# Information behaviour of law students; the impact of mobile devices on information seeking behaviour and provision in the 21st century: Volume 1

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# Prior Publications

Abbas. Zaki., (2015). "#citylis: Reflections and Research: Zaki Abbas on the Rise of Mobile Technologies among Law Students" - CityLIS News – Library & Information Science at City, University of London. Available: https://blogs.city.ac.uk/citylis/2015/07/09/citylis-student-zaki-abbas-rise-mobile-technologies/#.WaKYbD6GOpo

Abbas. Zaki., (2016). "#citylis Reflections and Research: Zaki Abbas on "Generations"" – CityLIS News – Library & Information Science at City, University of London. Available: https://blogs.city.ac.uk/citylis/2016/01/29/citylis-reflections-and-research-zaki-abbas-on-generations/#.WMpEYm_yipo

Abbas. Zaki., MacFarlane. Andrew., Göker. Ayşe., (2014). Smartphones for Law Students – Persuasive, Pervasive and Legal: A Research Study. Legal Information Management, 14, pp 174-180. doi:10.1017/S1472669614000413.

Abbas. Zaki., MacFarlane. Andrew., Robinson. Lyn., (2017). Use of Mobile Technologies by Law Students in the Law Library: An Exploratory Study, Legal Information Management, 17, pp 179-188. Doi:10.17/SI472669617000354.

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## Declaration

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# Abstract

This research examines the information seeking behaviours of law students; in the context of using mobile technologies to search for and retrieve academic legal information. Law students have been exposed to a variety of legal resources which are accessible in both paper-based and electronic formats. The latter is of specific interest given that it has increasingly been ported onto mobile form factors; providing unprecedented access to legal content to students without the physical restrictions that paper-based resources traditionally were inhibited by.

This cohort's interaction with text-based resources (rather than data) is significant, leading to our interest, resulting in the undertaking that builds towards an original contribution of knowledge. In addition to the law student cohort, this research also engaged with academic law librarians; whose input provided an overarching perspective on the consumption of legal content by law students. Their insight into the design, provision and promotion of legal information services by vendors of said products was well founded and of great value.

Achieved through a mixed methodology and the utilisation of a variety of research tools fielded at the cohorts, this research extracts significant empirical data through statistical analysis which is articulated to further enhance our discovery and understanding of the subject landscape.

The outcome of which is a proposal of a law students information seeking behaviour model (LSISBM) that maps out a law students' information seeking journey as they search for legal information using a variety of technologies available at their disposal (Fig.1).

The proposed model is refined through a multi-staged research approach and our tools are developed as we successfully engage some 28 academic law librarians and participation from circa 100 law students spanning all four home countries that comprise of the U.K. Key themes arising throughout the research effort included the intangibility of digital resources vs. the tangibility of paper-based content and the perceived reliance on digitally-based legal research tools.

The latter observation challenging the traditional law student information seeking behaviours, as described by academic law librarians, where research skills once acquired by legal practitioners as a rite of passage and part of the profession were now under clear threat from an increasingly digitised legal information corpus.
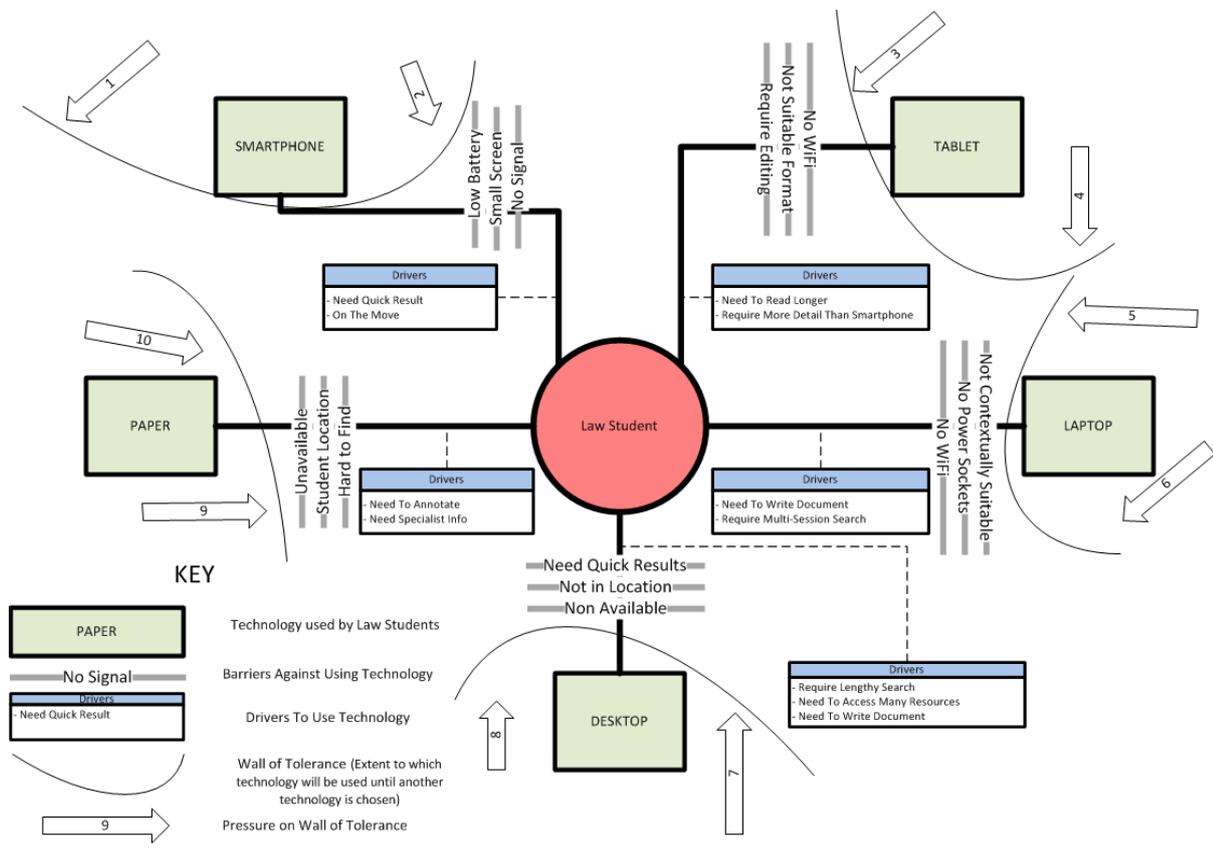


Figure 1: The Law Students Information Seeking Behaviour (LSISB) Model.

This research uncovered a digitally aware law student cohort, confident in the transitive use of technologies to access legal content with little appreciation for non-digital content and limited understanding of analogue research methods. This newly emerging behaviour challenges the traditional position where the focus has been on utilising extensive, and at times laborious, manual research skills - often crucial to retrieving legal content of relevance - from the vast array of paper-based legal content. From these findings, this research output is further complemented by delivering a set of recommendations for academic law librarians and legal product vendors which can be used to better inform on the management of legal information resources.

# 1     Introduction

## 1.1.  Overview

This study investigates the impact that mobile devices have made on use of information resources by law students, and the consequences for academic library and information services. The study also aims to inform law student, law librarians and vendors of academic legal information resources on needs, use and resource provision respectively within the previously mentioned context (Abbas, McFarlane & Robinson 2017).

This area of research is of interest to the researcher because of the unprecedented impact mobile devices have made on society - especially in the past two decades. The ubiquitous nature of these devices has positively impacted not only the social and inter-personal communications medium across the worlds diverse cultural, economic and age groups but also set societies expectation of constant connectedness via this digital channel (Lee & Katz 2014). There have also been reports of negative aspects that mobile technologies have introduced such as their distractive nature driven by their capabilities to multi-task, impacts on normally social interactions by making individuals less observant of their environment in lieu of being focussed on their mobile device (Baron 2011), even covering pedestrian, vehicle operating and tourist related activities that have been impacted by mobile technology usage (Haque et al 2015), (Lennon et al 2017) & (Ayeh 2018). Many of these behaviours can be related a result driven by activities comprised within the framework of Information Seeking Behaviour outlined by Wilson (2000) as;

"*…the purposive seeking for information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with manual information systems (such as a newspaper or a library), or with computer-based systems (such as the World Wide Web)*"
and lead on to the aspects of Information Searching "*…the 'micro-level' of behaviour employed by the searcher in interacting with information systems of all kinds.*" and Information Use Behaviour also defined by (Wilson 2000);

*"…consists of the physical and mental acts involved in incorporating the information found into the person's existing knowledge base."*

<u>Mobile</u>

Mobile devices, of late, have evolved from basic GSM handsets for two-way voice communication to the highly complex pocket-sized multi-media devices which are commonly referred to as smartphones (Baron 2011). Adding to this assortment are other portable devices such as tablet's, Netbooks and the Phablet – a hybrid of a smartphone and tablet device (Kennedy 2013).

Within this technology market, devices have competed aggressively for market share with smartphone sales outstripping those of desktop PC's as early as late 2011 (Albanesius 2011) and tablet devices set to repeat this success, although still seconding to their smartphone counterparts, sometime in 2019 (Arthur 2013) & (Hiidee 2019).

Research on mobile technologies has included the impacts of these devices on the social interactions in certain age groups, cultural influences, linguistic challenges via emerging acronyms used in mobile conversation (Blom et al 2016), digital literacy and language (Verheijen 2013) & (Hughes 2017). Economic impacts in both developing (Rigouzzo 2009), (Baro et al 2013), (Sahle 2016) & (World Bank 2018) and developed countries (GSM Association 2018) & (International Monetary Fund 2018). As well health and safety issues arising from these technologies and one's physical well-being have also been covered (Baron 2011), (Rospa 2017) & (Schmidt 2017).

Further literature related to the adoption of mobile technologies in other industries such as healthcare (Rodriguez et al 2003), (Pai 2014) & (Souter 2013), the law enforcement authorities (Chau et al 2001), (Henderson and Selby 2011), supply chain management and transportation (Partridge et al 2011) & (Gibson 2011), finance and banking (Millar 2013) and emergency services (Hall 2013) & (Solomon 2014) have been found. More relevant to this study, usage of mobile devices within the legal professional practice (Leckie et al 1996), (Black 2017) & (Coffey 2018) and in wider education (Kuiper et al 2008) & (McKenzie 2010) has been examined and

demonstrates the wider bearing the technology has made and continues to do so in almost every area of our society today. The embedding of these devices within the strata continues unabated with literature reporting as such also increasing in volume.

The field of clinical teaching was briefly researched with findings from (Boruff & Storie 2014) informing specialist medical libraries on how best to support students in their information seeking via their mobile devices. Kim & Ball (2011) also note that the use of mobile devices is higher in the medical profession compared to some others, driven largely by the fact that medical practitioners tend to require immediate access to information and be contactable at all if not most of the time and mobile technologies are well-designed to address this need.

Other scholastic related areas of research in the context of information seeking were also considered especially in relation to Web browsing which remains a key purpose and driver for the use of these technologies (Heimonen 2009), (Burford & Park 2014) and (Church & Smyth 2008). However, it is the impact of mobile technologies within the area of education for law students, which is specifically of interest to this study and within this scope, lies our interest in finding out the impacts of these devices in context of the provision of information for academic information retrieval see (Section 1.2.3). Our literature review found that mobile devices had not only impacted upon the way education was being delivered pedagogically (Adeboye 2016) & (Majumdar 2017) including the use of novel practices such as personalised education, real-time assessment as well as empowering the more vulnerable parts of society (Stone 2015).

We have also noted how the emergence of mobile technology has affected the way in which students perceive the ecosystem of the learning experience with studies noting this as far back as Hoffman (2002), (Stockwell 2010) and more recently (Farley et al 2015) & (Russell 2018). Complementing this transformation is the social-interactive element provided by social media, its widespread adoption amongst the student populace (Bal et al 2017) and corresponding impacts to which mobile technologies have contributed towards.

Providing yet further disruption to the traditional learning space where the historical method of student-teach communication during class hours being challenged and at times replaced by direct and near-ubiquitous links of correspondence, greater opportunities for student collaboration, promoting online etiquette and even keeping them academically engaged outside the classroom (Reader 2011), (Hunt 2014) & (Watanabe-Crockett 2017). It should be noted that the use of social media, specifically, in relation to legal information seeking is covered in this research given its use in the specific academic setting (Browning 2016), but only limited to this specific context.

Law

The subject of law was chosen due to the researcher wanting to study a student group of professionals who would ultimately require access to a vast collection of largely text-based content. Amongst the assortment of information, efforts were clearly underway to digitise many traditionally text-based collections for archiving purposes (Candela et a 2010), (Dipshan 2016) & (Gellerman 2016) which has resulted in providing legal professionals a relatively cost effective means to access vast amounts of content, retrievable in a fraction of the time and effort it would normally take through traditional paper-based channels (Lambert 2016) & (Letlape 2016). Naturally, law libraries have found this to be an increasingly popular approach for data gathering, retention, formatting and delivery and accessing this by mobile technology channels is a by-product of this trend as the shift from desk-based electronic applications migrates towards cloud-based and mobile device platforms (Maxwell & Schafer 2008), (Bintliff 2010) , (Michaelson & Smith 2015). However, despite the growth of digital resources, there remain voices which cite the necessity of maintaining both the new and older formats so that patrons can be free to choose the type of resource they wish to use as well as acknowledging the useful characteristics of each kind (Wu 2005), (Pandita et al 2016) & (Gorham 2017). When combined with the pedagogic element, more specifically, academic legal information provision, we found many questions and interesting topics that arise and to which we sought further elaboration of accordingly and are outlined as such in this report.

<u>Context</u>

Several contextual aspects were also considered in the exercise due to the very nature of information seeking via mobile devices, especially at times when such activity may be dependent on the physical, time, environmental, situational and geographical location of the individual information seeker (Sohn et al 2008), (Agarwal 2011) & (Orlu 2016) with some studies specifically on legal practitioners being examined (Ilo et al 2017).

<u>Libraries</u>

Libraries have traditionally been paper-based domains with their resources primarily consisting of physical media (books, papers, articles, etc.), however the growth of digitalisation has led to an increasing proportion of holdings to be contained within electronic formats (Palfrey 2010), (Kenchakkanavar 2014) & (Enis 2018) and that too in a mobile setting (Tait et al 2016) & (Sharma et al 2017). This shift has been driven by a variety of reasons including the need to reduce valuable shelf-space, address budgetary requirements, meet end-user needs for more electronic resources given the remote access capabilities and to provide multiple patrons access to the same resources, amongst others (Elsevier 2017). Librarians, as a consequence of these changes, made significant efforts to ensure that they can cater for, source, support, validate and promote their increasingly diverse information resource collection to their patrons (Okamoto 2012), (Fought et al 2014), (Ndungu 2016) & (O'Neill 2018). Hence, we found the landscape for librarians being disrupted and challenged to migrate towards an increasingly technologically fuelled content environment yet retaining its traditional holdings of paper-based materials as well as the provision of research expertise throughout (Tait et al 2016) & (O'Neill 2018). Our research will seek to investigate this change.

## 1.2.  Information Seeking Behaviour - Background

According to Ikoja-Odongo (2006) information seeking is a complex process that consists of social, communicative and interactive behaviours that are ultimately driven to search for information to satisfy certain goals or purposely acquire information from selected information sources. Wilson (2000) defines a number of terms which were used within this specific research, these definitions help provide context and understanding on the various aspects of information behaviour and as such are outlined here.

Information Behaviour

The totality of human behaviour in relation to sources and channels of information, including not only active but also passive information seeking and information use. Therefore, it includes face-to-face communication with others, as well as the passive reception of information i.e. listening to a radio commercial or watching a commercial on a website without any intention to act on the information given (Wilson 2000). Bates (2010) outlines it as;

"…the currently preferred term used to describe the many ways in which human beings interact with information, in particular, the ways in which people seek and utilize information."

Bates (2010) furthers that research interest in this area originally stemmed from a number of streams including librarians wanting to understand their patrons better. To illustrate the relatively broad area that information behaviour encompasses Wilson (1999) proposed his nested model consisting of three layers, starting from the inner side; information search behaviour, information seeking behaviour and ultimately, information behaviour. This all-encompassing layer being defined as that which covers all types of human interactions with information. The model is articulated further in (See Section 2.7.3).

Historically research in the area of information behaviour was often termed as "use studies", studies of "information seeking and gathering", or studies of "information needs and uses". (Bates 2010). As time progressed, the term "information seeking research" started to be used to refer to all kinds of research on people's interaction with information.

However, the term "information seeking" indicated that the effort was referring primarily towards how information was located and did not cover many of the other ways in which people and information interacted. Hence this term was succeeded by "information behaviour", despite the opposition of some who argued that information did not "behave" (Bates 2010). Technology has played a significant role in the development of information behaviour research and consequently its impact on information behaviour been subject of much interest since the 1990's (Vilar & Umer 2011). Fast-forwarding into modern times we find that the advent of the Internet and World Wide Web; tools which have enabled individuals to access gargantuan amounts of information with relative ease, this too has been accelerated by the advent of growing digitalisation of library resources (Bates 2010), providing patrons the means to access the resources within these institutions with the flexibility normally attributed to electronic resources.

Information Seeking Behaviour

Ikoja-Odongo (2006) notes that information seeking behaviour arises when an individual has a perceived need for information and seeks to satisfy this need. Adding;

"The individual recognises an inadequacy in his/her knowledge that needs to be resolved in order to deal with a problem. The effort to satisfy the perceived need results in information seeking behaviour."

Wilson (2000) elaborates that this concept comprises of the purposive seeking for information as a result of a need to satisfy some goal. While seeking, the individual may interact with manual information systems such as paper-based resources or with electronic resources. Research in this area originally started to look at how professionals searched for information and the corresponding resources used to obtain it and has over time expanded to include a variety of practices such as engineering, basic sciences, computer science, health sciences and mathematics (Gordon et al 2018). Combined, these studies came to a consensus that these professionals aspired to remain updated in their current fields of expertise and research, they sought to remain flexible in using a variety of resources as well as be open to different search strategies when exploring unfamiliar and new research areas (Gordon et al 2018).

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Further studies have covered the information behaviours of both faculty and doctoral students which showed that in order to succeed, individuals needed to continue to adapt to an ever-increasing growth in the number of available publications, different technologies (Bauder et al 2012) whilst managing a multitude of digital choices (Borrego et al 2007). More current studies included the information seeking behaviours of millennials in general and findings raised concerns over this cohorts shift away from traditional subject-specific resources and more towards general digital tools such as Google (Lo & Chu 2015) & (Mukh 2017), with a greater element of collaborative information seeking taking place (Khan 2018) & (Bowler 2018).

Information Searching Behaviour

According to Wilson (2000), information searching behaviour is at the "micro-level" of behaviour that is employed by the searcher in interacting with information systems of all types. It consists of all the interactions with the system, whether at the level of human computer interaction (e.g., using a mouse and clicking through links on a web page) or at the intellectual level (e.g., using a Boolean search strategy or determining the criteria for deciding which of two books selected from adjacent places on a library shelf is most useful), this could also involve mental acts, such as judging whether the content within the data retrieved is relevant or not. Outside the conceptual sphere and more relevant to this research study are the findings of Vilar & Umer (2011) who outline that young researchers who used digital tools showed a preference for visual information over text. The study also found that the cohort sought a variety of learning experiences, shifted towards greater form of digital communication, were more likely to multi-task and be more impatient for delays in retrieving results.

Information Use Behaviour

Wilson (2000) describes information use behaviour as something that covers both physical and mental activities involved in incorporating the information found into the individuals existing knowledge. It may involve physical activities such as marking sections in a text to outline relevance for a particular reason as well as mental acts that could involve, say, a comparison of new information with existing knowledge.

Noh (2018) defines information use behaviour as;

"…a series of individual actions, such as resource type selection and frequency or time spent using the equipment and resources." The topic has also been studied at significant depths covering areas such as researchers engaged in the study of natural sciences, chemistry, mathematics and physics. With other studies in the area of information use, path of use, source of use based on data types and library use (Noh 2018).

With the advent of modern technologies such as computers, mobile devices and information sources such as the Internet, information use behaviour has changed driven by the near-instant access to information Noh (2018) and our research will look to finding out the changes to law students use of mobile technologies has impacted their use of information.

Human Information Seeking Behaviour

Human information seeking behaviour research can trace its origins as far back as 1916 - where studies based on library users and readership studies were conducted. Following the post-war period, research in this area intensified, fuelled by increased volume of scientific literature which was increasing not only in volume but also availability (Wilson 2000).

Following this, the Royal Society Scientific Information Conference held in 1948 can be noted as the first official place mark from which modern examination of human information seeking behaviour was conducted (Wilson 2000).

Most studies conducted in the realm of human information seeking were based within the use of libraries and focused more on the actual configuration of the cohort of library users and not the actual drivers behind the use of libraries themselves. Mawby et al (2015) found a new concept of information – that of disposable information. This is defined as task-specific information which is likely to only be needed by an individual on a one-off basis. The study found individuals only wanting to put effort towards obtaining quality information if they perceived it to be of value at their point of need or see that it would be required again.

In the context of our research we find technology providing a means to facilitate access to information and seek to find out how and what drives law students to search for legal information, in particular situations and characteristics.

Information Needs

There were also many studies focussing on how the use of information resources could be improved but the focus here was on scientists and academics, not on the public. Modern day human information behaviour itself in its general form was not seriously considered until a major study was conducted in 1972-1973 – based on the information needs of ordinary citizens (Wilson 2000). And whilst this study examines a number of items regarding information needs it and similar studies of this kind continued to face challenges when defining the concept of 'information need'. Wilson (1981) therefore suggested that this concept was not a fundamental need as such (e.g. the need for food) but more of a secondary order need which arose out of the desire to satisfy a primary need(s). Following these research activities an increasing amount of research was conducted within the academic community with a focus on the individual as opposed to the information system itself, accompanied by a change from using qualitative research methods instead of quantitative and this trend continues to this day (Wilson 2000).

## 1.2.1. Previous Research

Our research looks to find out about the information seeking behaviours of law students in relation to using mobile technologies to access electronic resources, as such we briefly covered literature in areas which were relevant to this topic. This included the use of mobile devices in the classroom, social media in education, the internet as a means to obtain digitised information and more applicable; information seeking behaviours of legal professionals.

Mobile Technology and Learning

(Campbell 2007) conducted a study on the cross-cultural comparisons of perceptions and uses of mobile telephony amongst groups of college students from Japan, Sweden, Taiwan, Hawaii and the U.S. Mainland.

The author identified that there was a lack of research on the social science elements within this area. The study found that some of the most diverse societies in the world had successfully adopted mobile device use and some of the rates of take-up were influenced by socio-economic and political forces.

The study also noted that the wealth of countries did not serve to be a barrier and these technologies were clearly indifferent in permeating across the boundaries which would otherwise exist between the rich and the impoverished areas of the globe, largely thanks to the device's lower barrier of entry and ultra-portability of these devices (de Silva et al 2011).

Campbell (2007) also found that in some instances adoption of mobile technologies was not blocked by literacy but more driven by not only economic progress of countries, i.e. member states of the former Soviet Union but also being integrated into well-established cultural practices such as the concept of forming personal networks (guanxiwang) in China's populace. This assertion was supported by a real-life experiment conducted by the One Laptop Per Child project (Ackerman 2012) - after a set of small form-factor devices was delivered to a remote farming community in Africa, the study found that children with no previous literal abilities were quick to adapt to the use of these technologies and engaged on an unforeseen and heart-warming learning experience, illustrating the intuitivist nature of these technologies and shedding light on the rationale behind the fast adoption of them. However there still remain challenges in the post-adoption of these technologies and their application within various contexts. Education being a prime example where several studies have also been conducted on the aspects of the use of mobile devices in the scope of academic practice; this includes both positive reports (Rung et al 2014) & (Phelps et al 2017) and negative such as cyber-bullying, sexting and general disruption (Maps 2017). There have also been observations around digital literacy amongst students which in the context of academic information research was found to be somewhat challenged (Chen & DeNoyelles 2013), (Hanbidge et al 2015) & (Kaeophanuek et al 2018)

Stockwell (2010) also studies mobile device use in the context of pedagogic activities in the classroom and we found many other studies related to this area (Sung et al 2016), (Kelly 2017) & (Gupta 2017) amongst others.

It was also found that the use of these devices could potentially bring a number of positive impacts on the learning experience of students such as learning on the move, however it was left to academics and learning instructors to evaluate how best to associate the features of mobile technologies and innovatively apply them into the learning space (Woodcock et al 2012). Calls were made to provide more support for both teacher and student in the user context (Woodcock et al 2012) & (Montrieux 2015). Other research examined included that on students' digital preparedness before entering the classroom given their increasing exposure to modern technologies (Sutherland 2016) to Woodward (2014) & (Deady 2017) who report that most of the student population tend to already be confident users of mobile technologies well before entering the classroom.

More specifically to our project, Kerins et al (2004) investigated the perspectives of legal training of law students, highlighting that the cohorts learning experience was instruction-centric and content-oriented, but outlined the growing trend of Universities moving away from this mind-set to focus on more process-oriented teaching. Some reports however disagree citing the lack of evidence of academic benefits to students (Coughlan 2014); supported also by (Kim, Mims & Holmes 2006) who also cited a lack of research on mobile technologies within the academic realm. Having said that, the impingement of these technologies within the student lifestyle has led to a near certain expectation of being able to access most if not all types of information through these channels and a surprise if this is discovered to be not possible (Church & Smyth 2008).

On the opposing side of the usage spectrum, studies have been conducted on the social impacts caused by the non-use of these devices (Wilmer et al 2017), (Lee & Katz 2014) and (Baron 2011) with findings that the removal of these technologies increased and enhanced inter-personal interactions and collaborative engagement.

Social Media

(Oberer & Erkollar 2012) investigated the impacts social media use made in higher education –
this is somewhat relevant to the research given the extensive use of social media within mobile
contexts and the corresponding changes this too is bringing to the student learning space
(CampusQuad 2014). Faizi et al (2013) found a number of benefits that social media use in an
academic context brought to the learning process including the encouragement of greater
collaboration as well providing less-active students the opportunity to engage with others
through a less intimidating digital forum. Verdegem & Vanwynsberghe (2013) recognised the
trend of social media use in academic spaces and so proposed a framework to help integrate
social media into an education setting.

Libraries and Mobile Technologies

(Robinson & Bawden 2001) examined the position of libraries and information services in
relation to the "Open Society" advocated by Karl Popper and George Soros in which information
was accessible to all and not controlled by some select group or personnel. The advent of the
internet has made the flow of information more open to unprecedented members of the public
this has presented a new challenge to Libraries who need to account for and work within these
new specifics for information provision. This and the digitalisation of content has provided a
means for individuals to access unprecedented amounts of information and this has grown into
a considerable source of knowledge for society, a position once largely dominated by the
library. This should not be a concern for the latter as there is strong argument that rather than
the library seeing the internet as a challenger, it should be viewed as such given its relatively
disorganised structure, unverified content and general lack of expertise control and
management (Herring 2001) & (Herring 2008).

Directed on the legal aspects of this area, (Leckie et al 1996) conducted research on lawyers and their information seeking behaviours, it was found that research on this group concentrated more on professional issues such as ethics and accountability with the actual information needs, use and seeking behaviours only briefly covered. Other research showed the need for better tools to aid legal professionals in navigating through the maze of digitised legal information (Kuhlthau & Tama 2001), (AALL 2001) recommended a significant shift in the way academic law libraries were organised to better prepare for the eventual changes that will be impacting the traditional library model.

Furthermore, studies on the use of electronic resources; by legal professionals; found that there was a lack in understanding of how to effectively use these materials (Makri et al 2008). These studies yield a good case for further research into the area of human information seeking behaviour as the resultant output would help strengthen the understanding of human-information system interaction (Fidel & Pejtersen 2004).

## 1.2.2. What Has Been Found?

Although literature as highlighted earlier (see Section 1.2.1) illustrated several findings covering areas such as mobile technologies in the learning space, the use of social media, librarianship & information service provision and, more specifically, information seeking of legal professionals. We found a number of gaps in areas such as there being limited focus on law students and their use of electronic resources via mobile technologies. Many topics discussed consisted of isolated experiments as opposed to more of a holistic perspective on a cohort – something which our research proposed to do. To start with we wanted to build further on our understanding of the current literature on information seeking. We looked at Wilson (2000), who highlighted that increased focus on the individual and their interaction with information systems has resulted in a shift from quantitative to qualitative feedback, with the names of leading researchers such as Kuhlthau, Ellis, Dervin and Wilson himself contributing towards this shift.

Because of our research interest, we expanded into examining literature covering information seeking of legal professionals. Here we found that the profession tended to concentrate on issues such as ethics and accountability or on the conduct of cases in a particular area of Law. As well as, the type of information was being sought influenced their behaviours when searching for it (Leckie et al 1996) and (Wilkinson 2001) – with the latter citing a lack of empirical research on the subject in general, this was supported by the findings of (Fiedel & Pejtersen 2004), (Makri et al 2006) and more recently (Das & Jadab 2017).

Khan et al (2011) & (Chancellor 2015) highlighted that the information seeking behaviours of legal professionals were at times influenced by the legal needs of the client and there was a preference to refer to printed text over electronic material. This may be caused by the legal professionals being misinformed somewhat of the potential capabilities of electronic resources available as identified by Makri et al (2008).

Yet there still continues a drive for adoption of electronic media within the legal domain, there remained a risk of information overload in the form of irrelevant and unimportant information (Maxwell & Schafer 2008) and (Bawden & Robinson 2008) – an aspect which would have a corresponding bearing on law students' experience of using the same resources if not similar to those used by practicing lawyers. Adding the internet into this mix and we find that the risk of information overload - given the internet's lack of quality control – increasing (Herring 2008), however social media on the other hand appears to be found itself to be more of an acceptable source of information and increasing its appeal to the profession, especially with products such as LinkedIn which are considered by many lawyers as essential tools (Simons 2014), however (Hopkins 2018) warns that whilst some tools may be more applicable in the legal industry it is essential that a sensible approach to content management is applied.

Within the scope of education and law students the U.K., Curtis (2009) discussed that higher education establishments - often facing cost reduction exercises – looked at employing technologies that would help alleviate the capacious burden of storing printed material on bookshelves.

This also included initiatives such as providing fixed study areas and extended operating hours, to meet their fiscal needs (Kim 2012) & (Lindermann 2014), These findings have also been supported by that of IPSOS MORI (2009). Kuiper et al (2008) reported that students have managed to acquire skills for information search that extend beyond their traditional information sourcing methods they would otherwise employ when looking for information to address a study-related issue, Dogruer (2011), (Prensky 2012), (Thomas 2015), & (Carbonell et al 2018) found students utilising the internet - be it through computers or mobile devices - as a key means to address information needs with a variety of results and conclusions including suggestions on how the usage of such an information resource could be better aligned to the academic environment.

Library spaces were no exception to this trend. Also, we noted that social media use in academia was also found to be growing as part of the environment's digital transformation (Vervaart 2012) & (Etherington 2018).

On a wider note, we found instances where perceived over-reliability on certain resources as well as the increasing use of social grammar, utilised in mobile communications, making an appearance in formal writing (Arafeh et al 2008) & (Wilson 2012). Kim, Mims & Holmes (2006) also highlighted the welcoming shift away from the established classroom learning mantra towards a more mobile scholarly environment, with cases such as Ebiye (2015) noting the speed at which mobile devices allowed students to retrieve information and Smith et al (2016) reporting both students and teachers creatively applying the functionalities of mobile technologies into the learning space.

Others however have raised concerns that whilst informal information seeking using mobile technologies may be well-established amongst modern day students, application of these skills to a formal, academic information seeking setting highlights the lack of the pedagogic approach (Kakai et al 2004). To counter this, attempts have been made to provide students with instructions on how best to approach information seeking within the electronic domain (Head 2013) with recommendations for the same (Catalano 2013) & (El-Maamiry 2017).

Having said that and despite the studies showing the popularity of electronic resources, there remains evidence that students still resort to using print material when required to study for extended periods (Foasberg 2013), (Baron 2015),when the quantity of material was of a large amount (Amaya et al 2016) or even when concentration was needed and to avoid being distracted by digital screens (Rosenwald 2015), yet whilst printed material may still be popular for academic studies, there remain opportunities to refine digital materials in order to optimise them for the learning space (Riffe 2017) & (Bikowski 2018).

Moving towards resource provision in the library space we noted the gap in research covering specifically law students and their use legal information resources for academic studies and what role their use of mobile technologies plays within this context. Head and Eisenberg (2009) examined the information seeking behaviours of over two-thousand students engaged in higher education, their findings reported that the use of library resources remained high as was the use of scholarly databases and other course-related research tools. They found that students tended to underutilize librarians and did not consult them as often as one would hope. They also found that the lack of confidence and procrastination towards the use of electronic resources had been almost eliminated with the younger generation of students being highly versed in using electronic resources for information retrieval. Miller (2017) also found similar concerns.

Although the research by Head & Eisenberg (2009) covered a significant overlap towards what our research aims to address, their paper was concerned with students in higher education in general and not specific to the study of law. The high textual capacity of resources and the challenge in presenting such detailed content in electronic format as well as having to navigate through a famously voluminous collection of paper-based resources was yet to be explored, especially in relation to the academic law library – normally host to many legal resources and a central part of a lawyer's information source.

Correlating to the aspect of academic library usage is Miller's (2017) study which noted the reluctance of students to approach librarians for help with resources and often preferring to seek support from peers or faculty, using various resources, the research covered students in general and did not specifically look at the information seeking behaviours of law students. And whilst Toteng et al (2013), (Karunararthna 2014) and (Onwudinjo et al 2015) did examine law students and their use of library resources, their studies were focussed on single institutions (outside of the UK and did not cover digital resource use through mobile devices).

## 1.2.3. What Questions Remain?

<u>What do we know?</u>

We have found a sizable amount of research that covers the history of legal information research, information seeking behaviours of professionals, lawyers, students and students with mobile devices. However, our literature review shows that there is still a gap when it comes to assessing this type of behaviour with law students as the prime cohort and has been highlighted by other research in the area (Makri et al 2008) & Das & Jadab 2017). The detailed information behaviours of such a relatively niche group, when engaging the vast collection of both written and digital material, is still lacking in available literature. Compounding this challenge is the inclusion of mobile devices within this context and research around how law students are using such technologies to retrieve academic information provided by the law library; which continues to disrupt the information flow through ever evolving technological advancement and greater channels through which legal content can be delivered.

<u>What else is happening in this space?</u>

Many calls have been made for an enhancement of legal research skills training and academically focussed digital literacy amongst the student body (Chen & deNoyelles 2013), (Catalano 2013), (El-Maamiry 2017) & (Miller 2017).

Yet we found warnings of students being over-dependent on digital resources (Wilson 2012) & (Serdyukov 2017) and technologies (Humphreys 2018), especially when scoping in the intuitive nature of mobile device-based applications which can provide a significant amount of information with little effort. These are valid concerns.

<u>What do we need to find out?</u>

We want to find out more about the information seeking behaviours of law students in the context of using mobile devices to access academic information. We will need to understand how this cohort accesses legal resources for their study needs in general and then narrow our focus to include electronic formats via computer and more specifically mobile platforms. We also need to find out more about how the emergence of mobile technologies has impacted the way in which non-technical resources are accessed and used as well as the mapping of the information behaviours of the law student cohort in relation to all the technologies at their disposal.

These enquiries give rise to the rationale for conducting this study. A more detailed overview of the research questions and objectives are outlined and reviewed later within this report as we continue to solidify our understanding of the topic area from the literature and scope out our intention on how to address this challenge.

## 1.3   Scope

Scope is essential to any research study to prevent the effort from expanding into an uncontrollable exercise and ensures that the focus remains relevant and concentrated. It also ensures that all the components used to bring results and fruition to the research can be managed so that what was initially proposed to be achieved and what is achieved can be related (Price & Murnan 2004). Scope also protects the research project from being distracted towards irrelevant works and topics as well as making clear boundaries which protect the study from any external influences that may hinder the effort (Goes & Simon 2013). Therefore, it is essential to manage these boundaries from the outset and make clear what is and what is not expected to be covered in this research study.

### 1.3.1   What Will This Study Do?

This study will seek to find out the information seeking behaviours of law students' using mobile devices for their academic studies. This research will aim to address several research questions that will be proposed as well as deliver a set of recommendations to those parties who stand to be impacted most from any changes within this focus area. This research will also look to develop, refine and propose an information seeking model that best describes the information seeking behaviours of law students and their use of technologies to interact with legal information resources. This model will help inform the audience on how, why and when law students use technologies to access legal information and their rationale for doing so.

Noting the wide scope of this topic, the cohorts will be reserved to Law Schools within Higher Education Institutions (HEI) in the UK only, namely law librarians and law students.

### 1.3.2 What Will This Study Not Do?

This research study will not seek to;

- Examine HEI outside of the UK

- Students engaged in the study of topics other than the subject of Law

- Examine law students' interaction with a specific resource(s)

- Design/refinement of a specific resource(s)

- Develop a resource(s)

- Recommend a change in law library practice

- Deliver any instruction or guide on how to use legal information resource(s)

- Deliver any instruction or guide on how to search for legal information

It is essential that this research is protected from an unwanted scope-creep especially given the amount of interactions that will take place with research subjects as well as the emerging technologies that this study will examine.

### 1.3.3 Overall Aim

The research project aims to find out about the information seeking behaviours of law students and the role mobile technologies play in this context. It uses a mixed methodology and fields a series of research tools towards a pre-determined cohort set of law students and academic law librarians. The output from the research tools is then used to help formulate our understanding of the landscape and propose a contextual model outlining the information seeking behaviours of law students considering mobile technologies as well as other technologies at their disposal; used to access legal content for academic study. The output also helps build a focused approach towards the use of mobile technologies in this context and deliver observations which can ultimately be used to better design, inform, promote and use mobile-platform-based legal resources.

The new knowledge created incorporates feedback from both cohorts to provide a balanced perspective and opportunities to find both synergies and differences between.

### 1.3.4   Overall Objectives

The overall objectives of this study were to;

- Carry out an initial investigation into the existing information seeking behaviours of law students using a variety of technologies to access legal resources in both non-electronic and electronic formats and include students use of mobile technologies for their information retrieval needs
- Carry out a detailed investigation for the same as above but with specific emphasis on academic information seeking and the use of legal information resources and their design
- Build an information seeking model that will outline these behaviours of the said cohort and provide a greater understanding of the use of different technologies (both non-electronic and electronic) to access legal information resources in several contexts including both stationary and mobile
- Deliver a list of recommendations for law librarians and law students on their use of legal information resources and how these can be refined and further developed.

### 1.3.5   Contribution to The Research Field

This research effort is primarily user-centric and employs both quantitative and qualitative research methods to help achieve a better understanding of individualistic approaches to information system interactions (Wilson 2000).

Given the cutting-edge nature of these technologies and their deep impingement within society it was essential to have a grounded perception of how these devices are impacting the information seeking behaviours of future practicing law makers.

It was felt that the youth of today could provide a good indication of societal usage of mobile devices in the future and there was ample evidence that these technologies are having a significant bearing on the way society is evolving within the context of using these devices. With impacts, already being noticed on children (GCM Association 2013) & (Ackerman 2012) and in education (Kim, Mims & Holmes 2006) – due to the very intuitive and user-friendly nature of these technologies we noted several changes in student's study behaviours – including impacts on the cohort's ability to conduct research; perceived by some instructors to have become somewhat weaker (Abbas et al 2014).

Other challenging facets arising included the use of social media within the academic context and the corresponding privacy issues that can discourage its adoption within a pedagogic domain. However, this is also showing signs of change whereby HEI have actively begun to utilise social media elements as an effective communications platform within their organisation (Oberer & Erkollar 2012). Furthermore, there have been many statements that call for more research into the topic covering legal information seeking (Makri et al 2008), (Leckie et al 1996) and (Wilkinson 2001) as there is no doubt of the impact the technology is having on this area.

Research also shows that HEI students in the U.K. are amongst the most likely group to be in possession of a mobile device, thus it was logical to focus efforts for this study on this cohort, with focus on those studying law, in particular (Wilkes & Oates 2014), (In Focus 2013) & (Ofcom 2014).

The literature review provides highlights of the study conducted within the area of information seeking and information seeking behaviours briefly on society, on professional Lawyers, on the use of mobile devices in a pedagogic surrounding – and then focusses on law students. However, we highlight the lack of research within the legal profession and academic space in the context of these technologies and illustrate the gaps that this study aims to fill.

The study also looks to provide a framework from which both legal information providers and academic law libraries can better serve the information needs of law students within the context of mobile devices as a means for effective information service delivery. The contribution of this research is to expand the knowledge and understanding of information seeking behaviours of law students accessing electronic resources using mobile technologies such as smartphones and tablet devices for their academic information retrieval needs. This project achieves this by assessing how both non-electronic and electronic resources are used by this cohort and using this understanding from both literature and field research to propose a contextual information seeking model. This model encompasses both types of resources as well as the range of technologies used to access them; which could include both mobile and stationary technologies. The "wholeness" of the model helps give a broader overview of law students information seeking behaviours in the grander scheme of legal content which they can examine and the various technologies (both non-mobile and mobile) for access. Attributes which contribute either towards or against the use of these technologies are also accounted for through our understanding of law students' information seeking behaviours obtained through the proposed research efforts. We complement our contribution by delivering a succinct review from our findings in the form of a set of recommendations for law librarians and legal information providers which help better inform on the design, build, provision, promotion and use of electronic resources via mobile technologies.

## 1.4 Thesis Structure

The thesis is summarised in this sub-section to provide an outline of what can be found in the respective sections. It also gives a briefing as to why it is structured in this manner to help build a picture of the flow.

### 1.4.1 Chapters Outlined

**Chapter 1** in the thesis is initiated by an overview of the topic from a high-level, it ascertains whether any studies in this area have been conducted before as well as what has been found. It starts to then raise questions that remain from these findings. The scope is also defined and justified.

**Chapter 2** outlines the literature that has been reviewed to build a strong understanding of this area of research. The methodology of the literature review is introduced, scope and governance as well as the tools and resources that were utilised to obtain the literature in the first place.

Given that information seeking is a well-known research area, information seeking behaviour and models are studied and their relevance to this research outlined. Findings from these models and their behavioural descriptors are noted and summarised. We then move onto looking at the legal information resources that are available and briefly outline them, this paves the way to introduce the various modern technologies that can be used to access these resources and how these technologies have impacted society in general, professions, legal practice, academia and then focussing on legal studies itself. With law students now introduced into the picture, electronic legal resources are sketched-out together with examples of usability experiences which are summarised. Other ancillary resources are also covered, such as social media and the World Wide Web and how law students use these resources for their information seeking behavioural needs. We then look to see where gaps exist in the area that this specific research study seeks to examine, with the aim of filling them.

**Chapter 3** looks at the research questions that have arisen from the gaps identified and how these questions will be addressed by the research objectives proposed. The chapter also includes details on how the research in this area will be carried out and why it should be done, together with the deliverables that it hopes to present.

**Chapter 4** brings more details into how the research will be conducted, the methodologies considered, the mixed methodology used as well as how it was applied. Research instruments that were used to bring results from the study are introduced, outlined and described together with the various tools and approaches considered to extract this information and analyse it. The research cohorts are scoped as well as the risks for managing the cohorts and the technologies that were covered during this research effort.

**Chapter 5** covers the initial pilot study which was our first attempt to gain a more first-hand experience of the landscape this research area seeks to investigate. Our results are presented, discussed and reviewed together with lessons learnt and any revisions we made to the cohorts and adjustment to the research tools were utilised.

**Chapter 6** dives into the exploratory study, here we outline our results and provide summaries for the findings from each set of the research instruments we employed. These findings give way to the proposal of two information seeking models that hope to fill the gap identified in the literature review. The final selection of the proposed model is determined together with a critical analysis of the results from the exploratory study. We take the opportunity to conduct a lessons learnt review and thus making some adjustments to the research tools and approach going forward, these are also highlighted together with our strategy around refining our proposed model in the following study phase.

**Chapter 7** looks at the changes applied from the exploratory study and introduces us to the detailed investigation phase of the research where more research instruments are used, and their rationale put forward. Given the size of this phase we split the results into two following

chapters (chapter 8 and 9). The cohorts are introduced and the results from the research ascertained on a part-by-part basis which is then comprehensively summarised and analysed critically. The revised information seeking model is illustrated and the rationale for the changes applied is justified.

**Chapter 8** works in a comparable manner as chapter 6 where we present examine the findings from some of the research instruments used but in this instance for the detailed investigation and then present the results from them.

**Chapter 9** covers the remaining research instruments which also formed part of the detailed investigation and we also start to implement refinement works on our proposed model as well as scoping out our lists of recommendations for law librarians and law students which were outlined in our research objectives earlier in chapter 2. We also refine the proposed model and present it here. The chapter concludes with our lists of recommendations for law librarians and legal information providers.

**Chapter 10** is where a discussion and critical analysis takes place on our findings for each of the research parts covering interviews, questionnaires and the focus group.

**Chapter 11** provides a detailed narrative of our research activities throughout together with our findings from the cohorts, which is followed by our analysis on addressing both the research questions and the research objectives we originally set out to cover earlier in chapter 2. We also take the opportunity to outline the limitations of this research and an opportunity to reflect on our journey.

## 1.4.2 Research Project Pathway

The research project grew through a constant review of the literature and measurement of the findings from the research against the projects overall aims and objectives. These two categories were checked continually to ensure that they were achievable and realistic. As the project progressed, so did the findings from the research studies and this in turn gave way to a better assessment of the research questions and objectives. Gaps that were identified at the outset of the research study were also assessed to check if they had been filled and once these gaps had been addressed they were cross-checked with the research objectives. This progress is outlined in the flow chart shown (Fig.2).
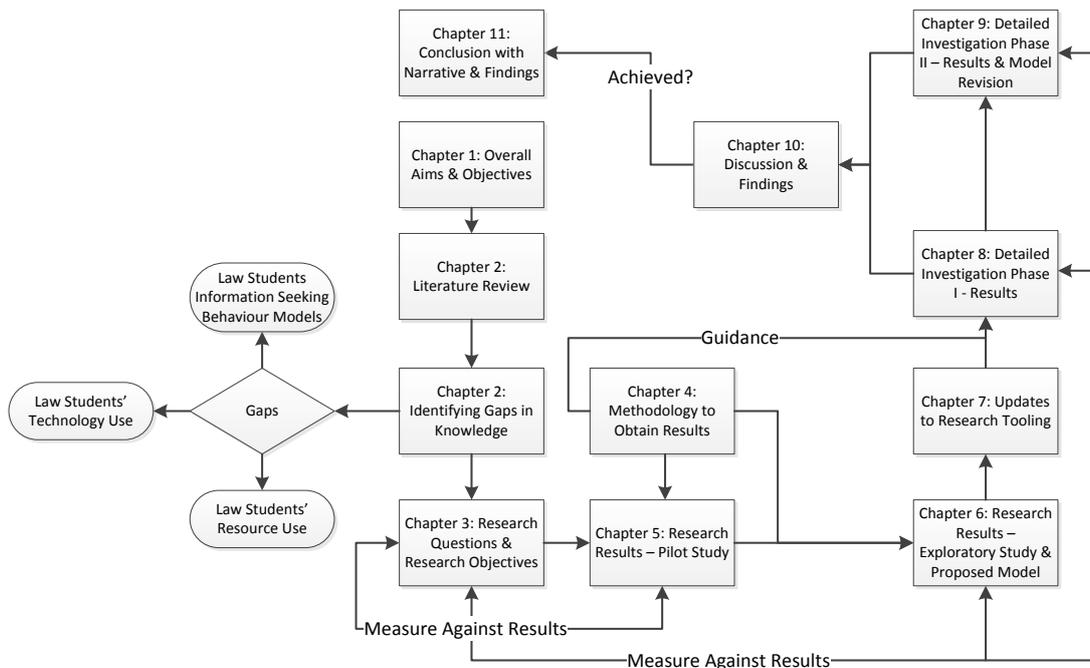
Figure 2: Research Project Pathway

## 2 Literature Review

## 2.1 Review Methodology

Several bodies of literature were reviewed during the period of reading between 2013 and 2018. The literature review needed a strategy to initially obtain a wide-arrayed, elevated level understanding of information seeking behaviours, information seeking models and what work had been carried out in this area in general as well as focussing in on the specific topic at hand. Resources consulted included verified journals in PDF format, papers and associated submissions in PDF or Microsoft Word format from the following;

- Google Scholar

- Google (for general related or relevant articles)

- Emerald

- Elsevier

- City University Library Portal (electronic books and associated publications)

- Westlaw, LexisNexis, Lawbore and other bespoke legal information databases

The strategy was to first develop an understanding of the origins of information and communication – at the basic level and in brief form (Spar 2004) and (McKie 2013). Information needs and information seeking behaviours were then looked at (Wilson 2000); this was accompanied by observing the many models that have been developed over time in these subject areas (Sutcliff & Ennis 1998), (Bates 1989), (Wilson 1999; from Godbold 2006) and (Leckie et al 1996). Risks associated with information overload, the increasing shift towards electronic formatting of data was studied (Bawden & Robinson 2008), (Maxwell & Shafer 2008) and (Tredennick 2010). Following this, literature covering research and studies on information seeking behaviours and habits of lawyers was studied, narrowing down to the information seeking activities of students' in higher education (Makri et al 2008), (Kerins & Fulton 2004), (Kuiper et al 2008), (Kakai et al 2004) and (Eisenberg & Berkowitz 2013).

With a gradual build-up of this knowledge, in parallel, the background of smartphones and communications technology was investigated as was the impact of smartphone technology use in the domain of both the legal profession and higher education (Paterson & Boon 2011). It was also interesting to have identified research on smartphone technology use within the information retrieval arena and the use of such technology in work practices to observe the various impacts that were being noted. Given the substantial amounts of literature available and the constraints on what could realistically be written, students perspectives on information seeking and mobile technology use was also emphasised and focused on as much as possible.

## 2.2   Scope & Governance

The scope of the literature review needed to be determined to maintain focus on the research subject and ensure that a good understanding of the topic was being obtained. Given that the subject of information seeking behaviour and mobile technologies had numerous works available on them it was important to ensure that the specific meta-content on these subjects were looked at and there was no "scope creep". It was decided to break down the various elements that comprised of the research subject into components and then review the available literature therein. The four key parts to this being;

- Information Behaviour Models
- Legal Information Resources (Non-Electronic and Electronic)
- Students
- Technologies Used to Access Resources (Including Mobile Devices)

The desire was to seek the existing literature and find out whether any research had been conducted on the Information Behaviour of law students using mobile technologies in their academic information seeking context.

## 2.3   Tools & Resources Used

Most of the tools used to conduct the literature review included paper-based resources normally accessed via the public library or the City University Library where the research was conducted. There were also opportunities for examining literature provided by legal information vendors which were reviewed when found on shelves in the said libraries.

For electronic material, access was overwhelmingly carried out using either a desktop or laptop computer which was connected to the internet and access to the City University Library online catalogue. The latter resource also provided direct links to electronic versions of books, journals and papers where possible and this was found to be a very useful and flexible approach to conducting the literature search. In some cases, smartphones and tablet devices were also used for brief periods of information research. Access to other HEI Library sites also provided links to relevant literature, most giving insight into how their Library services were organised and served their respective law student body. This included sources from the University of Oxford, the University of Cambridge, the University of Westminster, London School of Economics, the University of Edinburgh, the University of Brunel and Queen Mary University of London.

The research students' personal smartphone was also used at times to search for literature via the device's Web Browsing interface, brief outlines of relevant information were search for and if the search was deemed to be of interest then the link would be emailed to the research students' laptop or desktop PC and then when possible, the link used to continue the study on the said material, albeit on a larger screen.

### 2.3.1  Search Engines

We were well versed with using web-based search engines for casual information retrieval. And although academic information retrieval per-se was still an exercise involving the searching for and extracting relevant data, it was wholly appreciated that in practice both casual and academic information seeking were different and thus required different approaches.

The main search engine used to look for literature was Google Scholar. This was due to recommendation from fellow students as well as available material online which was found to be of high quality, numerous as well as the sources being of trusted origin. Further investigation into this tool revealed that it was a highly popular resource for academics and allowed for the filtering of results so that research data could be extracted from larger result outputs, given the sizable amount of information available online (Friend 2006).

Some academic institutions warned students to using Google for their academic research due to the intrinsic nature of most websites which were often "unstable, unscholarly, and generally, a poor substitute for library collections or the subscription electronic resources available" (Truslow 2013) and guided students towards the more academic-centric Google Scholar - which only gave the researcher more confidence in the resource (The University of Edinburgh 2015), (Truslow 2013) and (University of Illinois at Urbana-Champaign 2015).

Google Scholar focused more on the quality of information as opposed to the quantity, which in this case was key and a lesson well learnt by the researcher's initial information seeking activities when Google was used, and many irrelevant results were obtained which required a lot of analysis. With Google Scholar, many embedded functions allowed for filtering and intelligent extracting so that the results of relevant information could be maximised (DeGraff et al 2013).

Full text searches for topics were used as it was felt to be the most natural approach for the researcher. We determined that using what was most natural in information search behaviour would be a good method to start the search and refine this approach form the outset as the work progressed. In many cases, open terms like;

"smartphones used by law students" yielded different results between Google and Google Scholar, with output in this case being more relevant in Google than Google Scholar, with a direct hit on articles on "Helpful smartphone Apps for law students" and "smartphone Optimization for law students".

On the outset, these articles seemed relevant, yet some articles were either too generalist or

not relevant due to the wider net that Google searches cases as opposed to that of Google

Scholar (Fig.3).
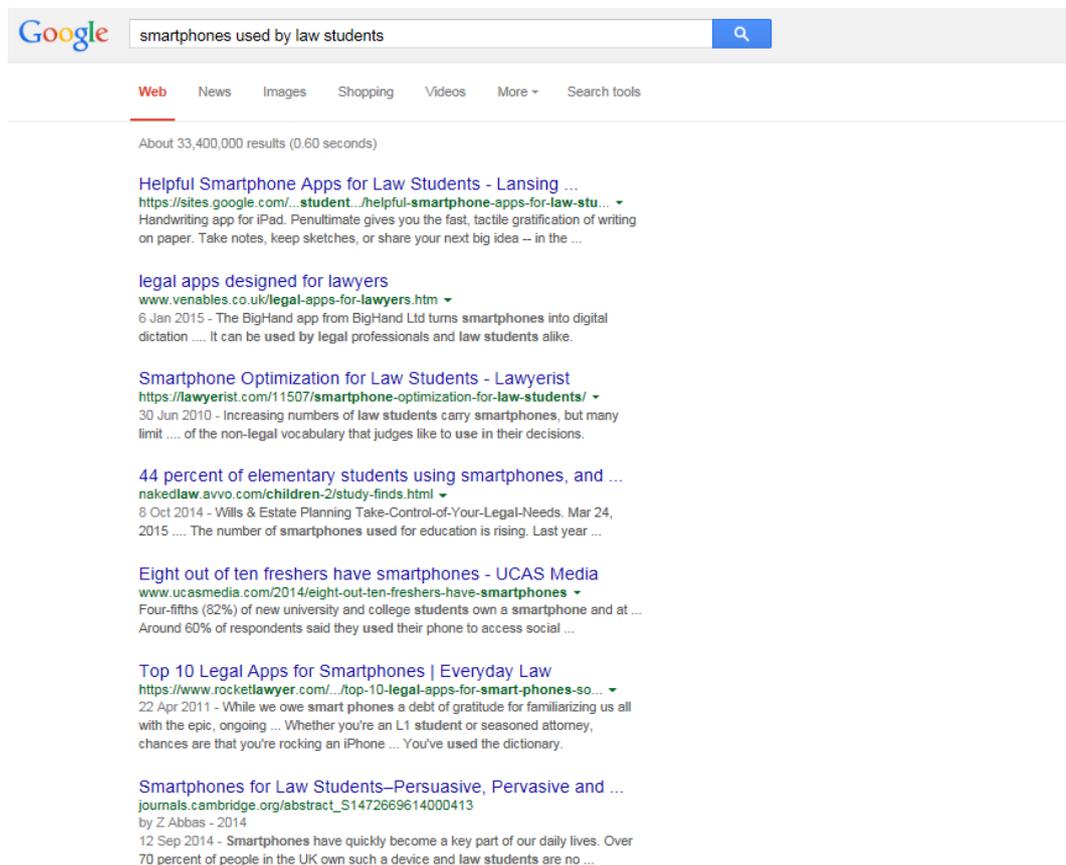


Figure 3: Google Search Output

With Google Scholar, the results yielded a more focused output such as "Social implications of

smartphone use; Korean college students' smartphone use and physiological well-being" and

"Habits make smartphone use more pervasive" to name a few, some of these articles contained

components of relevant information which would be deemed useful for background reading,

some not.
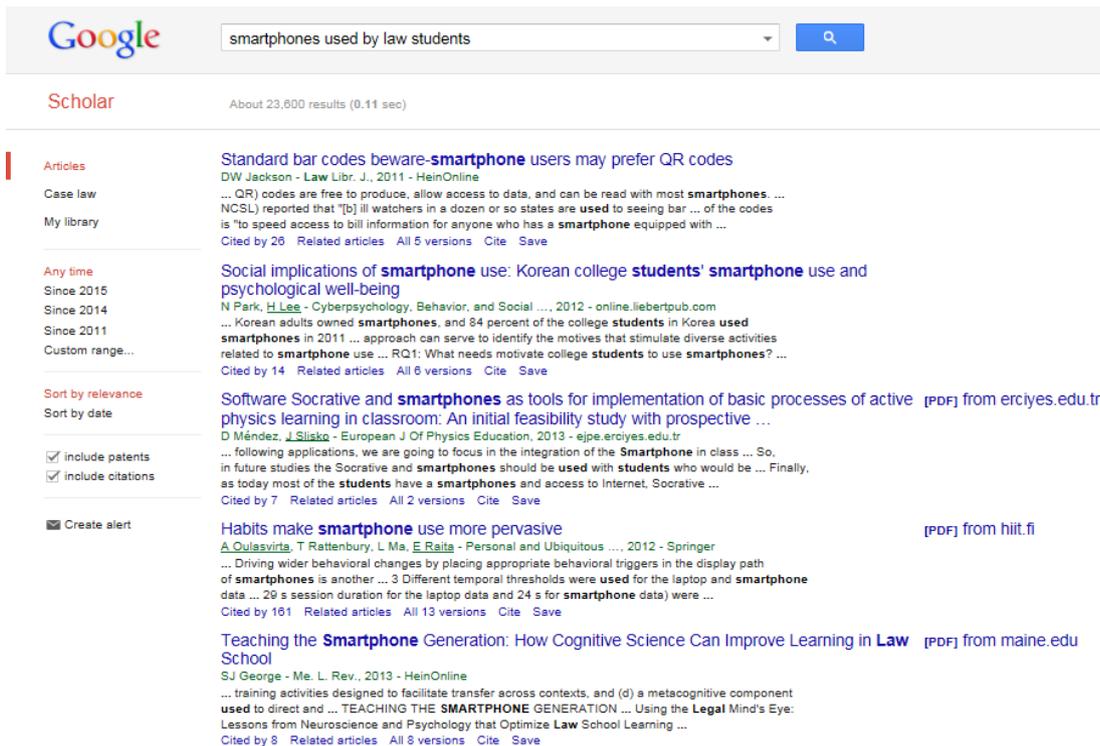
Figure 4: Google Scholar Search Output

Yet the results from both sources (Fig.4) showed information which could be used in different areas of the research topic, providing value. Thus, both Google and Google Scholar were used on a regular basis throughout the literature search and various parts of the literature review document were built accordingly to the information retrieved at that time. The search was not linear but more of an evolving pattern.

## 2.3.2  Google Scholar

To help understand the type of searches that were conducted to find information relevant to the research study, examples are provided using some of the tools that were used. Each example shows the style of query inputted into the respective tool and the outcomes resulting from the search together with the options provided to deliver the final information artefact.

For example, we wanted to look for general literature on the topic of information seeking using mobile devices. The search began by first navigating to Google Scholar and entering the phrase "Information Seeking Using Mobile Devices" in the search bar (Fig.5).

Figure 5: Google Scholar Search Box

The resultant output not only provides the results of the search but also gives a brief outline of

the content and its origin. What is appealing is the sections in the results page which allow for

further interrogation on material which has been cited and material which is of academic basis.

In this instance, the most appealing result was that of "A diary study of mobile information

needs" which we determined to be relevant for tool selection when studying the chosen cohort.
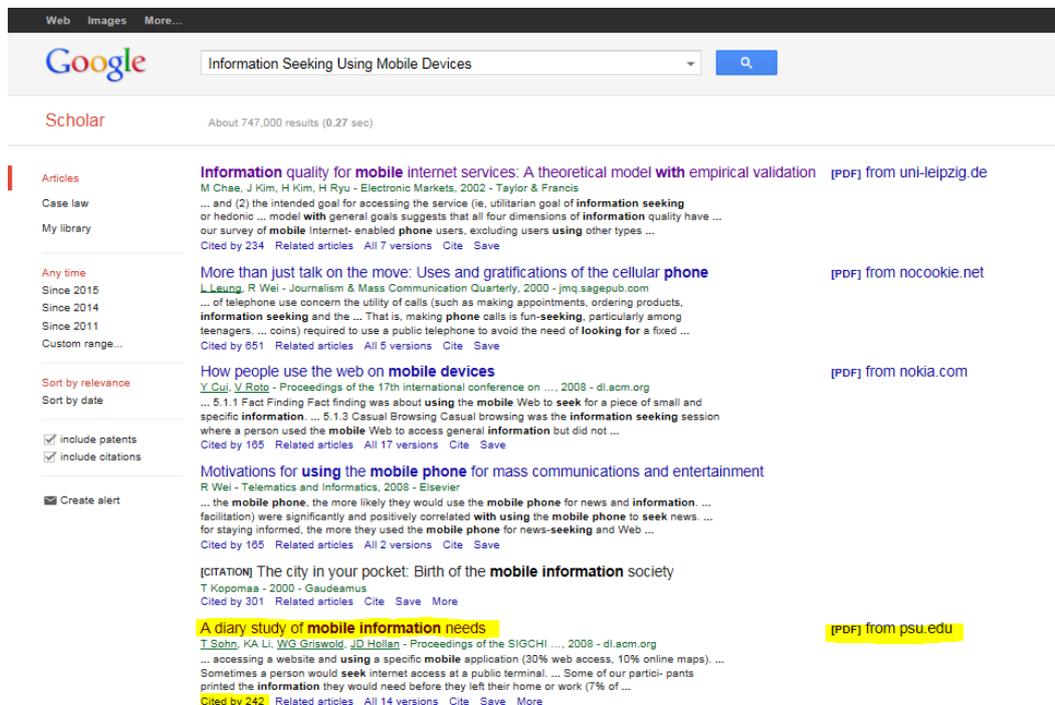


Figure 6: Google Scholar Search Output

The highlights (in yellow) were added manually in this instance in the screenshot above (Fig.6)

however they illustrate the relevance which was determined by the researcher in this search

context. The relevance being the topic of interest which was serendipitously discovered. What

was originally a general search for information seeking using mobile devices resulted in the

output of a paper featured on diary studies in the context of mobile information needs.

Further selection of the highlighted link on this topic navigates to the electronic repository where

the article can be retrieved, and further details of the said item can be found (Fig.8).



Figure 7: ACM Digital Library Screen

From within this page (Fig.7) the abstract of the article can be found as well as the publishing

origin and the source – in this case the University of California at San Diego. There are also

details on the bibliometrics as well as the actual year in which the said item was published.

After reading the abstract, in this case it was determined that this article was something worth perusal. Content within the abstract which appealed is highlighted (manually) (Fig.8).

> *Being mobile influences not only the types of information people seek but also the ways they attempt to access it. ==Mobile contexts== present challenges of ==changing location and social context, restricted time for information access==, and the need to share attentional resources among concurrent activities. ==Understanding mobile information needs and associated interaction challenges is fundamental to improving designs for mobile phones and related devices.==*

Figure 8: Content Abstract

These highlighted parts all showed relevance towards the actual research itself given the specific research questions and objectives.

## 2.3.3   City University Library Online

To gain access to the article itself, the City University Library site was accessed thanks to the University's subscription to many information sources and databases. The actual name of the article was entered in the search bar to see if it was available (Fig.9).
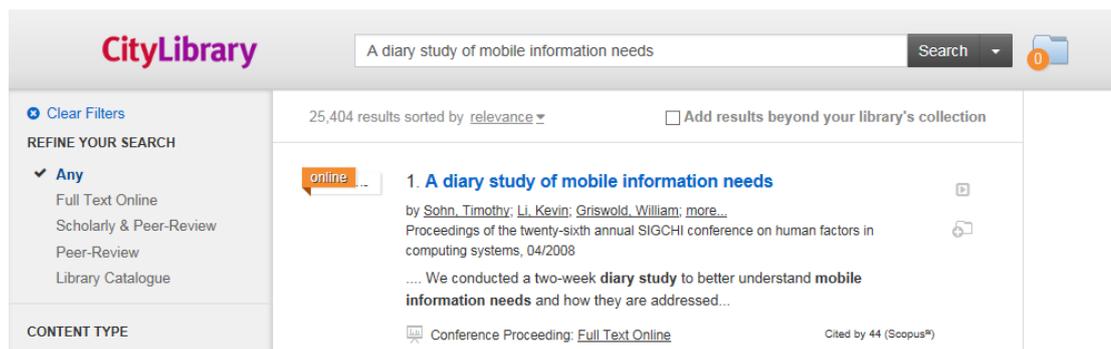


Figure 9: City Library Search Screen

Once the result was shown and clear that it was accessible, the "Cite" option on the right-side of the page was chosen with "Harvard" as the citation format (Fig.10).
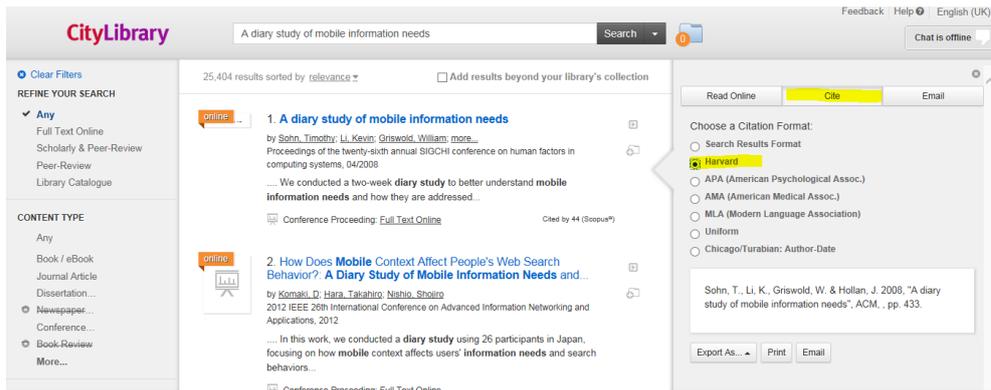
Figure 10: City Library Search Screen with Citation Information

With the citation details copied for inputting to the references section in the write up, the "Full

Text Online" option was chosen and then the researcher authenticated with the City Library

Services page and was then taken to the source information itself. Which in this instance was

back to the ACM Digital Library page albeit this time access was given to the collection via the

City University login (Fig.11)



Figure 11: ACM Digital Library Screen with City University Authentication

Selecting the "PDF" icon on the top left opened the actual paper required in PDF format and this

electronic copy of the document was saved for future reference.

Then the abstract was examined to determine the relevance of the content in relation to the research context, in general, informative less technical abstracts were more likely to result in the paper being reviewed and documented quicker as opposed to more complex literature which may require in-depth study. Also, abstracts provided a relatively quick method from which the content and key aspects of a retrieved document could be found (Fig.12).
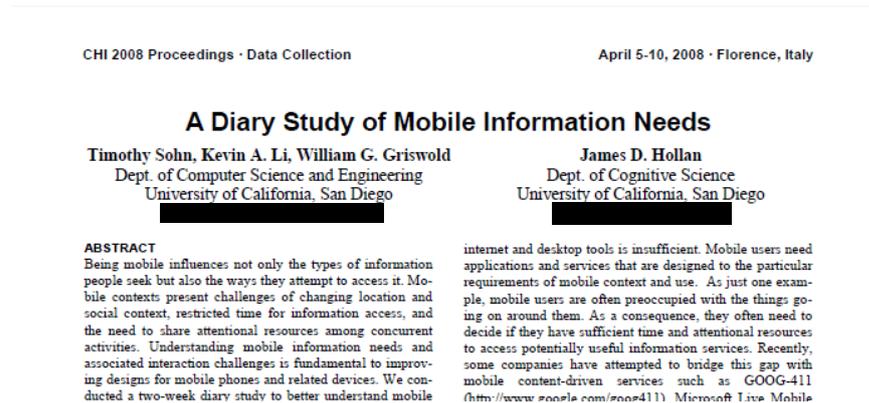


Figure 12: PDF of Retrieved Article

In relation to Bates' Berry Picking Model (See Section 2.8.1) the path taken during the search above has not been a linear path but more of an evolving one, where the pursuit initially began as a general search for "Information Seeking Using Mobile Devices", the wide net that was cast provided a more detailed piece of information on a separate but related item. This was determined to be relevant in the context of this research as it contained details on the assessment methods of a research group that could help towards examining the particular cohort of this project as well as provide insight into examination methods of responses and output. With the required information in sight, other sources, in this case, the City University Library page was consulted, and the said item searched for under an authenticated student account. Upon access to the digital library which held the article via the authenticated account, the actual paper was retrieved, and its abstract reviewed for further relevance and determination as to where in the literature review, it could be referenced and how much effort and time would be required to do so based on the complexity of the papers' contents.

## 2.4 Databases

A small number of databases were consulted during the search for literature. There were two reasons for this;

- To obtain information which was determined to be relevant to the research topic if possible, having said that, consulting legal databases would mainly focus on the legalities of the topic itself and not a generalist academic perspective. Hence this type of research was kept to a minimum.

- To get a better understanding and insight into the search experience of law students where possible.

### 2.4.1 LawBore

Legal web sources such as Lawbore.net were consulted due to the convenience of having a single place where many different legal databases could be accessed (Fig.13).
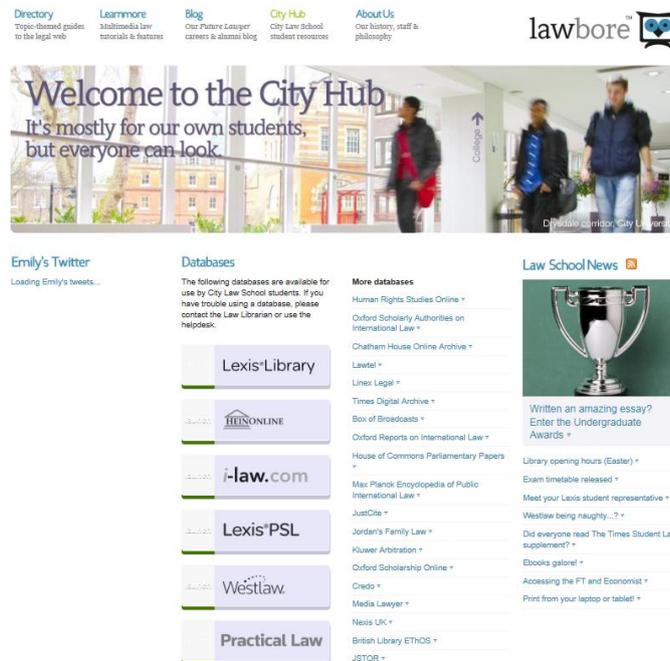


Figure 13: Lawbore City Hub

Here access to many of the different legal databases could be obtained, and a bespoke search undertaken by the research student to simply get a feel of the different user experiences law students would normally have faced when using these resources for their academic information needs.

Only high-level searches of legal items were conducted to get an appreciation of the interfaces the resources that were referred to during the discussions with the law librarians and the surveys conducted with the law students, had. Specifically, this resource displayed well when used on smartphones, hence accessing information from Lawbore in this context was found to be relatively convenient (Fig.14).
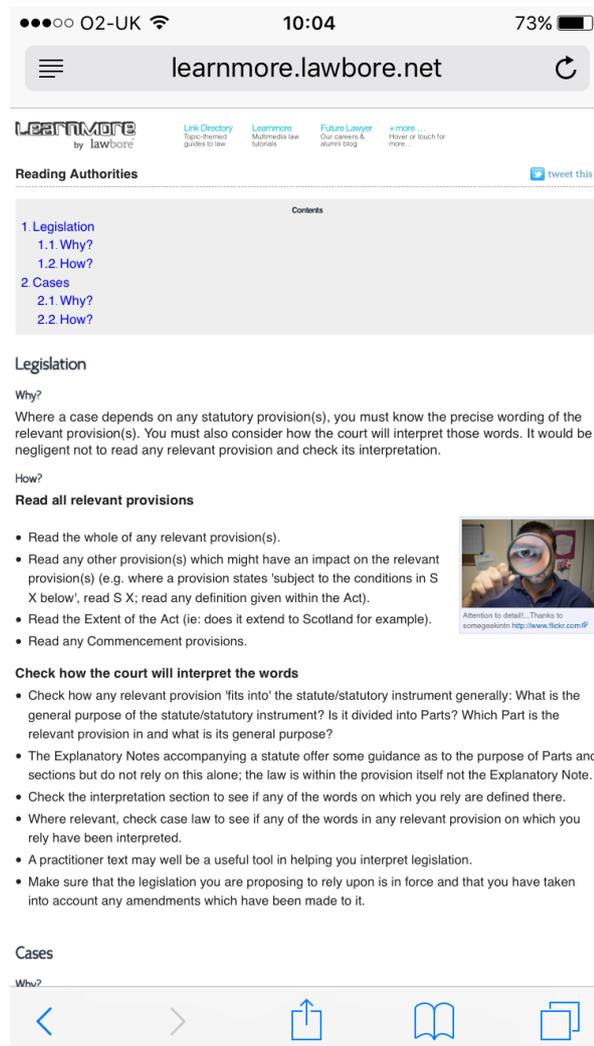


Figure 14: Lawbore City Hub – iPhone Screenshot

## 2.4.2   Literature on Related Topics

Conscious of the research topic, we sought to ascertain whether studies on related items pertaining to the subject of information seeking behaviours of law students using mobile technologies to access legal information had been conducted before or if similar subject matters outlined had been covered in some way. We consulted the Library & Information Science Abstracts database (LISTA) and found that as far back as 2012 mobile devices, especially smartphones, were recognised as being the main conduit for internet access (Nagy 2014).

Studies showed that the provision of mobile internet access would in turn create new demands on content providers and as a result, libraries would need to revisit their services delivered and factor in this new mobile-access requirement (Nagy 2014) & (McGough 2016).

Studies, in the area of, how smartphones have impacted student performance in the academic context have also been performed (Yong et al 2016) and also research focussing on undergraduate students, in general, using mobile technologies to access library resources. Salisbury et al (2015) discovered that the proportion of students using their mobile technologies to retrieve information via library resources was very small due to the students not being aware that their devices could facilitate such activities. And whilst students from many disciplines were covered in this study, law students in particular, were not. The focus specifically on legal content in digital formats found efforts conducted by Bhardwaj & Madhusudhan (2016) outlining that whilst legal content was being ported into electronic formats, it failed to utilise the full potential of modern web platforms such as tagging of relevant text and placing annotations where required, thus denying users of such data the opportunities that could enhance the search experience. Our research for mobile device uses by law students or related topics referring specifically to the use of such technologies for the retrieval of legal information for academic purposes did not yield any results.

## 2.5   Library Catalogues & Other Resources

The City University Library catalogue was the main resource used for extracting academic papers and other relevant pieces of work which would not normally be freely available in Google Scholar. Given that subscriptions to many academic resources online were granted through enrolment at the University, it was deemed a good strategy to utilise this resource for obtaining works which would normally require payment if they were accessed outside the University space.

The general search strategy employed for literature search in this context was to use Google and/or Google Scholar for information searches, narrow this down to relevant papers or works, and check if these items were freely available online. If they were not, then the City University Library catalogue would be checked for the same resource and obtained from there via student login credentials. Where results were not available through the Library catalogue then the Library help services were approached for assistance.

## 2.6   Technologies

Several technologies were used to access the information for the literature review. These are summarised together with the rationale for using them in the following section.

### 2.6.1  Books & Paper Material

Some information resources were not available in electronic format such as legal handbooks in certain cases or books covering mobile technologies as well as histories and usages of such technologies. Where this was the case, then the paper-based resources were used. Although these types of resources were more pleasing to the eye for long-term detailed examination, allowing for note taking and annotation, information from this type of resource pool was cumbersome to locate and use due to the intrinsic limitations that came with them.

E.g. some physical books may not be available in the location or some books may require purchase, delivery lead times and their generous size may hinder their use when travelling due to their perceived inherent restrictive portability.

## 2.6.2  Desktop PC's & Laptops

At fixed locations, we would utilise either a laptop or desktop PC where detailed examination of the said literature, in electronic format, could be conducted. Laptops were used more frequently than desktop PC's largely due to their portable capabilities.

The only hindrance of using laptops was the smaller screen compared to that of desktop PC's and especially those with dual-screens which greatly enhanced the user-experience and multi-task effectively.

## 2.6.3  Mobile Devices

Often due to extensive travelling schedules, the researcher's mobile device – in this case a smartphone – was used to search for information whilst in transit. As mentioned earlier, the smartphone was used to access information in small time-periods and If the information was deemed to be useful then the URL would be emailed to the researcher's email account and a follow-up on the said item be conducted in detail using a laptop or desktop PC.

## 2.7    Information Seeking Behaviour & Models

Information seeking behaviour is outlined in many different contexts and sub-contexts. As a topic, it has evolved to include the study of how diverse groups of individuals will seek out information for their specific needs in bespoke circumstances and requirements. Over time as the studies of these cohorts have developed so too have illustrations – or models – which serve to outline the various paths information seekers may undertake to fulfil their information need. This section looks at a limited number of models that were chosen to be reviewed in the literature due to their relevance within the scope of this research study, we used this analysis as an opportunity to gain insight into the work already conducted in the area of modelling information seeking behaviours and find out how various aspects of information seeking was illustrated. We start with models on information seeking behaviour, the information search process and information behaviour in general.

Our rationale being to discover the holistic perspective of information seeking in terms of initial activities, drivers, barriers and the various stages that form the spectrum of the information seeking process. We also looked at models that outline individuals'' interactions with information systems and the corresponding stages that are normally followed when working in this way. This included models that outline interactions with electronic information systems and that which looked at outlining the interactive search process as a whole. A discussion is included to summarise our findings in this particular area.

### 2.7.1   Information Seeking Behaviour Models

Information seeking behaviour models themselves evolved largely from the shift in user-centric information behaviour as opposed to system-centric, consequently this led to a spur in the delivery of numerous models which in their own respective methods provided a description of the said humanistic activities therein (Wilson 2000), (Case 2012) & (Robson & Robinson 2013).

Information seeking behaviour models examine the approaches individuals take when seeking

information based on a variety of roles, situations and contexts. The models examined were

chosen as they highlighted a broader range of research in this area, (considering what has been

outlined in Section 1.2) then converging on models which look at information systems

interaction, information seeking behaviours, information seeking in electronic environments, the

interactive search process, Web-based information retrieval and legal professionals' information

seeking,

## 2.7.2  Wilsons (1981) Model of Information Seeking Behaviour

T.D. Wilson's 1981 model of information seeking behaviour (Godbold 2006) (Fig.16) presented

the concept of personal, interpersonal and environmental "barriers" which inhibited and

influenced the information seeking behaviour process (Knight and Spink 2008), however this

model situates the user in a static environment and given the ubiquitous nature of mobile

devices this leaves a gap which needs to be fulfilled for a better illustration.
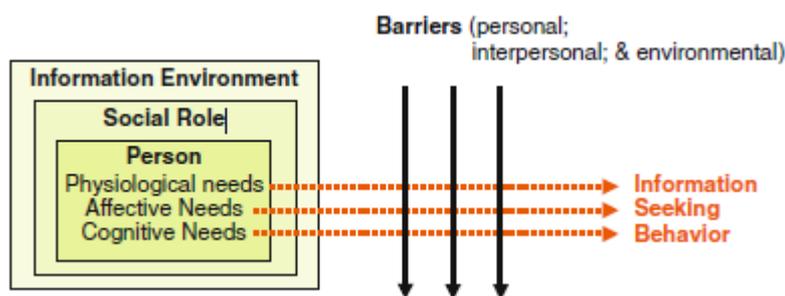


Figure 15: Wilson's (1981) model of Information Seeking Behaviour (Knight & Spink 2008)

The use of barriers (Fig.15) is a good means of illustrating the restrictions that the individual

may face when working with a resource or system depending on their needs, position and

contextual environment.

## 2.7.3 Wilsons Nested Model of Information Behaviour

Wilsons Nested Model of information behaviour (Godbold 2006) (Fig.16) shows that information search behaviour was indeed a subset of information seeking behaviour, which in turn was a subset of information behaviour itself. As a result, it was indicated that information behaviour contained different modes of within, in particular information seeking and information search behaviours respectively.
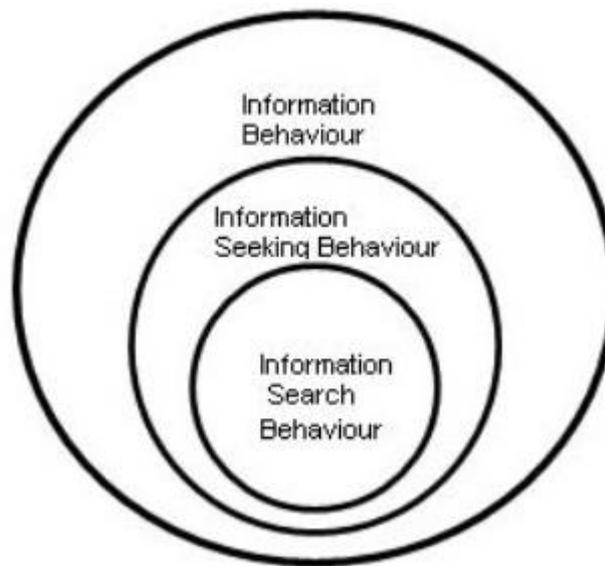


Figure 16: Wilson (1999) Nested Model of Information Behaviour

### 2.7.4  Kuhlthau's Model of the Information Search Process

Kuhlthau' s Model of the Information Search Process (Kuhlthau 2004) shows the process as a set of 6 sequenced stages that would cover certain aspects of the search process before moving onto the next part, the model is defined by Kuhlthau as a 6-stage process which outlines holistically the information seeking procedure from a user's perspective. The model's components are summarised as;

- **Initiation**; when a person first becomes aware of a lack of knowledge or understanding, and feelings of uncertainty and apprehension are common.

- **Selection**; when a general area, topic, or problem is identified, and initial uncertainty often gives way to a brief sense of optimism and a readiness to begin the search.

- **Exploration**; when inconsistent, incompatible information is encountered, and uncertainty, confusion, and doubt frequently increase, and people find themselves "in the dip" of confidence.

- **Formulation**; when a focused perspective is formed, and uncertainty diminishes as confidence begins to increase.

- **Collection**; when information pertinent to the focused perspective is gathered and uncertainty subsides as interest and involvement deepens.

- **Presentation**; when the search is completed with a new understanding enabling the person to explain his or her learning to others or in some way put the learning to use.

## 2.7.5 Ellis' Behavioural Model for Information System Design

Whilst Ellis' model (Fig.16) described an information seekers stages of activity as features that did not necessary occur in a linear pattern – this depiction can be applied to the Web-based research activities that many law students find themselves engaged in in or out of their study scope and Ellis' work provides much guidance on the support for a better information system design (Knight and Spink 2008).
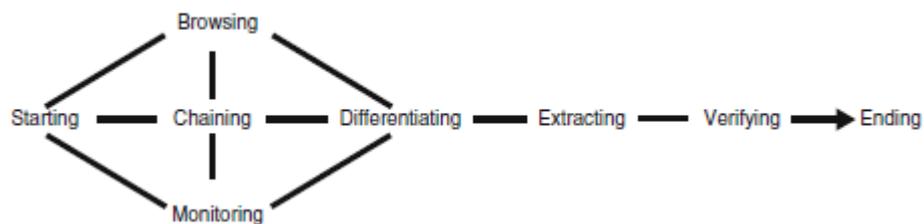


Figure 17: Ellis' Behavioural Model for Information System Design (Knight & Spink 2008)

In summary;

- Surveying/Starting – the point at which the individual starts their information search process by establishing the first stage of the IR source

- Chaining – following leads from the starting point to make sense of the amounts of information retrieved

- Browsing – a casual search of information where interest may lie, referring to specific sections of text or data

- Distinguishing – the sources of information are ranked by the individual for relevance and use

- Monitoring – following specific sources to keep existing information at hand updated

- Extracting – analysing data and using subsets of this information source to obtain relevant and useful information that will help satisfy the individuals' information need

- Filtering – individual criteria that may be applied to keep relevant information and discard that which is determined not useful

After the framework outlined above has been introduced, Ellis identified additional activities associated with the above set;

- Verifying – confirming the accuracy of the information obtained

- Ending – concluding the information seeking process by determining the information need has been met and evaluation of this

Although these various stages outline the information seeking activities of individuals, it can provide support to the investigation of said activities within the context of mobile information seeking activities and the associated processes that can arise. Robson & Robinson (2013) show that Ellis referred to his model as "the relation between these characteristics or components. These can interact in several ways in different information seeking patterns.  This does not illustrate the set of stages or phases that any or all researchers follow when seeking information" (Ellis 2005: From (Robson & Robinson 2013).)

Whilst model (Fig.17) is intended to illustrate the information seeking activities of individuals, it does not include the role and activities of information providers as such nor does it account for the individual's information needs or the context. Thus, in relation to this research study Ellis' model does provide some high-level perspective on individual students' information seeking behaviours but the focus is on the information seeker, there is a lack of account for the information service provider as well as the technologies used to access the information itself.

## 2.8    Interactive Information Seeking Behaviour Models

Interactive Information Seeking Behaviour Models provide an illustration of how individuals may interact with an information system or resources to retrieve the information they so require. The use of the system and corresponding interaction also outlines the potential search process itself dependent upon the findings retrieved from the system being used as well as the possible changes in search strategy that may be caused by the same output.

### 2.8.1   Bates' Berry Picking Model

Bates' Berry Picking Model (Fig.17) (Bates 1989) illuminates information seeking as a path of evolving activity with the key theme being that the search was an evolutionary process that involved several stages of query, thought, evaluation and continuation. This model could also be aligned to the information seeking activities when engaged in Web-based research.
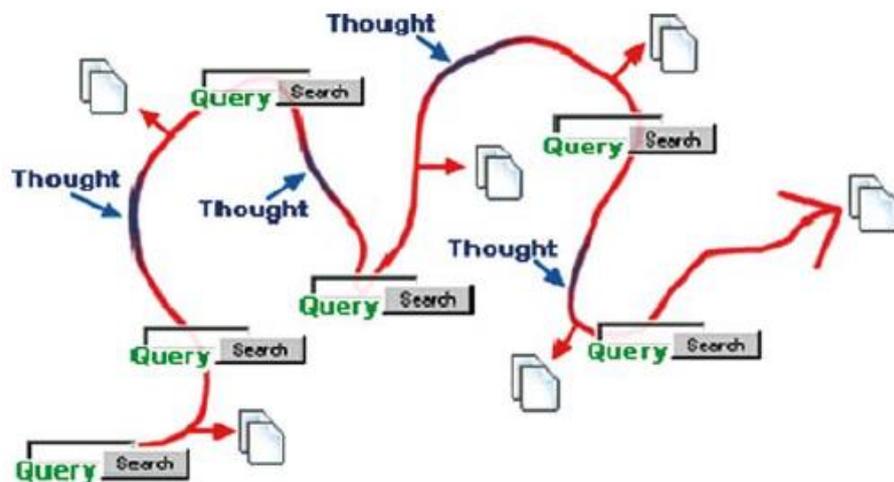


Figure 18: Bates' Berry Picking Model (Bates 1989 – From Knight & Spink 2008)

There is a possibility that this model could become more complex if the search query yields more diverse results leading to more changes in the information search path. What this model does demonstrate well is that most if not all information seeking activity is multi-functional and hardly ever a linear action, and more so when engaging with different technologies for the said purpose.

## 2.8.2 Marchionini's Information Seeking in Electronic Environments Model

Marchionini developed a model (Fig. 18) which shows information seeking in a relatively linear form with iterations taking place at various stages of the process. This model scopes in the individual's interactions with an electronic information retrieval system.

During the stages outlined, Marchionini assumes that the individual will engage in evaluating one information need at a time – which would result in the possible identification of an additional information need or obstacles in the search process – leading to a redefinition of the need itself - a type of browsing activity (Knight and Spink 2008).
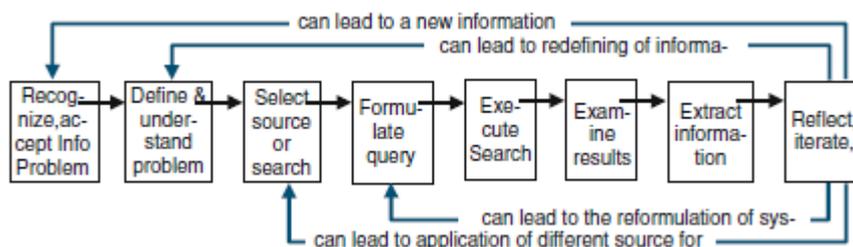


Figure 19: Marchionini's Information Seeking in Electronic Environments Model (Knight & Spink 2008)

This model (Fig.19) helps illustrate the end-user experience when interacting with an electronic resource, i.e. a database which would encourage the use of formulating queries, examining results, extracting information and re-iterating the exercise until the information need was fulfilled.

## 2.8.3 Spink's Model of Elements of The Interactive Search Process

An additional model (Fig.19) which looks at the tactical measures taken during the interactive information seeking process is that depicted by Spink as a stratified set of activities that are built around interactive loops where feedback, user judgement and tactical movements and searches are inter-connecting components of the entire search process itself.

This "cycle" may consist of one or more interactive feedback occurrences; usually defined as user input, system output, user interpretation and judgement or user input. An input may also illustrate a move within the information search strategy and may also be a search tactic to advance the search. In summary, each move by the user consists of either input or a query, resulting in a system output. (T.D. Wilson 1999).

This view of information retrieval interaction is based on the appearance of user judgement, search tactics and interactive feedback loops that link information retrieval interaction directly with information-seeking behaviour in general. So, judgements made by a user engaging in information-seeking may be influenced by previous activity of information seeking, tactics and moves used and proven to deliver useful results in different settings other than the interactive information retrieval system at hand.
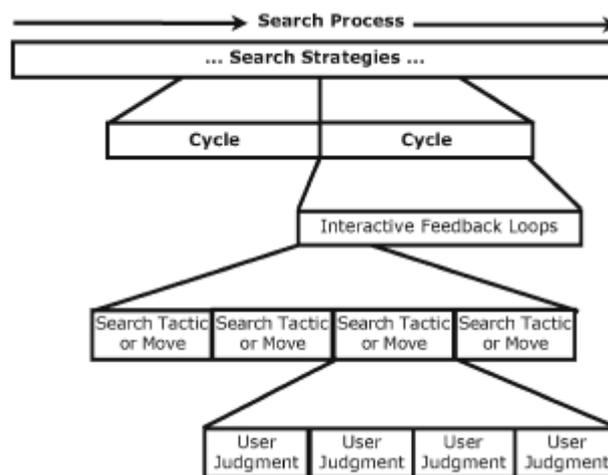


Figure 20: Spink's 1997 Model of Elements of the Interactive Search Process (Saracevic 1997)

All three models presented show the individual interacting with some sort of information system. The very inclusion of "Interacting Feedback Loops" in Spinks' 1997 model (Fig. 20), the "Reflect", "Iterate" component of Marchionini's model (Fig. 19) to the numerous stages in Bates' model (Fig. 18) where "Query", "Search" and "Thought" occur regularly – all illustrate that a search process is not a linear one but something that can evolve as it progresses.

From the initial research conducted within this project it has been learnt that law student's information seeking behaviours are somewhat overlapping with the above concepts in that their search process is hardly ever a linear, single action but more of a set of tasks that changes depending on the results obtained from the search being carried out.

## 2.9    Web interaction Models

From our initial literature review we knew that the internet and the World Wide Web was increasingly playing a leading role in information provision (Horrigan and Rainie 2006), (Rosenstiel et al 2011), (Schultz 2017) and this too has been fuelled with the growth of mobile technology adoption (Anderson & Jingjing 2018). Given the internet having been well adapted to be used in the mobile environment, we find that web browsing on mobile device technologies has quickly become a key activity within this context (Benson 2009), (Mims 2013), (Murtaugh 2014), (Anderson & Jingjing 2018). Where in some cases the use of mobile technologies have been identified as the driver behind the growth of internet usage itself (Mims 2013) and (Keizer 2013). Here we outline models pertaining to the area of information seeking using web-based resources.

### 2.9.1   A Macro Model of Human IR Behaviour on The Web

Given that the Internet, specifically the Web, plays a lead role in the use of mobile devices for information retrieval, the theoretical model proposed by Knight and Spink (2008) (Fig.21) was also reviewed for relevance. This model not only addressed the attributes and roles of the individual and the interacting system but also outlined the inputs and influences of other established information seeking models within the context of the proposed one (Fig.21). In this instance, the Web plays a lead role.
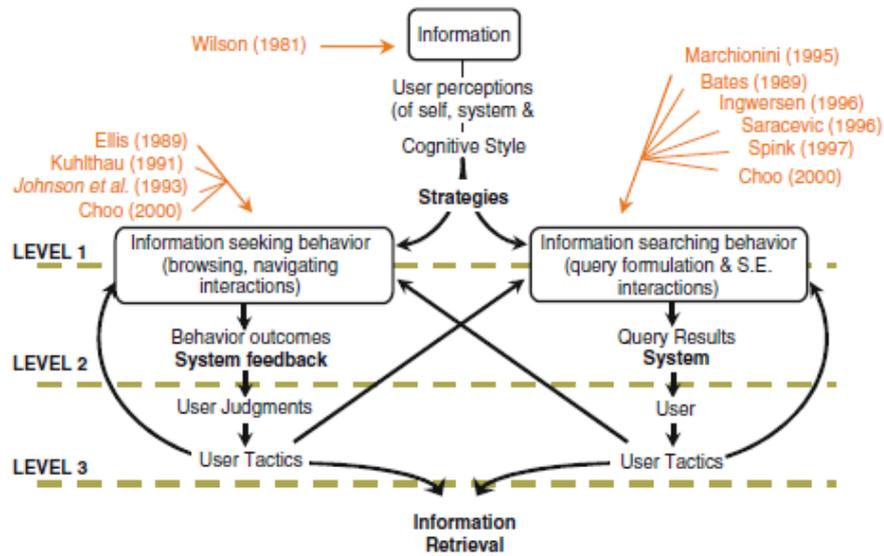
Figure 21: A macro model of human IR behaviour on the Web (Knight & Spink 2008)

In the background to this, Ford, Miller and Moss (Knight and Spink 2008) also added to the area by using Wilsons Model of Information Seeking Behaviour outlining user differences during search strategies and performance. The model was driven by the inclusion of context which presents some significant challenges and variation, location, surroundings, atmosphere, temperature and situation are all relevant and pose as influencers in the type of information sought and retrieved.

## 2.9.2 Wilson's Model of Information Seeking Behaviour

With information retrieval filtering taken place dependent upon the circumstances or context in which the activity occurs, what influence this has on the information sought through the many different situations and corresponding outcomes can be realised (Wilson 1999 from Godbold 2006) & (Robson & Robinson 2013). Our literature review found that Wilsons model (Fig.22) had been used for a theoretical framework study of numerous postgraduate students using a Web-based search engine to undertake a pre-defined information retrieval activity (Ford et al 2001 from Knight and Spink 2008).
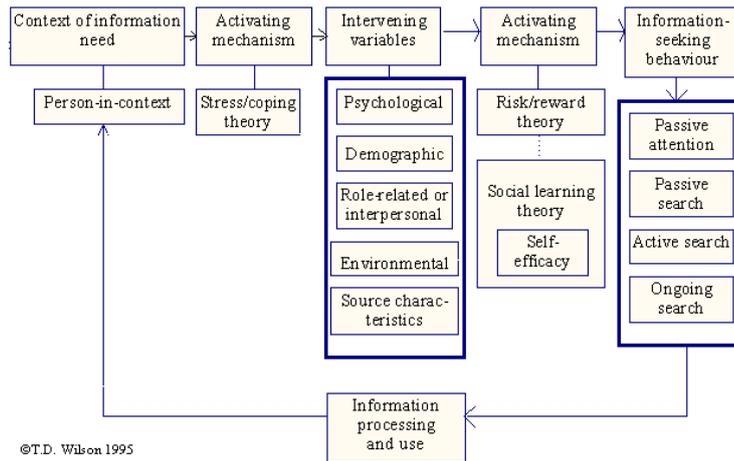
Figure 22: Wilsons Model of Information Seeking Behaviour (Wilson 1999 From Godbold 2006)

Consequently, the relevance of the "Intervening Variables" (contextual aspects) as well the

nature of the search being conducted – be it "Passive" or "Active" as from Wilsons model

(Fig.22), the end user's judgement of the system being used or even themselves and their

respective searching capabilities are all topics that have been highlighted from the research with

the cohort conducted so far. Whilst this model was not specifically referring to information

seeking using the internet per-se, the attributes outlined within the model (Figure 22) hold

relevance to information seeking using web-based resources given that modern technologies

provide both mobile and stationary usage contexts. More specifically, given the ubiquitous

nature of mobile technologies, information seeking can be either "Passive" or "Active" on the

same device, depending on the contextual environment and circumstance in which the

technology may be utilised. With reference to our research, a law students' search tactics,

ability to use or query the information system (be it mobile or stationary) as well as the systems

functionality itself may all play a role in the law students' information seeking behaviour.

## 2.10  Profession Focussed Information Seeking Behaviour Models

As the study of information seeking has evolved and diversified to cover a wider cohort, so too has its focus on groups of individuals and their specific information seeking needs. It is the models that have concentrated on specific professions that are of interest to this research, especially those professions that can give some insight into information seeking within a legal context. Hence our effort to focus towards this area.

### 2.10.1 Johnson & Mieschke's Comprehensive Model of Information Seeking

Since the topic of Law requires validity as a basis for the acceptance of the source of information, Johnson and Mieschke's Comprehensive Model of Information-Seeking (Fig.23) was also reviewed (Knight and Spink 2008) outlining the individual factors for the reliability, authority and accuracy of the information source and the corresponding impact this has on the information seeker.

This model was built from a study on cancer patients and their need for information – for which accuracy and reliability was key and as noted by (Knight and Spink 2008) this model could provide insight into Web based search functions in terms of relevant information.
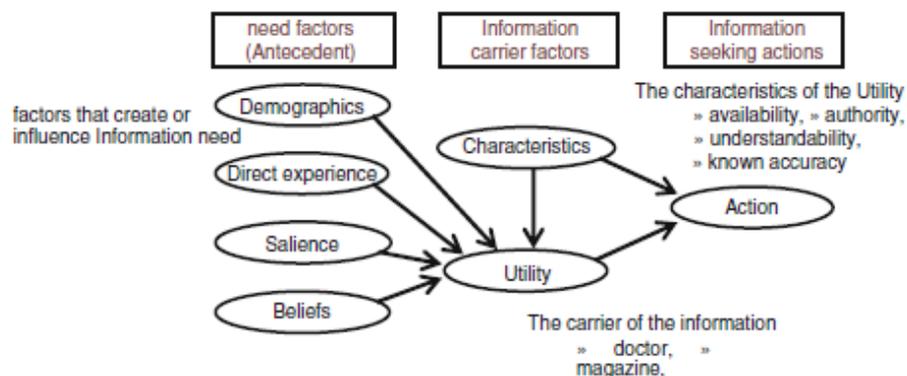


Figure 23: Johnson and Mieschke's Comprehensive Model of Information Seeking (Knight & Spink 2008)

Reliability and accuracy of information are key to legal information as without these two

requirements being met, the information retrieved is relatively worthless (dlawadmin 2017), thus

this model helps elaborate these two pre-requisites and how they impact the information

seeking behaviours of the individual with the system/tool/resource being utilised.

## 2.10.2 Leckie Model

The Leckie model (Leckie et al 1996) (Fig.24) outlined within this report was built from research

conducted on the information seeking behaviours of professionals including lawyers. The model

took to illustrate the information need brought upon the individual due to their professional

practice and the corresponding information seeking behaviour that resulted to address this

need. Like legal professionals, law students too have individual characteristics of information

needs based on the specific task at hand and the context in which the information is required –

often requiring a multiple set of roles in which the student seeks to fulfil their information need

(Robson & Robinson 2013). However, the focus of the model was not law students who

although may display similarities in the topic being researched, would most certainly be

conducting said search activities in an entirely different context and nature.
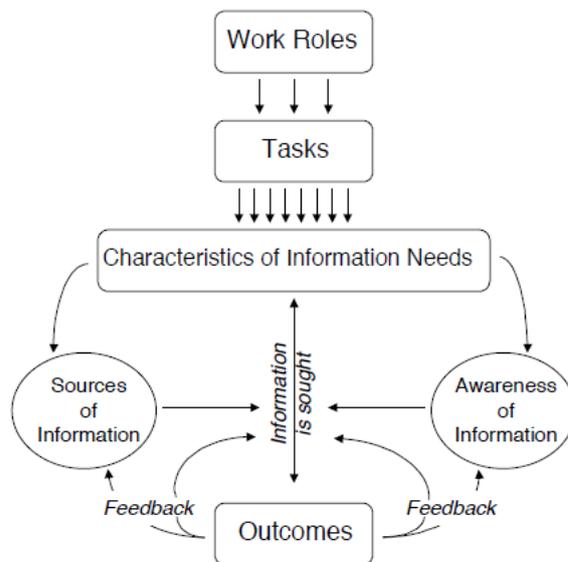


Figure 24: The Leckie Model (Knight & Spink 2008) & (Leckie et al 1996)

It was the group of models that outline information retrieval in the context of the (Wilson 1999 – From Godbold 2006) (Fig. 22) and Web (Ford et al – From Knight & Spink 2008) (Fig. 21) that was of most interest given that students in general tend to use their mobile devices primarily for Web-based search activities, be it casual or for academic purposes (Aldrich 2010), (Poll 2014) & (ICEF 2012). The models by (Johnson & Mieschke - From Knight & Spink 2008) (Fig.23) and (Leckie et al 1996) (Fig.24) added to the picture by providing background on how professionals conducted their information seeking, particularly for the legal profession. Overall Bates' (Bates 1989 – From Knight & Spink 2008) (Fig.17), Marchionini (Knight & Spink 2008) (Fig.18) and Spink's 1997 model (Saracevic 1997) (Fig.19), complement this framework built by highlighting the interaction of the user with the search system and the corresponding queries and search paths that can develop.

## 2.11  Information Models – Discussion

A great focus was placed on the above models which highlighted the information behaviour of a user in the context of environment, role and physiological, affective and cognitive needs. Be it Web or Internet based search, looking at how the evolutionary process in which information seeking could occur and the profession focused model outlining the characteristics of the law practitioners' activities therein.

Marchionini's Information Seeking Model based in Electronic Environments (Knight and Spink 2008) (Fig. 19) went further to highlight the seeking paths individuals can take when using electronic resources for extracting information. These models delivered a platform upon which more investigation into the growing trend of user-based information systems can be assessed. The shift from linear to dynamic information seeking is all too apparent in the behaviours of law students who engage in the use of electronic resources for their academic requirements – be it mobile device based or not (Makri et al 2006).

However, law students do not always utilise electronic resources for their information seeking, there are plenty of alternative means through which their information needs can be addressed, i.e. paper-based journals, microfilm, audio recordings etc. Specifically, this research aims to focus on the usage of electronic resources with the recognition of the other types of technologies that are also at the law students' disposal; with the focus being on mobile technologies. To provide a more holistic illustration of our findings from the review of the models, and enhance our understanding, we attempted to map the models against some of the key issues that could impact law students' information seeking behaviours in relation to mobile technologies when using them for academic study (Fig.25).
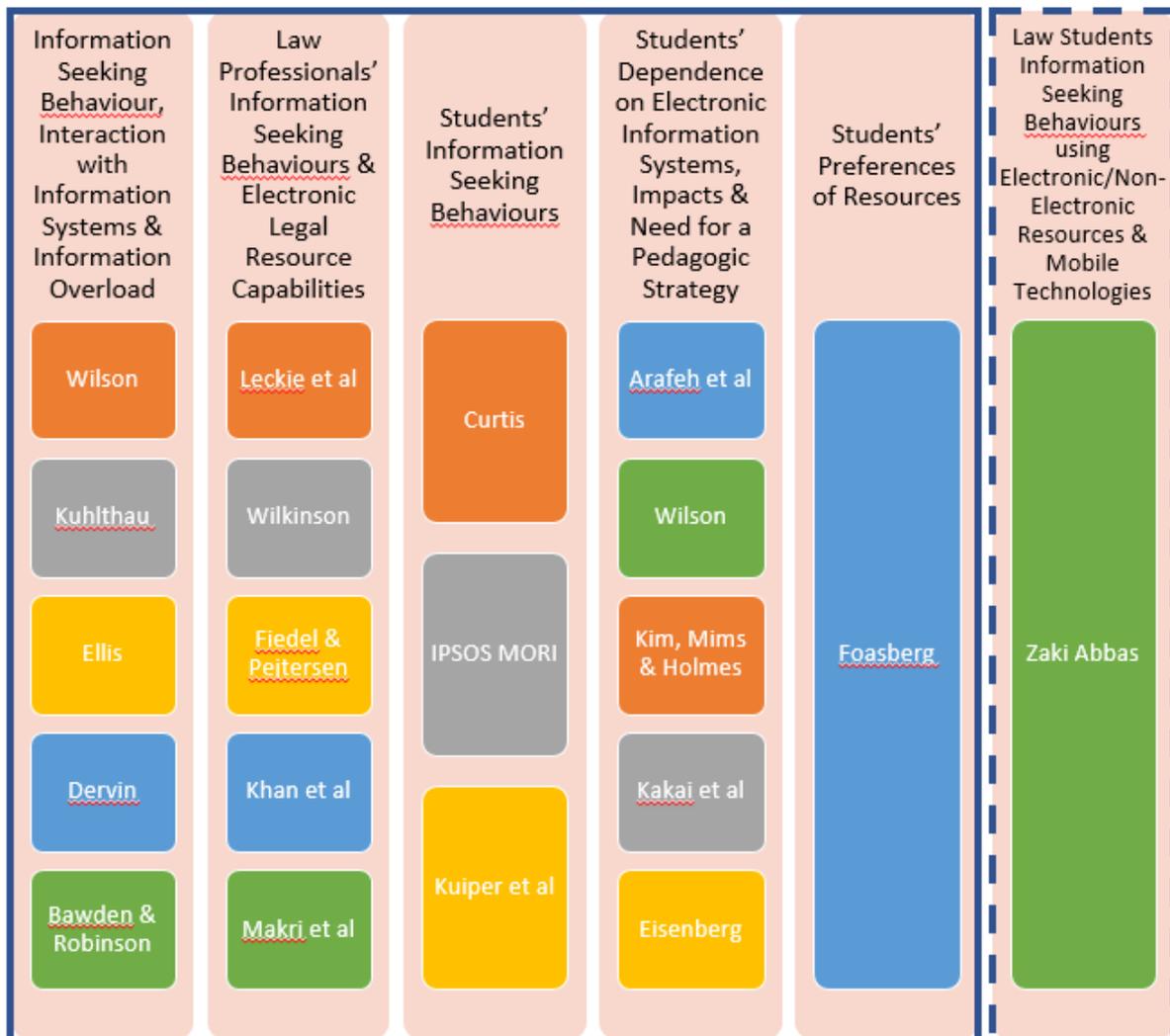


Figure 25: Categorisation of Information Models Against Perceived Behaviours

The figure (Fig.25) maps the assorted topics of study that were covered in the literature review with the information seeking models that closely align with those topics. Where possible, it also includes references to these models from their authors and helps build a gradual picture of the area this research is looking to focus on. The last column on the right outlines the proposed effort within this study. Our literature clearly found a gap in the models we reviewed whereby the information seeking behaviours of law students was not the sole focus, furthermore, the use of mobile technologies in this context was also missing. Given the very nature of mobile devices being a multi-tasking tool, presented a compelling reason to have a model that would not only cover the information seeking behaviours of law students as the focus point but also include the use of mobile technologies as a basis from which academic legal information is retrieved. We knew that law students used a variety of sources for information, this include not only mobile devices but also computers, laptops as well as paper-based resources such as text books and journals, hence our model would seek to include these technologies as well in order to present an all-encompassing perspective of a law students information seeking journey. From the existing models a picture like this was somewhat lacking. And of the models examined, Wilson's 1981 model (Fig.15), Bates' Berry Picking Model (Fig.17), Marchionini's Model (Fig.18) and the Leckie model (Fig.24) were deemed most relevant to the mobile information retrieval context and those which were developed with a modern technological aspect and legal information seeking in mind.

The common theme in all the above models was that they were created from extensive study of a select group of individuals with specific needs, scopes and characteristics. And from the resultant output, their information seeking behaviours were mapped out and illustrated in the form of a diagram which, in many cases, was tested and refined by way of further research activities. We decided to follow this approach.

This study, given that it sought to develop and propose a specific model - which would account for the academic information seeking needs of law students in the context of mobile device use - thus the need to concentrate research upon the said cohort which would provide the required inputs to help map out a model that could help achieve our goal. Each of the models already reviewed could in theory be associated with the information seeking behaviour process of law students but whilst each model could play a role in describing the behaviour of this specific cohort, the models themselves could not cover all the various aspects that law students' information seeking may encompass. E.g.

- What determines the push from using electronic search interfaces to a paper-based one?
- What does the law students' information seeking behavioural journey look like in relation to the different technologies and resources that may be at their disposal?
- What would the practical implications be for using one type of technology over another?
- Can the information search process of a law student be overlaid towards a technology and/or resource to improve its design?

At this stage, our literature review had found out about the diverse types of information seeking behaviours individuals engage in, including those of legal professionals – albeit at a high-level. What remained to be understood is an insight into the actual resources that legal professionals – and law students use and how they interacted with them via the different platforms and technologies available to them. Preliminary research on the cohort of law students and law librarians was key to delivering the required raw materials from which a proposed model could be built, tested, refined and validated. And within this thesis are included results from initial research that we sought to commence that task. The questions raised above did evolve as the research progressed to keep the focus on the projects research questions and objectives which are described in the following sections within this document.

## 2.12 Other Relevant Findings from Literature Review

Apart from reviewing the literature on Information Seeking Behaviour Models, it was also necessary to examine the existing work on legal information resources (both paper-based/non-electronic and electronic), with a gradual focus into the resources used by law students and any resources that may be accessed via mobile device platforms. The next section covers the resources in the following manner, first we look at paper-based resources such as handbooks, statutes, journals, articles, transcripts, digests and law reports. We then initiate a discussion into the electronic realm by outlining the various modern technologies those seeking legal information are likely to use, this includes desktop pcs, laptops, tablets, phablets, smartphones, Feature Phones, Smartwatches and Augmented Reality Headsets. The latter two - wearable technologies – are not covered in much detail given their relatively recent appearance on the market and the need to focus on mobile devices per-se for information seeking and not wearable devices – which are out of the research project scope.

The section continues to build an insight into how these technologies are used in society in general. Given our focus is on mobile device, the discussion on desktop PC's and laptops is kept at a minimum. With the diverse application contexts that mobile devices have found themselves to be working in, this section is divided into covering three cohorts, society in general, students in education and then narrowing down to law students.

## 2.13 Overview of Legal Information Resources

Background on the various legal resources available was obtained from reviewing websites and online literature from many HEI within the U.K. where legal training in some form was provided see (Section 2.3). Our core focus was looking at resources that were used by law students in the U.K. which provided the theoretical background on the subject of law and not the practicalities of it (McCallum 2009) & (Oxford Royal Academy 2017).

And whilst legal professionals would tend to use the same if not similar types of resources, we retained our focus to be on products and services used by law students and not the latter group of individuals (Williams 2013), (Cohen 2017) & (Jones 2018). Therefore, our scope in this overview is to look at the types of legal information resources that are available including brief descriptions of them. In essence, law students begin their academic journey by learning to navigate through, retrieve, filter and interpret content that may be obtained from the collection of resources available to them, their success in professional practice ultimately depends on how well they can maintain this skill and develop it into a formidable shape in order to provide concise and relevant association to any legal query they may be challenged with (Rowe 2009). At an elevated level, legal information resources that law students tend to have available for use can be grouped into two categories;

- **Primary Sources**: Which consist of authoritative statements of law as made by law-making bodies, and include Statutes or Acts of Parliament, Statutory Instruments, Draft Legislation in the form of Bills, Case Law; where details of cases of legal importance are published in law reports – which over time develop into a body of case law and may usually be followed by a judge as a precedent when deciding in court (University of Salford 2014) and (University of South Wales (A) 2014).

- **Secondary Sources**: These are more focused to act as finding tools to help locate relevant primary sources of law, e.g. indexes, current awareness and digests. The can also include commentary material and interpretations of primary sources including textbooks, case books, practice books, e-books, journal articles, legal dictionaries and encyclopaedias (University of Salford 2014). These resources include any sources other than legislation and case law i.e. primary sources of law (University of South Wales (B) 2014).

Law students are often encouraged to refer to secondary sources first as they tend to be easier to locate and study, often leading the student to the relevant legislation and cases as noted by (University of Salford 2014). In this sub-section, we outline briefly the diverse types of legal resources available and the technologies used to access them.

## 2.13.1 Paper-Based Resources

Paper-based resources in the legal domain are plentiful. Traditionally, legal information has been dominated by volumes of books that cover the expansive subject of law.

Given the amount of legal information products and the content within that students must navigate through, they are often encouraged to think and plan sensibly when using paper-based resources to navigate, effectively source and absorb the information they may ultimately retrieve from their search within this content format (Wenee 2015). We outline some here to give more context to the subject area.

## 2.13.2 Legal Handbooks

Legal handbooks are essentially collections of legal material comprising of detailed content on the specific area of law. This also can include templates and draft legal documents that can be edited and re-used by the ready for their need.

## 2.13.3 Journals

Legal (or Law) journals can be defined as; "A scholarly or academic publication presenting commentary of emerging or topical developments in the law, and often specializing in a particular area of the law or legal information specific to a jurisdiction." (Duhaime 2017) These types of legal resources are also known as legal periodicals or law reviews. Law journals also tend to contain detail on jurisprudence and legal history as well as commentaries made by either those in the legal profession or those within its academic faculties.

Journals can also offer focused information on specific areas of law such as Intellectual Property and advice on best practice not only to lawyers but also to those actively involved in that specific subject-matter (Oxford Journals 2016). These resources can provide relevant legal information also to legal professionals as well as students, teachers and administrators (The Cambridge Law Journal 2017). Journals in paper format tend to be part of a seasonal subscription that law libraries often commit to.

## 2.13.4 Statutes

Elliott (2016) describes statute law as that what is written down and codified into law. Statutes initially start out as;

- Public Bills – These are mostly public acts that impact the whole of the UK or some of its constituent countries.
- Private Bills – Acts which may grant limited powers to public bodies or only apply to specific locations within the UK.

Bills (Fig.25) are initially proposed and scrutinised and refined before a final draft is created. Then they are read twice, where the second reading generates a debate on the proposal and its contents. In the U.K. this is carried out by both the House of Commons and the House of Lords.

At this stage, amendments may be made, and this is followed by a third reading where any further changes are applied. Depending on which house the bill was drafted in, it is passed onto the other house where final amendments can be made. Once these procedures are completed, the bill receives the "Royal Assent", after which it becomes law.
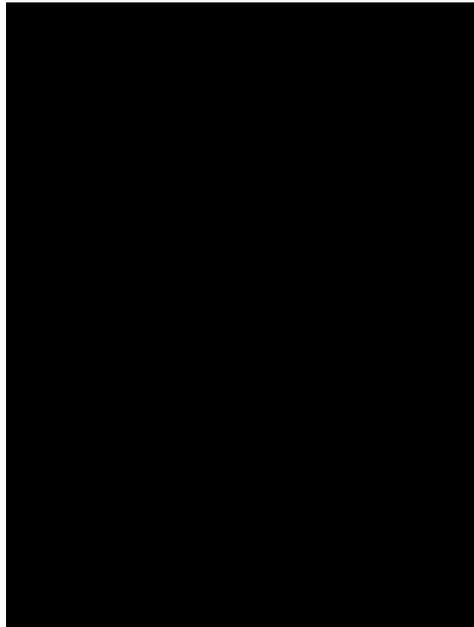
Figure 26: An ACT for the Adoption of Children (State Law Publisher 2017)

Statutory Instruments are secondary to the main Acts of Parliament, without the requirement to amend or repeal the full Acts of Parliament themselves. These are just as valid as the Acts themselves but provide more flexibility to the legal ecosystem surrounding these aspects (Elliott 2016) & (The Inner Temple Library 2017). An Act may come into force immediately, on a specific date, or in stages (www.parliament.uk 2017). As Acts of Parliament are constantly being amended through delegated legislation (www.parliament.uk 2017) and/or repealed it is essential to ensure that when referring to a statute, the validity is checked just in case it is superseded by another more current version (Statute Law 2017). In printed resources, Law Statutes are cited by the year in which they were enacted followed by the Chapter number – which is the numerical order in which they were passed and received Royal Assent.

Thus, the Human Rights Act 1998 = Chapter Number 42 means that the Act was the 2nd Act to be passed in the year 1998 (SOAS 2016, pp3-4). Given the rate of which they change and the requirement of legal professionals to be continually up-to-date with this information, paper-based resources covering Statutes are often printed in loose-leaf to enable continuous updates to the general collection of the information resource (Statute Law 2017).

## 2.13.5 Transcripts

Legal transcripts are documents produced by court reporters that cover the initial record of proceedings and the opinion of the judges (University of Strathclyde 2017). These official documents contain a significant amount of information, but they lack any real analysis of their content. Although they are produced quicker than law reports, they do not provide many of the additional aspects that law reports address such as lists of cited authority, subject terms, summary of facts & argument and summary of decision.

These documents can provide details on when and where a case was held and despite no analysis being carried out on them, the content of the judgement itself will be the same regardless of whether it is a transcript of a report (JustCite 2017).

## 2.13.6 Digests

According to JustCite (2017), digests are short summaries of cases which may at times include a list of the main points of law. This resource is useful for those who wish to be kept informed on the progress of a legal case, however, these resources should not be relied upon as an authority unless the judgement cannot be located elsewhere (University of Strathclyde 2017). Digests are not judicial precedent, but an editorial summary authored by a third party (University of West London 2013).

## 2.13.7 Law Reports

A law report is a record of a judicial decision on a point of law of a specific case which sets a precedent (ICLR 2017). Not all cases have their outcomes reported and those which are (approx. 1.25% of cases within England and Wales specifically) considered to be of significant legal interest (University of Bradford 2017) & (University of Strathclyde 2017).  It must be noted that not all decisions in a court of law set a precedent, however interesting they may be in terms of the facts of the case or its consequences.

A decision is only reported if it establishes a new principle of law or changes or even clarifies the existing law in place. Hence when looking at law reports it is essential to distinguish between cases which do in-fact change or clarify the law – thus need to be reported. And ensure that any report of a case clearly outlines all the relevant information so that it can be called upon by students, teachers and legal professionals as an accurate authoritative statement of the principle of law on which the case was decided (ICLR 2017). These documents are generally better laid out for the reader with keywords highlighted to bring them to the practitioner's attention (JustCite 2017) & (The Inner Temple Library 2017). Law reports generally come in two distinct types;

- Full text law reports which include the full judgement(s) given by the court as well as a summary of the case known as the headnote and a few other elements within it.
- Summary reports, also known as case summaries, digests, case notes etc., comprise of summaries or abridgements of the judgement and are presented in a less formal way than a full-text law report.

Law Reports are an essential component of the information collection for the legal profession largely due to the English legal systems heavy reliance on the doctrine of precedent. This determines that the courts, albeit within certain restrictions, abide by earlier verdicts. Hence, in decided cases, principles of law that may have been laid down by higher courts should be followed by other courts in similar cases. However, a system of precedent can only function successfully where there is a well-established method of law reporting – and so law reports are essential to enable decisions to be assessed by future courts (University of Bradford 2017).

## 2.13.8 Paper-Based Resources – Discussion

Legal resources in paper-format remain a critical factor in enabling those in the legal profession to be able to practice their chosen field effectively with access to the most current and most relevant source of information possible.

Legal information in this arrangement is highly matured and consists of a well-established collection of several kinds of resources that can cater for the expanse of legal information needs. From articles to journals, from practice handbooks to more detailed texts, the detail is almost certain to be covered and searchable from somewhere. Ensuring that their knowledge consists of the latest in developments in the area is a must and without this their profession stands to lose its ability to advise clients accordingly (Ellis, Makri & Attfield 2014).

These resources empower the legal professional to gain a strong understanding of the specific area of law they wish to find out about and address the detailed questions that may arise before, during and after the search process. Various resources can provide varying amounts of information, if one seeks only a summary of a legal position then an article can be read, if more detail is needed together with any news on the developments of the area of law then a journal will help. And if more detail is still required, then a legal text books dedicated to the subject matter can be referred to. Granted that the effort required to keep paper-based material up to-date is laborious compared to electronic formats – which can be done remotely and in significant volumes - however legal practitioners show little sign of abandoning paper altogether, with some noting that paper can still be found to be more quicker to access than online versions of the same material, given that law can involve deeply complex matters, the resource with the relevant data to help address the gap in knowledge to cover it can often be a book .

Legal handbooks, for example, are deemed to be important sources of information (Makri 2008: From Tuhumwire & Okello-Obura 2010) as well as other similar format materials such as digests, textbooks, commentary materials and journals.

Text books especially are found to be useful when the information seeker wishes to gain a better understanding of the legal concept itself and can contain a significant amount of references for further research on the topic if required.

Where the change starts to evolve between paper and electronic is the portability, availability and the speed in which information can be accessed. Paper provides the individual with the ability to "own" the item and keep it in physical form, annotate it and depending on the volume, carry it with them. Often this means legal resources that are known to be quite voluminous pose a significant challenge to legal practitioners who may need ready-access to their knowledge collection. However, electronic resources manage to overcome the physical challenges through digitalisation of pages of legal content, but the compromise being the lack of a physical and tangible object that can be freely edited with a pen.

Then again, the sheer volume of information, especially when visible in its corporal form can prove to be quite intimidating to almost any information seeker, never mind a law student who would yet to be more versed with such voluminous amounts of text that the chosen subject requires one to digest. So, search strategies that enable the student to compartmentalise their search and then learn from their pursuit in a monitored, planned and adaptive manner can save a lot of frustration, delay, information unfulfillment and information overload (Edinburgh Law School 2017) & (pp8, Business and law librarians 2016).

Wu (2005) argues that despite the advent of electronic resources in the legal sphere, paper-based resources still retain a significant holding due to its time-tested format and ability to fulfil certain promises that technology is yet to deliver. Primarily that not all legal material is available online and that which is, still needs to mature and evolve towards providing a user-experience like that of physical materials. Some electronic resources are not vetted yet freely accessible, hence the risk of individuals accessing incorrect information remains a concern. With paper-based resources, this risk is significantly reduced due to the very cost and laborious procedures involved in getting information into publication (Wu 2005).

This element of risk for electronic resources did, originally create a sense of distrust amongst the legal profession, though as the format matures and proves its worth by tightening its quality control, improving its functionality and demonstrating its validity as a viable alternative to the traditional physical materials that lawyers are used to, we will continue to see plenty of change in this landscape.

## 2.14 Modern Technologies

Modern technologies can be described as tools that enhance the capabilities of individuals to carry out certain functions and tasks. Because some of the technologies we use advance at relatively rapid rates, it makes sense to identify these changed and updated means as "modern" which indicates an improvement or change, often for the better. Books can be described as a technology, albeit an analogue one (Lorcan 2007), indeed 500 years ago, when printed books first began to appear in society at large through the advent of the printing press, books were a modern technology.

But over time it is simply found its place within cultures as a regular norm, invisible and hardly ever referred to as a technology but nonetheless it is so (Ingram 2011). Other paper-based resources are also considered technologies but in the broader sense, when referring to books in this study, we mean paper-based materials interchangeably.

Technologies that are modern, in that they have emerged relatively recently in the past few decades, if not years, are summarised in the following sections. These include the desktop computer; which provides a stationary information seeking function with a larger display screen (Nordquist 2015) but at the cost of floor space (Hirsh 2015). Laptops give users a near-mobile experience yet delivers computing power almost equivalent to its stationary counterpart, hence their growing popularity, notably amongst students (Arthur 2009), (Nordquist 2015) & (Nield & Jones 2017).

Then we have mobile devices which covers a collection of devices including feature phones – technologies that have managed to be applied successfully in the classroom (Valk et al 2010) & (Vahakyla 2012) but their relatively limited capabilities leave them vulnerable to being succeeded by smartphones, the more sophisticated version of the feature phone and having proven itself to be the biggest disruptor. With increasingly innovative applications to daily routines such as teaching and learning (Jeffreys 2015) we find smartphone adoption increasing and pushing society to be dependent on this specific technology (Gordon 2016) & (Clarke 2017).

Tablet devices are often viewed as non-telephonic smartphones with larger display screens and greater processing power have becoming a familiar item amongst the mobile technologies owned today (Nield 2017). Nield (2017) also outlines these devices can often be seen in the hands of students who can utilise many of the other specific functionalities such as augmented reality applications, voice recognition search, learning videos and the use of web cameras.

Phablet devices have also been reviewed their meshing between tablet and smartphone technologies, essentially delivering a telephonic device with a larger screen however this advantage increasingly being diminished with more smartphones possessing larger screen sizes themselves (Sharma 2015), (Bobology 2016) & (Brewis 2017). Scribbles (2014) outlines the key benefit of these particular devices in that they enable the owner to possess both a smartphone and a tablet in a single device thereby reducing the need to carry multiple technologies and work with just one.

Finally, we reviewed wearable technologies such as smartwatches and augmented reality headsets, their use however is limited in the context of this research at this time despite the advancement of these devices and their capabilities which is only set to increase over time (Burns 2013), (Granata 2014), (Martin 2014), (Roland 2015), (Shanklin 2016) and (Boxall 2018).

## 2.15  Mobile Technologies' Use

The section gives a brief overview of technologies in society, covering the developed world; especially the UK, it then looks at the developing world where most of the staggering findings are coming to light and use of mobile technologies is showing its worth in a variety of areas such as literacy, banking and basic telephony.  We cover the user of these technologies in education in both developed and developing countries and the challenges the latter faces in the adoption of these devices within its learning space and how mobile technology is helping overcome barriers that would have traditionally hindered other technology usage. Finally, the use of mobile technologies by law students is outlined and how these devices are being used in the legal learning domain.

### 2.15.1 Mobile Technologies Used In Society

The developed world has long held the lead in the usage and adoption of modern technologies, from desktop computers and laptops to feature phones, smartphones, tablets and now augmented reality headsets and other wearable technologies. Developed markets have taken well to these technologies with significant penetration across the different elements of their societies and specific market sectors. Both public and private usage continues to drive forward and embed itself as a norm of daily life (Spiech 2015).

<u>Society in the UK</u>

For the UK alone, mobile technologies are becoming increasingly rooted into the daily activities of many and the impacts of their use is already becoming apparent in engagements such as daily work tasks, social lives and family settings. Smartphones, for example have overtaken laptops as the primary means of access to the internet.

People spend on average two hours a day on their smartphones – this is twice as long as the time spent on laptops and desktop PC's. and with the advancement of handsets and provision of faster cellular networks with improved software, the appeal of its utility will only drive adoption and usage further (Ofcom 2015) & (Lee & Talbot 2016). With other traditional technologies, such as television losing to this newcomer and being rapidly replaced as the preferred means of accessing information (Connected 2015).

Social vs. Essential Information Needs

We have also found that user behaviours and habits differ significantly between developed and developing societies, when it comes to mobile technologies, this cannot be more apparent, for example, Vizard (2015) writes that in developed markets, smartphones have overtaken laptops as the most important device to connect to the internet for the first time, mostly for leisure needs and with the context of brand awareness and advertising. Whereas for developing markets, this user behaviour would be more associated with those seeking essential information such as medical care, mobile banking and basic education.

Barriers for Adoption

There are two key requirements that modern technologies tend to come with that have proven to be barriers for entry and adoption in lesser wealthy elements of society, the first being the cost for procurement and the second being the need for effective supporting infrastructure. Desktop computers whose initial costs have always been high and their need for regular power supply as well as standardised software to operate correctly have proven to be manageable for the developed world and whilst this is now become a de-facto standard which most of the richest nations can adhere to, for the lesser privileged countries, the costs and other pre-requisites leaves limited options to deliver computing power to their people. Laptop computers, whilst managing to provide portability in a smaller form-factor, have long been hindered by even greater procurement costs, whilst having high ownership levels in the developed world, naturally they don't fare as well in the developing nations where disposable incomes are less.

Mobile technologies however have managed to change this consumer behaviour and successfully in many cases, break down the barriers of costs and infrastructure requirements to begin to make headway into the hands of millions in poorer countries (Poushter 2016).

Overcoming the Blockers

We know that most of the world still suffers from inadequate infrastructures that are ill equipped for modern technology settings. Poor roads, lack of water and electricity, coupled with inefficient fixed telephony systems exacerbates any desire for the establishment of a reliable and succinct high-tech setup are all barriers for effective mobile technology entry. However, mobile devices overcome many of these challenges through their use of cellular communications technology. Something that has resulted in mobile devices being rapidly expanded across the globe given the relative ease in which cellular infrastructures can be setup, with Aleksandar (2013) noting that it is easier to find an individual in the developed world with a cell phone than to have access to electricity or water. Innovative means of improvisation have meant that even activities like charging mobile devices have too managed to bypass the lack of reliable power provision by means of harnessing other sources such as solar power or portable charging stations such as that outlined by Schiller (2013).

New Accessibility

One of the immediate changes that mobile technologies have brought to the developing world is that of access to the mobile internet, that has been one of the drivers for the need to have a handset in the first place. Often for most, this tends to be their first experience of accessing the World Wide Web as well as the ability to communicate with others in a near ubiquitous manner. Studies show that people in developing countries cite that access to the mobile internet has transformed their lives for the better especially in being a change agent for how they work and improving their earnings power (Gruman 2014).

People can now even use mobile devices to access to banking facilities that previously would require a long journey to another location; a very difficult option for some areas of the world where the transportation infrastructures render this option very hindering. Now this is made possible, opening more opportunities for the financial sector and boosting economic growth (Pew Research Centre 2014).

<u>Mobile Literacy</u>

Toor (2014) writes that mobile technologies have proven their worth also in improving literacy rates which are often a major challenge for most of the developing world to address. Where books and paper-based reading material can often be scarcely available mobile devices are making headway into providing means to distribute reading material through their screens to the masses and utilising their multimedia functionality to deliver assisted learning. As well as improving literacy levels in general (Munshi 2015, pp3-pp12). Overall, modern technologies are no longer limited to the richest echelons of society, mankind has learnt to improvise, create, innovate and overcome barriers that now allow for most of the globe to take part in ownership of these devices that continue to increase their omnipresence world-wide.

The impacts of these technologies are and will continue to be far reaching and any study conducted in this sphere is sure to discover new and novel behaviours that would preciously be unheard of. And mobile devices have already begun to prove this.

## 2.15.2 Mobile Technologies Used In Education

As mentioned briefly earlier, mobile technologies have managed to make their way into the classroom and bring a significant amount of disruption in the process. Technologies are not new to education as one would think. Clay and Papyrus were used several thousands of years ago, to deliver academic instruction to students in a transportable format. These evolved throughout the centuries in distinct parts of the world where varied materials were utilised including paper parchment.

It was not until the 19th century that books became the dominant format upon which teaching would be delivered and this too, with the advent of modern technologies, is facing its gradual phasing-out from the classroom (Gromisch & Silvester), (Trucano 2016) & (Historyworld 2015).

Developed & Developing World

Modern technologies such as desktop computers initially started the disruption, this in turn gave way to laptops and quickly followed by mobile devices. New aspects that these devices bring such as portability, flexibility quick access to a lot of information at near immediacy levels cannot be ignored yet academic institutions need to find ways in which they can utilise these technologies whilst retaining some form of authoritative control (Jeffreys 2015). Literature can be found on initiatives using mobile devices to teach foreign languages with built-in Apps used to help translation efforts with reading and spelling (Chhikara 2015).

As well as using functionality to assist in subjects such as geography for photo and video analysis as well as creating podcasts and learning animations (Drury 2012).

These devices, often arriving into the classroom through the pockets of students are been viewed more as a hindrance in the developed world as these countries tend to boast well-equipped classrooms that can cater for all the needs of modern teaching. Mobile devices are often used more for social media purposes which serve only to distract students (Drury 2012).

Yet, it is for the developing world where mobile technologies are providing a means of access, provision and delivery that previously would have been near impossible to achieve. Pupils here tend to see these technologies as their primary, if not only gateway to the world of knowledge, therefore tend to take a more serious approach to using these technologies in the classroom.

Mobile Education

Overall, there are many calls to embrace these technologies across the spectrum (Mquiggan et al 2015), (Macwan 2017) & (Shyshkanova et al 2017), regardless of whether they are in developing or developed countries.

Mobile technologies can provide a means of enhancing and enriching the pedagogic learning experience and bringing positive elements to many aspects of teaching, such as the ability to give students access to textbooks and notes in digital format and purely give them the opportunity to access information in significant content but within a portable context to encourage more learning (Kalicka 2018). This is so they can access them outside the classroom at any time as opposed to having to carry plenty of physical textbook that would otherwise discourage student use of resources (Wainwright 2017) and extend the time they would normally spend on looking at the bookshelf, given that it is now simply in their pocket. Innovative approaches to education can be realised through the leveraging of these technologies to allow for a more inter-connected learning experience where text, audio, video and physical positioning can all assist towards a comprehensive delivery of information (Adeboye 2016).

## 2.15.3 Mobile Technologies Used By Law Students

Studies covering the use of mobile devices by law students have appeared over recent times as an example, (Blissenden 2016) mentions a study involving the distribution of tablet devices to law students and finding out that flexibility, portability and productivity were all favoured aspects that students found most useful when using these technologies.

Other earlier studies covering law students using mobile technologies in group exercises have also been found (Habel & Stubbs 2014) as well as calls for the legal industry to align with legal academic training to exploit mobile devices further (Fox 2017),  However, there is not as much research available on the area of using mobile technologies with law students as compared to the use of mobile devices by students in general or society at large. This is understandable given how relatively recently these technologies have arrived on the market and how much disruption to the information access space they have caused, it would be natural to assume that not all areas of academic practice would be covered in depth at this stage.

That said, there is still literature available on research conducted in the area covering a variety of cohorts such as art students (Vassilakaki et al 2015), medical students (Youm et al 2015) & (Law et al 2017) and the general student population.

<u>Using Mobile Technologies for Library Access</u>

We also reviewed studies looking at the usage of mobile devices by students to access library services and how students can utilise these technologies to help them locate resources, use referencing in a more precise manner and engage with library staff via social media platforms. This also covered the general usage of the library to review material albeit briefly (Mattson 2013), (Lo et al 2015), (Dukic 2015) & (Abbas et al 2017). The usage of these technologies within the library domain depends on the information need and the provision of information in a format that can be easily accessed, interacted with and understood. And given the functionalities of mobile devices are well-known as well as their ability to provide a near-ubiquitous user experience for information search and retrieval, it is not surprising to find occurrences where functionalities such as cameras to check QR reference codes and mapping functionality to assist in the location of physical resources are used (Bell & Peters 2013), (Manoso et al 2016) & (Briz-Ponce et al 2017).

Brillantine (2013) adds that we should note that the use of regular computing facilities is also facing uncertainty due to the growth in advanced technological ownership by law students.

Their dependence on the traditional PC lab for their computing needs is facing review in many higher education establishments, but there are warnings for us not to rush into a decision until we have understood students' use of modern technologies in the context of their academic information seeking needs. This holds true especially in the wider sense that it is not simply a matter of doing away with the traditional PC lab with the simple assumption that students will access resources via mobile devices and that would be enough.

But more updating it to meet the needs of modern day students in other complementary aspects (Frydenberg 2017); where desks with computers are replaced with open spaces providing a flexible collaborative atmosphere for both academic and social gatherings, holding paper-based resources and also suitable infrastructures such as power and wireless network connectivity enables students to access material through whichever modern technology they elect to work with (Lukens et al 2017).

Law Students Usage

With the growth of legal resources in electronic format becoming more abundant, it is only natural for the more tech-savvy law students to attempt to access these resources via their own portable devices (Charlotte Law 2012) , (Harvard Gazette 2015), (Santos 2017) & (Russell 2018), with consequences not only for themselves but also for law librarians who are custodians of legal information for any academic institution that delivers legal instruction.

As for law students, where usability and the formatting of information is of acceptable standard, they tend to use their mobile technologies for academic information seeking. Albeit this is also mixed with their interaction with social media tools and general social searching (Mamudu & Oyewo 2015). That said, poor interface design and lack of functionality have been well documented to drive usage down and deter this cohort of students as well as users in general from using these technologies for their legal learning (Bainbridge et al 2013), (Levin 2016) & (Kharcheko 2018).

Barriers for Usage

In general, elements such as lack of wireless connectivity, poor interface design and deliberate adverts on sites can hamper efforts for greater adoption of mobile technologies by creating a negative user experience where the individual is more frustrated in not being able to directly access the content they seek without being interrupted with marketing data that may or may not be desired at that time (Ketheeswaren et al 2010) & (Norman 2016).

For our research, we look at focussing on law students and their experiences of seeking academic information primarily via mobile technologies, however our findings may also include students using other locations and sources of information such as computer labs and non-electronic resources. Therefore, in need for maintaining focus, a detailed investigation into student experiences in using mobile technologies to access legal information is precisely what this research study seeks to find out more about.

## 2.15.4 Modern Technologies – Summary

In this sub-section, we reviewed the various modern technologies that law students have become frequented to using. We also outlined the high-level attributes that each of these technologies possessed and the corresponding advantages and disadvantages of each. Our literature review showed that of all technologies, the laptop presented the key advantages over others in that it possessed the computing power of a desktop PC whilst maintaining the near-portable aspects of a mobile device (McMahon & Popisil 2005). The usage of these technologies was enveloped by the ultimate need to have access to information (be it academic or social) at near immediacy levels and specifically drove the use of Smartphones (Kljunic et al 2015), (Gavali et al 2017) & (Wainwright 2017). We now move onto reviewing legal resources that are accessed via the above-mentioned technologies.

## 2.16  Electronic Legal Information Resources

Legal resources in electronic format are plentiful and continue to grow. In an era termed as "digital plus" (Roy Mersky & Jeanne Frazier Price: From Palfrey 2010) legal resources are facing an unprecedented shift in their composition, delivery, assembly, promotion, access and usage. Breaking from the normal paper-based collection, electronic legal information resources are becoming more voluminous over recent times and the pace is showing little sign of slowing down, this shift is leading a transition from paper to digital.

These formats present a variety of advantages over their paper-based counterparts and this has been well documented (Akpoghome et al 2010), (Leckie et al 1996), (Kuhlthau & Tama 2001) (Collins et al 2015) & (Jayadev & Hanchinal 2015). Sources of information include not only digital documents but also blogs, personal web sites, contributions through social media tools and data through active higher education institutions (Palfrey 2010). The following sub-section outlines the several types of resources available as well as providing screenshots of their interfaces to provide a better understanding of their appearance. Functionality of resources is also briefly covered where possible. Additionally, screenshots of these resources' in mobile formats are covered which demonstrated the end-user experience when accessing these products in a portable context.

## 2.16.1 Lawbore

Lawbore is an electronic resource for law students but it differs from commercially purchased resources in the sense that is has been developed by a law librarian working for a HEI and does not operate under a commercial for-profile business model. Lawbore provides law students with a central point from where they can access a rich variety of content that will help them navigate through the maze of legal resources that are available to them. The site adds tremendous value by;

- Integrating with social media tools
- Links to forms and other templates which would be required for legal study
- A user-friendly explanation of many legal concepts with real-life examples (videos and soundbites)
- Guides on various project related activities that students may be required to fulfil (e.g. Mooting).

In addition to this, Lawbore has another version which is more geared for those students already working in the legal industry but also taking the Legal Practice Course (LPC) and Bar

Professional Training Course (BPTC). This resource provides learning resources aligned for these students' needs, containing articles, documents and more resources that are collated by law librarians.

The resource also holds content such as practice guides, skills resources, careers advice, events calendars, database links, electronic libraries, support pages with material, twitter channels where library staff could send communications to students about events, as well as library stock titles and more.

## 2.16.2 Lexis

Lexis (Fig.26) is an online legal information system that harvests legal information from a variety of legal sources to present to the individual through its own proprietary interface. Acting like a conduit, the resource is available from all modern technology formats including mobile devices, however the interfaces change depending on the form-factor of the technology being used to access it. The screenshot (Fig.32) shows the results of the British North America Act. The results can be filtered by content type, i.e. Cases, Legislation, Journals, Commentary and so forth. The source of the information is also listed. There are also options to print, save, export the bibliography and export to email.
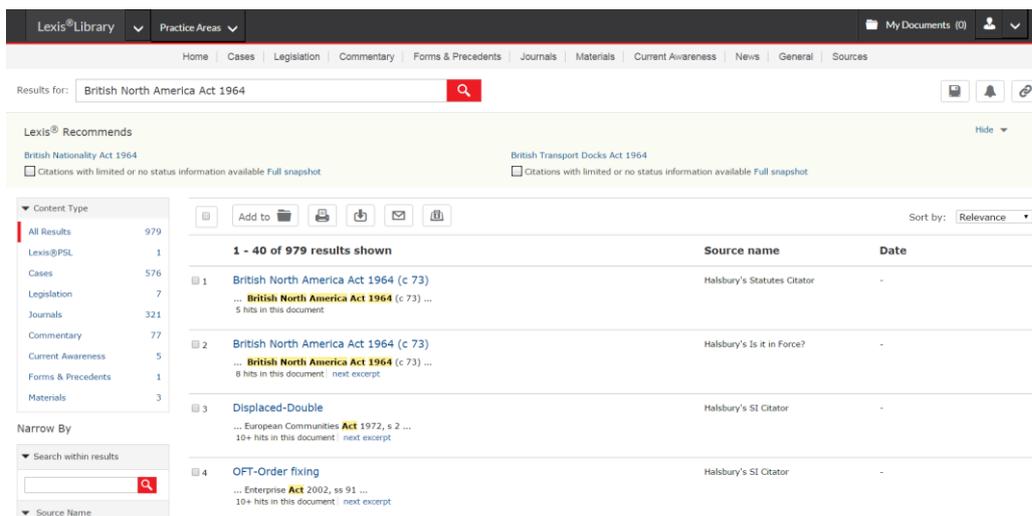


Figure 27: Lexis Desktop/Laptop Interface (Lexis Library Online 2015)

If accessed from a mobile device (Fig.27-8), the functionality of the application is scaled

accordingly to fit the relative size of the screen. This also includes the visibility of functions.
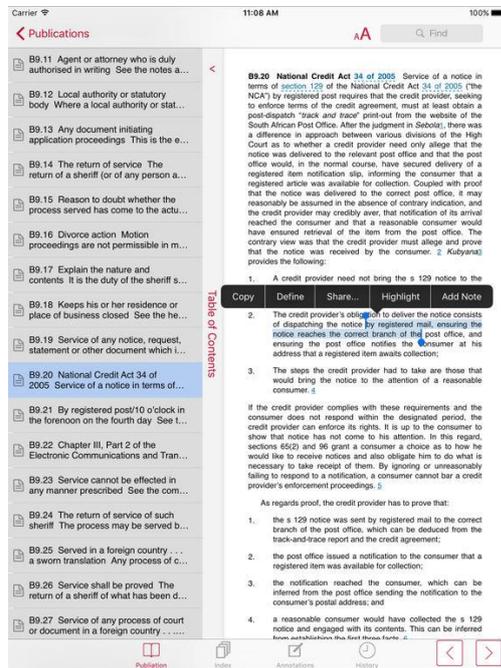


Figure 28: Lexis on iPad (iTunes(a) 2016)
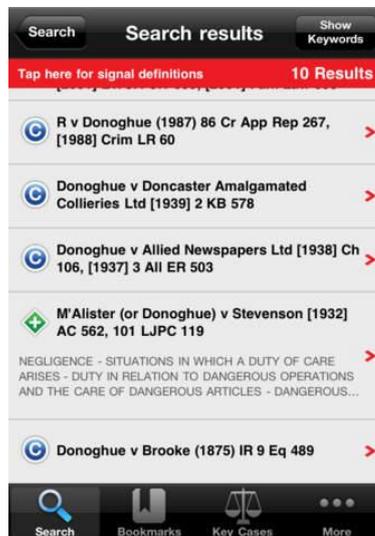


Figure 29: Lexis on iPhone (iTunes(b) 2016)

Given the broad scope of various legal sources covered within the Lexis collection, this

resource can act as a good first step to initiating a legal search. Within the products library, are

several volumes of other third-party legal resources in electronic format.

Law students would find this resource appealing since it includes information from the UK as well as Commonwealth legal sources, content from the All England Law Reports and Halsbury's Laws of England, Newspapers, Professional legal articles, trade publications, legal forms and precedents (University of Liverpool 2015(A)) & (University of Reading 2017(A)).

## 2.16.3 Westlaw

Like Lexis, Westlaw is a comprehensive online legal research service that includes UK case law, UK legislation, e-journals, e-books, current awareness, EU case law, legislation treaties and news information (University of Liverpool 2015(B)). Legal content dates as far back as Acts from 1267 and statutory instruments from 1948 (University of Reading 2017(B)). The tool is web-based and accessible via desktop PC, laptop or mobile device and provides a flexible search interface which allows for comprehensive filtering of searches, the search box also pre-populates when searches are initially entered based on the existing data available within the resources collection.

Results (Fig.29) can be filtered through which type of source the information arose from - such as cases, legislation or journals – which can then be outputted into print, PDF or emailed as an attachment to a pre-defined address. The results can also be identified for which type of legal topic they belong to, such as, finance, trademark, intellectual property, tort and so forth. The screenshot below displays an example of a search for the "British North America Act" and illustrates the various functionalities that exist within the interface of the application;
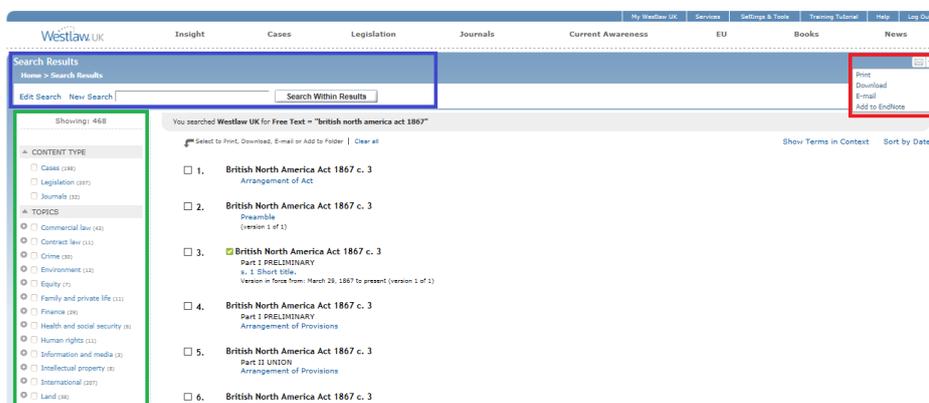


Figure 30: Westlaw Desktop Screenshot (Westlaw UK 2015)

## 2.16.4 Hein Online

Hein Online is the world's largest image-based legal research database (Hein Online 2015). It contains a variety of legal resources including over 2,000 law and law related periodicals and more than 100 million pages of legal history, all available online. The resource goes further to provide scanned copies of the actual documents in question and displays them in PDF format for review. Its user interface is relatively intuitive and there are plenty of resources available to help the end-user in becoming versed with the operation of the system. Web-based training is also provided to those who need it. Searching for legal content via its "Citation Navigator" tool can be done using full text, catalogue or by direct citation. Upon retrieval of the results, these can be further narrowed down by collection, date or document type.

The resource also encompasses enhanced search features that allows the use to search for titles by means of terms, authors and other detail (Hein Online 2015).

The resource has a smartphone and tablet compatible "App" that allows the user to access content by citation, browse and navigate by volume and view the image-based PDF's (Hein Online App 2015).  The App renders itself accordingly dependent on the form factor of the devices used to access it (Fig.30-1).



Figure 31: Hein Online iPhone Screenshots (iTunes (c) 2015)

Figure 32: Hein Online iPad Screenshots (iTunes (c) 2015)

## 2.16.5 E-Books

E-books, in a sense, are electronic copies of paper-based books where the pages are digitised. This format has evolved over time to include additional functionalities such as bookmarking, highlighting and adding comments – albeit, all in a digital capacity. E-books provide a means of accessing complex legal text through an electronic platform, thereby leveraging all the pros and cons that digital access provides (Cabot 2016);

- Multiple access to a resource without the physical limitations of copies required

- Access to the resource from any location at any time, provided electronic means available

- Not being inhibited by the physical make-up of the material and accessing many different copies of material through a small light-weight device

- Complex user-interfaces resulting in frustration during use

- Extensive reading on a screen can be tiresome

- Lack of ability to annotate with a pen

- Strict control rules varying between e-book providers which provide differing functionalities and lack of a consistent feel

- Access to e-books is by subscription, whereas access to the paper-based version is through physical ownership and cannot be revoked.

DBW (2014) also presents the argument that points out the true benefit of eBooks is the convenience of being able to access material which would normally require physical effort. Furthering that eBooks per-se are not electronic books but a reading service that provides content to an individual on-demand without the corporal pre-requisites that a traditional book requires. Conversely, others reason that the very fact that eBooks do away with the need of paper, ink, printing and shipping/handling, then these savings should be passed onto the consumers. But these savings may exist but are only there due to the manufacturing and distribution costs required for paper-based products. The actual costs come from the content within the material itself and the skills required to produce it. Yet the prices of eBooks remain a contentious one with charges rising due to market pressures and competitive pricing, typically, not in favour of the consumer.

This in turn leads the consumer to, at times, revert to paper-based resources – which are generally higher cost items and deliver more profits to the very publishers who also produce the digital "eBook" versions.

This leaves publishers in a win-win situation whilst frustrating the end-user into having to choose between an item of convenience and non-tangible ownership/inconsistent usability and a higher-cost item which delivers the usability but does away with convenience factor (Misc 2013). Given that legal books are more than often quite large and heavy, e-books provide a portable alternative by compressing these pages into an ultra-lightweight and portable digital copy. Many open-access e-books exist where access is freely available, and content can be copied with little restriction. However, for legal resources whose production requires specialist knowledge and skills, there is normally a cost associated with accessing these materials as well as limitations with e-books that publishers often impose.

This includes aspects such as the limiting of printing no more than a small fraction of each e-book per user for the life of each e-book and requiring a constant internet connection to access the material since offline versions may be limited to a specific time period (The University of Sheffield 2017).

## 2.16.6 E-Journals

For electronic formats, Journals can be accessed through third party conduits (Fig.32) which provide a structured interface through which they can be organised by date and topic. One of the largest providers of Law Journal collections is Hein Online which gives access to electronic journals via its centrally managed interface and providers a full search functionality where content within the journals themselves can be interrogated.



Figure 33: Hein Online Oxford University Undergraduate Law Journal (Hein Online (i) 2016)

These interfaces give those accessing these materials the ability to be selective not only on the content they wish to read but also that which they might want to print for futured reference. However different Law journals in electronic format tend to be available via different conduits, e.g. the following example (Fig. 33) is accessed through Lexis Library – which providers a somewhat slightly different interface and functionality experience.
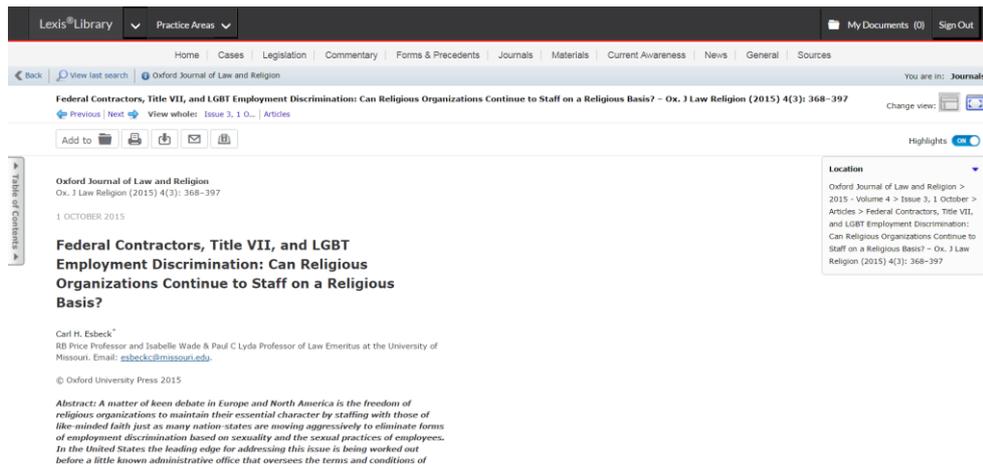
Figure 34: Lexis Library Oxford Journal of Law and Religion (Lexis Library (i) 2017)

Aside from this, some providers of electronic legal journals enforce different rules and regulations regarding access to this material through their own platforms (Fig.34).
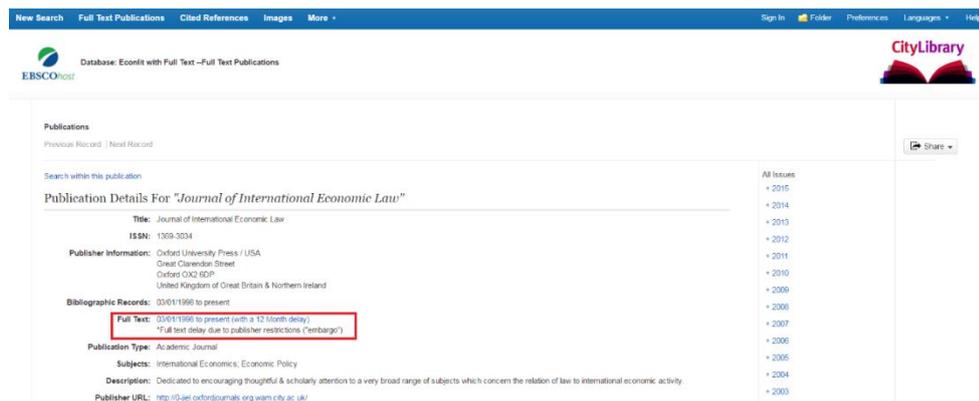


Figure 35: Ebsco Host, Database with Econlit (Ebsco 2017)

The highest quality journals are often those that have been peer-reviewed, these also known as scholarly journals, content in these types of journals often make significant contributions to the legal topic being discussed. Finally, practice journals are those items written by and for those who practice law in industry (Murdoch University 2017).

## 2.17 Free Web Resources

Free web resources tend to be those provided through open source publishers or governmental publishers which may be heavily subsidised by the state.

However, it must be noted that free web resources can put the information seeker at risk if the information they may have retrieved form this site(s) is not accurate and/if contains any misconceptions or erroneous data due to a possible lack of vetting of the content itself.

## 2.17.1 BAILII

The British and Irish Legal Information Institute (BAILII) is by far the most popular free online legal information resource used by academic law libraries in the UK (IALS 2015). A non-profit organisation, BAILII's online resource provides a diverse range of full text legal information at no cost to the end user.

The resource has quickly established itself as the mainstream tool for legal research with up to 45,000 information requests through its interface daily alone (About BAILII 2012) & (The British and Irish Legal Information Institute 2012). Within this resource, one can find case law, legislation and other law-related materials for England & Wales, Scotland, Northern Ireland, Ireland and Europe (Using Legal Databases 2009).

## 2.17.2 Legislation.gov.uk

Legislation.gov.uk is another free resource that is provided with the support of the National Archives on behalf of the government (Fig.35). The site is a key source of legislative information which is updated regularly and available to anyone who seeks it. Information types include UK Public General Acts, UK local Acts, UK Statutory Instruments, UK Ministerial Orders, several other Acts from around the UK and its constituent countries as well as historical Acts from the 13th century onwards. Legislation is normally held in PDF format and this is accessible both online and available to download for future offline reference as well as printing. The navigational interface (Fig. 35) used to locate content is relatively easy to use and displays the legal content in a chronological format allowing for searches to be conducted based on origin of enactment date or even through detailed searches of legislation if required.

Figure 36: UK Public General Acts from 1942 (Legislation.gov.uk 2015)

## 2.17.3 The Law Libraries' Online Catalogues

Libraries within HEI's have invested heavily in solutions which seek to bring access to digital records of their holdings under a single interface. This has also included the following content connects;

- Intranet

- Connectors to Social Media Tools

- Access to electronic resources

- Access to digital copies of library catalogues

Often Library catalogues have expanded significantly to account for the vastly growing holdings that academic libraries find themselves to be in possession of. Some academic subjects with a greater amount of library assets even demand their own dedicated physical spaces – with the subject of law being a prime example of this. It is then hardly surprising that with the sizable corpus held within the physical law library, then naturally a digital version of this dedicated space would follow (Coyle 2016).

Generally, academic Libraries have legal collections accumulated within the existing physical space and tend to provide a dedicated space for digital resources via their online library catalogues – which are accessible through library web pages. Paterson & Boon (2011) noted students favouring the provision of the library catalogue via their mobile device interface indicating a divide in the law student's understanding of where the law librarians' role is between legal information resources, mobile device channels and the students themselves. During this study, many academic law library web pages were examined for their content and how they provided connectivity to their information services.
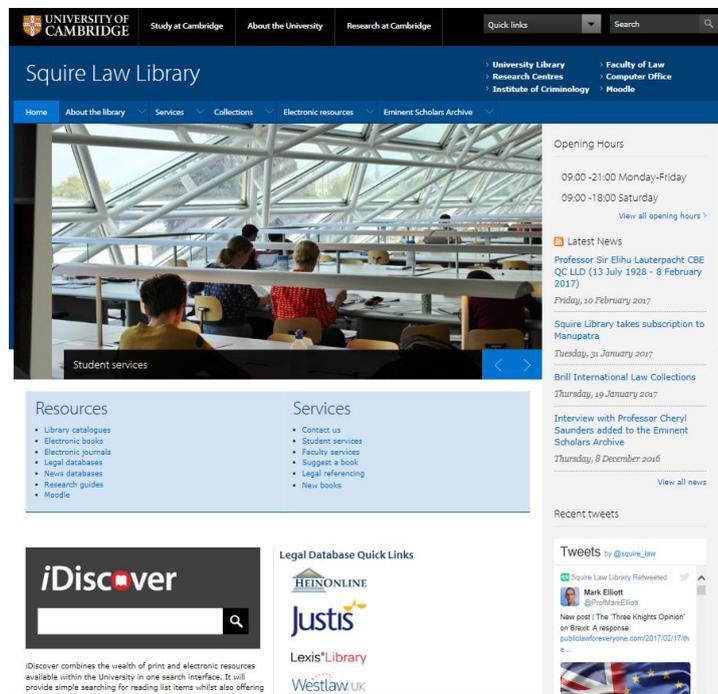


Figure 37: The Squire Law Library at the University of Cambridge – Desktop/Laptop Screenshot
(Squire Law Library (a) 2017)

These sites (Fig. 36) often contain links to electronic resources, twitter and other social media feeds, blog posts, general Library information, access to dedicated search engines that specialise in the indexing of legal data as well as training guides on how to use these tools.

Often law library catalogues not only give students access to their internal holdings but also to external resources which can be accessed via a dedicated secure account such as COPAC,

The British Library and more. Many library sites automatically render themselves to suit the format of the device from which they are accessed, as a result and more so in recent times, many sites have become well-adopted to being viewed from the smaller screens of smartphones and tablet devices (Fig. 37).
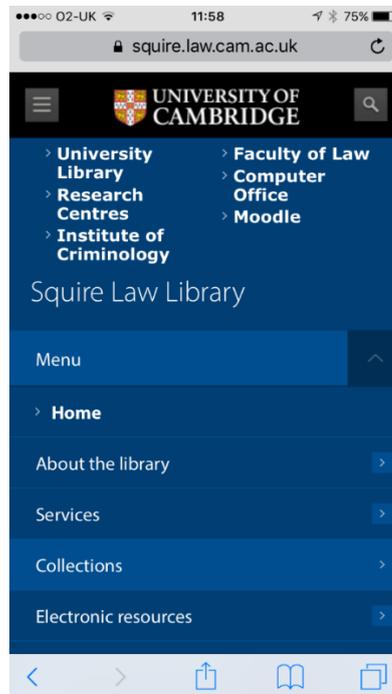


Figure 38: The Squire Law Library at the University of Cambridge – iPhone Screenshot (Squire Law Library (b) 2017)

Though, often the key challenge for access in a mobile context being that the service should be able to display all the available information to the end-user without compromising on the functions that may need to be accessed through the interface as well as the general functionality of the site itself.

## 2.17.4 Electronic Legal Handbooks

Electronic legal handbooks are essentially collections of legal material comprising of detailed content on the specific area of law. This also can include templates and draft legal documents that can be edited and re-used by the ready for their need, albeit in electronic format.

## 2.17.5 Electronic Legal Information Resources – Discussion

In this sub-section, we outlined the various legal information resources that were available in the general legal domain.

It was noted that this specific area of information service provision was facing a significant amount of disruption due to the drive towards digitalisation of resources. Technological advancements had made the opportunities for both those seeking information in this format and those happy to provide it.

<u>Well Designed Resources</u>

One of the key resources that was discussed was Lawbore – an award-winning legal resource that is designed to cater for as many different tastes as possible. With the content being in various formats such as electronic documents, audio files, videos, instructional guides, short help sections and a more social approach to legal instruction. Lawbore takes a very different angle to showing law students how they can navigate around the vast collection of digital legal resources using a well-structured website. Lexis Library and Westlaw UK were also discussed in that both provide information which is delivered from a specialist thirds party vendor. This makes it easier for the individual law student to seek legal content from a variety of different providers all through a single interface. Often this capability makes information seeking easier and more user-friendly. Both resources provide several options on how to receive the results of the search and this ensures that the eventual outcome of the search and the condition It is received in a state that is acceptable to the individual.

Hein Online was reviewed as this resource primarily contained legal journals that enabled individuals to view them in PDF format. Several thousands of types of journals and periodicals were contained within this resource despite their origin being from various sources. The application was noted to have an intuitive interface with training available to those who seek it. The same can be said for the other two resources mentioned – Westlaw UK and Lexis Library – both of whom provided instructional guides.

All three types of resources are available on mobile devices and we pointed out that the application on devices with smaller screens is scaled back to cater for the limited real estate and processing power, yet the key functionalities remained intact so to ensure that the information seeking experience was not impacted in a negative way.

Benefits of E-books

E-books were looked at to get a better understanding of how these resources were comprised and their use. Their value was that they provided access to high volumes of information electronically, thus removing the physical restrictions and burdens that bulky legal material is often hindered with. Furthermore, access to e-books was based on the requirement of the individual having access to the relevant source online, physical requirements on the person to be in a given location or the material book to be available were removed.

Barriers of E-books

There were drawbacks for using e-books which were down to the vendors whose subscription-based access often placed restrictions upon the end-user. This included the limitations on how many pages one could print from an e-book as well as often, complex user interfaces. These resources, it was found, had witnessed a gradual increase in subscription charges, which in turn pushed consumers back towards purchasing the paper-based equivalents which provided the tangible ownership that digital copies failed to do so. Nonetheless, the convenience and near-immediacy of access was outlined as one of the key benefits of e-books.

The Appropriate Format

Legal journals in electronic format (e-journals) were resources accessible through a variety of third-party products including those already mentioned. The popularity of e-journals was down to their content and their ability to be printed and used as physical copies of what would initially be digitally-based access.

Several types of applications used to access e-journals delivered a variety of functions that could be used to compliment the accessibility of these resources, many of these functions, however, were essentially the same such as saving search histories and exporting the results to different output channels. Free web resources that were outlined included BIALLI and Legislation.gov.uk, both very informative sources of information which were highly respected in the legal industry for their format, reliability and current awareness. Both resources were funded by the government and widely used for not only the historical aspects but also the latest developments in the legal domain.

Effective Service Provision

Finally, we reviewed library catalogues that had been successfully ported into electronic format and accessed through the library web pages. The interfaces of these catalogues had evolved significantly to deliver different pieces of information to the individual. Not only details on the collection of legal holdings but also information about the library itself, available services, locating and borrowing paper-based resources, comprehensive electronic resource search capabilities as well as integration of social media tools to open a communications channel between the patrons and the librarians.

Shift from Ownership to Access

Overall, our review of electronic resources in the legal domain showed us that there were signs of maturity emerging through the improved user-interfaces, functionality, intelligent formatting for mobile device access, better integration with other products and a generally more seamless search experience through a multitude of diverse sources channelled through a single interface. However, the key barriers that were repeatedly outlined in the various resources mentioned included;

- Individuals not wanting to refer to electronic resources for extended periods of time
- Flexible annotation with a pen, note taking and general tangible ownership were still appealing factors for paper-based resources over electronic

- A vast number of electronic resources hampered with poor interface design and limited functionality

More notably was the inherent fact that access to electronic resources was based on a subscription formula with no physical ownership, hence if the subscription payments ceased, so did the access to the resource in question. This was a significant shift in the basic ethos of librarianship and it was opined that this aspect alone was something that should be explored in detail in this research study.

## 2.18  Legal Information Resources Used by Law Students

In the previous section, we outlined the various electronic legal resources that are available, these provide a more general overview of the resources, their purpose, look and feel as well as an idea of their interfaces. Academic institutions in general have noted the potential in using mobile devices as a platform for information and services delivery to the student body (Aldrich 2010). Academic law libraries having to play a lead function in the provision of legal information to both students and scholars of the Law, have realised this opportunity and the contexts that arise therein.

The Library Catalogue

Most of the law libraries resources are indexed or organised within the library catalogue and this is generally available in digital format in line with many of the several types of legal information that is available today within the said domain.

Present day library catalogues are now largely internet-based but work differently from general web- search engines in that their functionality tends to be more specific to librarianship activities and not to rank results but focus more on BOOLEAN operators (Tay 2012). So, although to the end-user the library catalogue may initially appear like any other general web-search engine, in essence, it is a completely different product and consequently this impacts somewhat on the information seekers expectations, interactions and results retrieved therein.

Additionally, we now find ourselves in a situation where most, if not all law libraries have retired the traditional paper-based catalogue in favour of its digital form. Kim (2013) found many students to be accessing this primary information resource via their mobile device unilaterally, largely thanks to the ongoing development of web technologies which have made formatting pages in different screen sizes much easier thereby removing the need to be before a computer terminal to search for library resources.

Outsourcing

Harris (2014) found some vendors who specialised in the delivery of this information resource resulting in isolated instances where law libraries, had opted to outsource this service as opposed to re-inventing the wheel by maintaining their own version of one. However, these developments are not specifically to be explored further at this stage and have been highlighted for background only.

Resource Formatting

From our literature review, we already know that there are still several electronic legal resources that are ill-designed for use in a digital context (Makri et al 2008) and that resources of this kind are not suited for the extensive and multi-task nature of legal searching (Kuhlthau & Tama 2001). Accessing legal resources in a mobile context needs to not only address display and resolution limitations but also to address other inherent challenges posed by mobile technologies such as network connectivity issues (Yui Team 2007). Furthermore, those legal information systems which may be user-friendly on the desktop PC or laptop environment face more of a challenge when being ported over to a smaller screen and left with the pressure of having to compromise content and functionality just to be able to fit onto the smaller real-estate (Yui Team 2007) and (Kim 2013).

Student Driven Change

Still, academic law libraries have taken note of the drive for using mobile devices amongst their patrons and to this effect, have utilised the opportunity by expanding their mobile internet interfaces and looking at the provision of an increasing amount of services via the Web.

The results have been mixed somewhat with law students using some legal resources without formal instruction. This was largely due to the formatting and functionality working well in mobile contexts and retaining if not increasing their use of other electronic resources such as laptops and desktop PC's. This in lieu of consulting non-electronic legal materials – driven by the sheer convenience, usability and accuracy that digital legal resources provide.

Librarians' Reactions

On a higher level, developments in different approaches to librarianship in general are also evident with some re-inventing themselves as "vibrant and attractive community hubs" with meeting spaces, café's, adult literacy classes and gaming facilities. And by doing so, work towards catering for a more digitally focussed information seeking law student population whilst retaining the traditional non-electronic resources as well. Conversely some have taken a more aggressive manoeuvre and committed themselves completely to digitalisation with no paper-based collections within their space, just cloud-based collections of e-books and e-readers (Spinks 2015).

Law Library Collections

Law students' initial port of call for their academic information needs remains the law library within their respective institution or place of study. The law library contains most if not all the resources a law student can be expected to require meeting their academic information needs throughout their studies. Within these bodies, we tend to find legal resources including (but not limited to), legal dictionaries, legislation, case law & summarises, text books, abstracts, citation & legal journals and law reports.

In addition, and increasingly apparent, is the growing number of electronic materials that is now becoming available within this sphere such as electronic journals, e-books, digitised legal databases, digital legal libraries, multimedia covering legal content and social media.

Some of these tools are used effectively as a platform for portable information exchange and thus are widely promoted to the law student cohort by their respected HEI law libraries that provide these services through their Web Services portals. Brief examples as such can be found at the following areas;

- Squire Law Library – University of Oxford (Squire Law Library 2014)

- City University Law Library (Law at Northampton Square 2014)

- Queen Mary University of London Library (Queen Mary University of London 2014).

We looked at these resources but in the context of their use by law students.

## 2.18.1 Overview of Mobile Centric Information Resources Used by Students

Law students would no doubt be using the same types of legal resources that are used by those in the profession since these are designed to cater mainly for all parties involved in the study or practice of law. However, given the specific needs of this cohort, in that their inexperience of legal matter and need to research a variety of different legal topics for training, may impact the types of materials they elect to use. Given that this research study looks at law students use of legal information resources via mobile devices it was important to consider the behaviours of this group using mobile technologies for information seeking in general and then focussing in onto legal sources. We already know that mobile devices have over the recent years managed to embed themselves into the lifestyles of the youth of today and this is a trend that is set to continue with unprecedented results and unforeseen impacts (Lenhart 2015) & (Abbas et al 2016).

There is a multitude of activities that one can do with a mobile device, apart from using it as a portable telephone. The brief exchanges of information and the seeking of it are a considerable proportion of activities that take up the use of these technologies given their ubiquitous attributes.

The over-dependency on such tools to engage with friends, reduce isolationism and form

portion of a cohesive community without having to interact with others on an interpersonal level

have changed the very basic forms of communication which we have taken for granted for

generations. Indeed, numerous studies have been carried out on how this dramatic

enhancement of possibilities has impacted this cohort (Lavy & Sand 2014), (Alwagait et al

2014), (Alrubail 2015) and (Armstrong 2012).

One essential point worth mentioning is the concerns raised on the assumptions society in

general have made on the digital youth of today, the implication that because these youngsters

are confident and well-versed in using social media, they have an inherent understanding of

technology.

It would be unwise to make this association as just because one can use a tool, does not

automatically mean they are qualified to work with it, as commented by (Beeban Kidron: from

Ifould 2016); "*Children should be considered children until they reach the age of maturity, not

until someone puts a smartphone in their hand*".

Hoffman et al (2002), Chipangura (2013) and Elsweiler et al (2011) found that students in

particular tend to use their mobile devices primarily for casual information seeking. This initially

included using SMS text messages and making voice calls. However, with the rapid

advancement of technology and the advent of more powerful mobile handsets, new functions

and facilities became available for information seeking use in the mobile context.

Students can now access the internet via a mobile browser, take pictures, record voice and

video messages and exchange them; text messaging and other information exchange

mechanisms are also abundant. The ability to be in constant connection with others via this

platform furthers the perception of nearly always necessitating use of these technologies

(Burford & Park 2014).

Mobile technologies in general, provide much potential in helping overcome the traditional physical limitations of the classroom and other physical contexts – by engaging with mobility students can study in separate locations and in a more flexible manner (Kim, Mims & Holmes 2006). Studies on how students used mobile devices in the classroom outlined that despite the lack of certain functionalities of these technologies compared to desktop PC's, this did not hinder the adoption of mobile technologies thanks to their ubiquitous and portable attributes (Stockwell 2010).

<u>Law Students</u>

Moving towards our research cohort, Kerins et al (2004) conducted a study on the information seeking behaviours of law students and the output from the research highlighted some very interesting themes including the disconnect in student's appreciation of library and electronic information sources – resulting in the students developing a mind-set where the Law Librarian was not associated with the digital information sphere.

In this sub-section, we look at the various mobile-centric information resources that a fair proportion of today's teenagers and young adults tend to use, often in their role as students, why these resources appeal to them and how they are used.

## 2.18.2 Overview of The Mobile Internet & Social Media

Kayiwa (2016) Informs that it is the capabilities of the smartphone, with its powerful processing, rich graphical displays and ability to interact with others via voice, video and text, enables it to be the "pocket computer" and lead the drive for the worlds thirst for digital communication and content. The increasingly accessible technology which can leverage existing infrastructures for network connectivity, has easily managed to make its way into the pockets of both rich and poor, globally thanks to high volume availability and lower prices of handsets (Vasudev 2016).

<u>Mobile Academic Content</u>

Naturally, with the internet's capabilities to provide a gargantuan level of information within a relatively small and portable form-factor, students are often found to be referring to their smartphones and other portable devices to seek answers to questions that may arise during both their social and academic contexts.

Resources for the former are plentiful given the popularity of social information seeking tools such as social media Apps and web-based resources. However, for the latter, academic sources, the market still needs to adopt to this demand in a more formal way.

<u>The Academic Response</u>

Academic institutions have made efforts to meet these needs by placing more resources on the "web" in the hope that students will use internet access on their mobile devices as a channel to refer to these sources of information.

The adoption is happening and evidence of students' usage of their mobile devices in this manner is being well-documented, however challenges remain in that students seek more technical and pedagogical support for integrating their portable technologies in the classroom, leading for calls for institutions to provide more training to this cohort and improvements in the support models for mobile infrastructures (Chen et al 2015), (Gayle 2015) & (Das 2016).

Despite these barriers, students continue to use the mobile devices for both social and academic information seeking needs interchangeably and this is a behaviour that is likely to grow and evolve over the coming years as will the requirements for the demands that arise from these activities.

Now we find that education establishments acknowledge that mobile-centric functions such as social media is a well-embedded part of daily student life thus leveraging this would be beneficial. Many institutions have taken a more creative approach to provide instructions on how best to use Social Media with policies on safety, best-practice and misuse, which would encourage the use of these resources in a more controlled and constructive manner (Brunel University London 2016).

There is also wide use of social media amongst the library domain as a means to communicate with their student population effectively. Twitter being a prime example of such use;



Figure 39: Screenshot of Queen Mary, University of London Law School's Twitter Page (Queen Mary, University of London Law School Twitter Page 2017)

Some have even used Instagram to promote technologies and legal research methods, such as the example shown (Fig. 46).



Figure 40: Screenshot of Harvard Law Library Instagram Site (Harvard Law Library 2017)

This resource has been found to be popular largely due to its focus on pictures and visual display over text, an attribute that works perfectly for story-telling and descriptive communication to its over 400 million users world-wide, it is a very popular social networking tool (Sullivan 2016(A)). Instagram has proven its value with the legal profession through a variety of use-cases such as attorney advertising, antitrust litigation, criminal law, defamation, employment law, personal injury litigation and many more with legally-themed accounts now being recommended and used (Sullivan 201(B)) & (Aldridge 2015). The resource has even been recommended to expand legal practice through its capabilities to connect with other Instagram accounts, engage with them, promote services and use this opportunity to build the brand in general (Louis 2016).

We know that law student's use of Social Media for their academic information seeking needs is not a new behaviour (Caron 2016), (Sullivan 2016(B)) & (Zephoria 2017). There is plenty of evidence that this cohort engages in information exchange via these platforms, however the focus here is on the information seeking behaviours of law students using resources for their academic needs and whilst the use of Social Media may play a role in this, it is still part of a greater picture where other resources and technologies participate. Hence there is only a brief but essential level of discussion covering Social Media and its use, specifically by law students within this research study.

## 2.19  Summary of Literature Review

In this sub-section, we summarise the literature that has been reviewed. This includes the gaps that have been identified from the literature in the context of the questions that are arising, developing and evolving within the mind.

## 2.19.1 Identifying Gaps

Gaps in the literature were identified by first comparing the research aims and objectives with the findings from the literature reviewed. Due to the literature review being of a reasonable size and covering a significant range, the assessment of the literature against the research aims and objectives was split into the areas of law students' information seeking behaviour, technology use and resource use.

## 2.19.2 Gaps in Information Seeking Behaviour

The literature reviewed showed the information seeking behaviours in many contexts including that of engineering and legal professionals. Ellis, Makri & Attfield (2014) point out that the information monitoring behaviours of lawyers – where monitoring means the need to remain constantly updated with the latest developments within the legal field – has received little attention, paving the way for more studies in this area. Their study found that paper-based resources were used to compliment electronic resources contradicting our initial assumption of the situation being the other way around, however in some cases paper-based resources were seen to be used primarily and then the electronic version used as a secondary source.

Hence it can be deduced that there is no final preference overall when it comes to both types of resources for legal professionals, but it depends on the context in which the information seeking behaviour takes place. And whilst literature covering information research conducted by lawyers is insightful, there seems to be hardly any similar studies for law students, especially where a general encompassing examination on their resource use, contextual information seeking behaviours, drivers and barriers for these different technologies to access information is outlined.

### 2.19.3 Gaps in Technology Use

We found from the literature review that modern technologies were widely used by students, more so, mobile technologies had managed to become firmly embedded within the student psyche and law students are no exception to this. Studies covering students use of modern technologies, especially mobile, have been conducted several times but these tend to be focussing on specific tools and resources as opposed to the wider spectrum that covers the entire landscape of mobile devices that are available on the market today. Moreover, we found that although mobile technologies, specifically, smartphones, have been examined and how law students use them, there remained a gap in our understanding of what drives this cohort to choose using these technologies as opposed to others such as desktops, laptops or even non-electronic tools. Literature revealed activities that studied how students chose to work with specific resources such as social media, reading emails, exploring the internet or referring to e-books, but lacked observations of the wider picture where;

- Law students are directly asked why they chose to work in this manner

- Why law students felt driven towards the use of these technologies to access resources

- What barriers exist for law students that may dictate their information seeking behaviours

- Which legal resources are more appealing than others and in what contextual access method

Another key component that leaves a gap is the lack of literature that covers the opinions of law librarians in the same discussion.

Literature was found on law librarians' thoughts of modern librarianship and the provision of resources for its patrons, the use of social media to correspond with the law student body, the shift that electronic resources had introduced where paper-based ownership of holdings was being overtaken by subscription-based access of electronic resources. Gaps identified here included;

- The question of ownership vs. subscription-based access, what did this mean for law librarianship

- The development of electronic law resources and how the adoption fared with various technologies

- The ever-changing landscape of new mobile technologies and the impact it made to the law library

A comprehensive exploration of these developments remained to be done and these studies, although available, did not exist where many voices came together to outline their opinions, perspectives, suggestions and recommendations.

## 2.19.4 Gaps in Resource Use

The literature review outlined the different resources that law students had at their disposal for them to research on legal information. Very limited literature was available on the use of electronic resource use by law students, especially the use of these resources in mobile contexts. This is not surprising, given the relatively brief time in which mobile technologies have been a mainstream reality for most legal professionals and students not to mention the vendors - who have since managed to harness the capabilities of these devices to channel their products to both lawyers and law students.

## 2.19.5 Summary of the Gaps & Proposing a new Model

As previously noted, Ellis, Makri & Attfield (2014) outline that there is a limited amount of literature available on the legal information monitoring behaviour of lawyers. This is also true for law students where the amount of literature covering this specific cohort is also restricted, this research study seeks to find out how law students use technologies and resources to keep up to date with developments within the legal field – something that is only a natural expectation not only for the duration of their studies but thereafter when they enter the profession itself.

Studies on the use of various technologies in the education field were plentiful but they tended to focus on isolated experiments where a technology was applied to a specific study activity as opposed to the wider pedagogic spectrum. This relatively sparse provision of literature in these areas was further reduced when the cohort moved from the general population to teenagers and young adults, the onto students and then narrowing this down further into law students; where works were very restricted. We still required a mechanism which would bring all the gaps together in a cohesive manner and help us address them, hence we looked at building a new model that could map out the different use contexts as well as technology and resource uses. We had already outlined the many information behaviour models currently available in the literature, however there still appeared to be limited information on any examinations specifically on the behaviours of law students. Some studies on law students and lawyers was available (Kerins et al 2014) and (Makri et al 2008), but when it came to outline these aspects in the form of a model, there appeared to be a gap.

Hence this research sought to fill this by proposing a model that would outline the behaviours of law students' information seeking in context of not only electronic resources but also non-electronic. This all-encompassing model would help outline the behaviours utilising some aspects of other successful models such as that of Wilson and to an extent, that of Bates'.

## 2.19.6 The Need for Another Model

In line with the research questions and objectives, a model that will help map the information seeking behaviours of law students was sought, to better inform law librarians and legal information providers on the information seeking behaviours of law students.

The aim was to build the model from the literature review and the output from the research studies conducted therein, then further research would be used to test, validate and refine the model for completeness.

Several attempts were made to account for the various inputs and aspects of information seeking models reviewed within the literature as well as the attributes of law students' information seeking behaviours in general, these are articulated clearly in the following chapters of this document.

## 2.19.7 Rationale & Motivation

The proposed model is needed to address gaps in a variety of areas specific to law students' information seeking behaviours. Specifically;

- What pushes students towards using a resource/technology for academic information seeking

- What pushes students away from using a resource/technology for academic information seeking

- Is there a correlation between the different technologies law students use for their information seeking?

- How can we map out the information seeking behaviours in such a way so that we can help build better resources in future with the context of the various technologies that can be utilised?

- Can more elaboration be provided on mobile technologies usage by this cohort?

- How mature is the use of mobile technologies for academic information seeking by this cohort?

Ultimately the model is to provide a mapping of drivers and barriers as opposed to a model that illustrates the information seeking process in that context. (Tella 2016, pp9-12) provides one of the many examples which have created models in this way.

This research aims to outline a model that shows the journey of information seeking but does so with the various technologies and resources law students have at hand.

It also seeks to elaborate more in the behaviours of this specific group of students with mobile technologies but outlining how and where other technologies such as desktop PC's and Paper-based resources fit into the bigger picture. Research has already been conducted in areas covering cohorts such as medical students' use of tablets and smartphones (Ebiye 2015), tablet devices on human information behaviour (Burford and Park 2014), the "Google generation" and their use of the library vis-à-vis mobile devices (Nicholas 2014). The lack of a model that can illustrate these factors and elaborate on them to provide a concise template upon which a stronger understanding as well as appreciation of law students' information seeking behaviours for academic needs is therefore justified to be produced as a key motivator behind this study.

## 2.19.8 Deliverables of The Model

The model proposed should deliver an overview of information seeking behaviours of law students in relation to the many diverse types of technologies that they have at their disposal. Because the research project focusses on mobile technologies, this group is further divided up to include laptops, smartphones and tablet devices so to ascertain more detail for these devices in particular. Moreover, conventional non-mobile technologies such as desktop PC's are also included in the model as well as non-electronic technologies; namely paper-based resources. It must be noted that whilst laptops provide some form of mobile computing, they are not as mobile as smartphones and tablet devices and so not categorised as such. The proposed model seeks to provide an outline of the various drivers that push towards and barriers that prevent or discourage the use of the various technologies law students may have at their disposal for their information seeking journey at a time, in a context.

Additionally, the model will include "pressure arrows" or drivers that would push a law student away from using a technology and towards another. Reasons for these three categories with respect to the technologies listed should also be included.

Ultimately the model will seek to help inform on the design, development, use and adoption of legal information resources. Also, it will aid law librarians in understanding which resources would benefit law students most given a context of use. E.g. If a Law Librarian seeks to invest in a resource that students can use for exam revision then the model should be able to inform on the most suitable attributes the resource should have given the technological platform it is likely to be used on.

## 2.19.9 Benefits of The Model

Researching into the use of resources by law students for their academic information seeking needs is one thing but building on this knowledge and using it to provide recommendations and guidance on the future development of these said resources is more of a challenge. However, that is precisely what this study seeks to deliver. And by doing so, it hopes to see a marked improvement in the following areas;

- A greater understanding of law students' information seeking behaviours in relation to the various legal resources available and the context in which these resources are used on the various technology platforms
- Strengths and weaknesses of the various technologies that law students are likely to use
- Advantages and disadvantages of the various technologies
- Drivers and barriers of the various technologies and how resources can take advantage of these attributes to maximise their usage opportunity
- Improvement in vendors' knowledge of the law student usage of their resources

## 2.19.10    Recommendations for Law Librarians

This research study looks to provide recommendations to law librarians based on the findings of questions fielded towards law students and law librarians themselves.

It is hoped that the UK-wide cohort of law librarians covering a fair representation of the HEI

cohort of law libraries will help give a holistic and broad overview of the opinions surrounding

mobile device use in the legal learning domain. It also aims to provide law librarians with a

comprehensive feedback set where they can see the views, opinions and challenges of their

peers within the same context as well as provide an insight into what their patrons (law

students) think and how they are working with legal resources and modern mobile technologies.

## 2.19.11    Rationale & Motivation

Law librarians have been at the forefront of the changing landscape within the law library

domain, especially over the past few decades where technology has gradually managed to find

its way into the surroundings and now managed to establish itself firmly into the psyche of the

department. At its origins, modern technologies were seen by law librarians to automate and

streamline internal processes, however, as time progressed, commercial services and

technological advancement have managed to provide innovative uses of these technologies

within the fabric of the law library and how it delivers its services to patrons (Danner 1996).

Mobile devices are yet another incremental development within this technology sphere and

have only accelerated the digitalisation of the law library, its holdings and its infrastructure.

These technologies have brought many changes, such as enabling law librarians to engage

with their patrons without the need to be present in the location as well as utilise online

resources to conduct research remotely (Bales 2014). It has also led to the gradual shift of law

librarians' role to be more technically focussed (Balleste 2013, pp80-85), catering for a changing

society where speed, flexibility and availability of information is the norm (Adler 2013), (Pepper

2015) and the traditional information resource holding being kept "just in case" to being replaced

with subscribed access for "just in-time" (Egeland 2015) & (Baker 2016).

Of the many different impacts and changes something of this significance brings, mobile device uses for information seeking purposes is only a subset of the topic at large, yet still an essential piece of the bigger picture on what is happening in this landscape. This research seeks to outline the various resources used within the law library, how law students use the said resources and outline where synergies or opposing views exist between the former and law librarians with the hope to provide recommendations to law librarians based on the associated findings.

## 2.19.12    Deliverables

The set of recommendations aims to provide insight for law librarians for them to be better informed in the developments of mobile technology use by law students within the law library domain. This is not to say or assume that law librarians are not aware of this behaviour already, but it is only to compliment this understanding by further exploring law students use of their mobile devices to access legal information resources, the rationale, drivers and barriers for this behaviour.

## 2.19.13    Benefits

In an era where plenty of questions are being raised on the future of law libraries given the amount of technologies that are increasingly being adopted into this domain (Dawson 2015), it is hoped that this research study will provide more informed insight to law librarians and help them make better choices on how to handle the growth of mobile technologies' use by law students to access legal information resources.

## 2.19.14    Recommendations for Legal Information Resource Providers

Legal information resource providers (or Vendors) play a primary role in the provision of legal information services to law students in the context of this study.

This research looks to leverage the feedback from law librarians on the various resources that are already available, their compatibility with mobile technologies, their usability and their use by law students; albeit from a law librarian's perspective. Any further discussion regarding the products available and composition is outlined but not be explored in greater depth.

### 2.19.15    Rationale & Motivation

Legal information resource providers are one component of a quartet of stakeholders in this research study, however for clarity and neutrality, they were not included in a specific feedback or investigative work given this studies effort to err away from any commercial discussion. Nonetheless, how vendors build and market their products to law librarians and how they are used by law students is of utmost importance to this study as it is these products and their respective attributes that have a bearing on how they are accessed by the latter cohort and the rationale and drivers of the former to procuring them in the first place.

### 2.19.16    Deliverables

This research study will look to provide a list of recommendations for legal resource providers in what law librarians and law students found to be most positive and most negative during their inputs in the research component phases of this study. It is hoped that these deliverables will provide vendors insight into the perspectives and feedback from one of their most important customer bases.

### 2.19.17    Benefits

At a time where the number of products that provide legal information to legal professionals via mobile technologies is relatively high and the different technologies used to engage in this type of effort varied, it is important to give those tasked with producing these information resources with valued feedback on what works and what does not for law students.

Law students are the Lawyers or Legal professionals of tomorrow and so their experiences in using resources may ultimately dictate their future product of choice when working in the profession itself given their experiences in using these products when studying Law. law students are increasingly mobile and tend to use a multitude of technologies and communications channels to seek, obtain, use, create, edit and exchange information. How these use-cases can be best harnessed to provide best value-add for law students, law librarians and effective delivery for vendors is something that the recommendations list hopes to provide.

## 2.20  Conclusion of Literature Review

Given the initial expanse of the topic this research study covers, it was decided to look at information seeking behaviours in general and then narrow the focus down to categories and sub-categories that would provide more granular understanding of the different areas of literature that would be most relevant for examination. A selection of information models was reviewed, from this we learnt about how individual behaviours were mapped out and illustrated. We also looked at the various contextual models as well as those referring to a specific information need relevant to a specialism or profession. We also looked at the way in which society used various information resources and narrowed this down to students and where possible, law students. This included looking at electronic and non-electronic resources. However, despite our search, we were unable to find a model that specifically referred to law students as a cohort and that too, focussing on the use of a specific type of technology – our interest being mobile devices. We sought to exploit this opportunity by proposing and drafting a model that would address this perceived gap.

## 2.20.1 Identifying Research Questions

The research questions were identified from the information seeking models that were reviewed, the literature that was covered which included the various legal resources that were available, their respective formats and the contexts in which they were used in. This followed by an examination of the several types of technologies that were used to access these resources and how these technologies factored into the information seeking behaviour of law students. A closer study was done with mobile technologies and the impacts this had on society, gradually focussing on different age-groups and eventually students, especially those in higher education. Literature covering law students and their information seeking behaviours in the context of mobile technologies was limited to say in the least, hence the first attempts to identify questions which would underpin this study started to develop.

Questions focussed on the areas specifically to cover the use of mobile technologies by law students, the types of resources used via mobile platforms, if the use of these technologies had impacted the information seeking behaviours of law students and what implications there had been (if any) on law librarians for the provision of legal information services.

## 2.20.2 Identifying Research Objectives

The research objectives would be the product of the answers to the research questions. These objectives would be the deliverables that would be sought to determine this study a success and ensure that it delivered a satisfactory conclusion to this investigation but also provided a grounding to future research opportunities in this specific area of information seeking. Given the fast pace of mobile technologies and their evolving role within society, it was key to manage the changes to literature, to technologies being released on the market and their adoption by law students. This research sought to capture the bigger picture of mobile technologies and not focus on specific types of mobile devices as it was feared that this would place a risk to the study itself.

These objectives were set to facilitate that framework of understanding and knowledge

contribution. Eventually leading to activities which would include the detailed analysis of existing

legal information resources that law students used, the drivers for using these (and especially

electronic format) legal resources, the challenges law libraries faced to facilitate access to these

products together with their strategic approach to better provide these services, take the

opportunity to propose a new information seeking model that would primarily focus on law

students and accommodate for their specific information seeking behaviours in the context of

academic study and utilise this together with the learnings from the literature and wider research

activities to propose a series of recommendations that would better inform on the provision of

legal information resources as a service in a mobile context.

# 3 Research Discussion

## 3.1 Research Questions Overview

The research questions were built from the findings of the literature review. Information seeking models were examined, resources were assessed, legal information resources were investigated together with the various technologies used to gain access to them. From these areas, research questions were extracted which would help provide grounding to justify this research project. Questions which may have not been asked before or addressed only partially, leaving a gap in the understanding of this specific topic. In short, the information models, the resources, the legal materials and technologies were all present, but there was a lack of structure that brought these aspects together and provided a holistic and details view of what law students' information seeking behaviours looked like.

### 3.1.1 Research Questions

To meet our overall research aims (see Section 1.3.3) we have posed the following research questions which were built after our examination of the available literature and existing information models, whilst remaining within the scope of this study;

1.    How do law students use mobile devices?

   *Overall Aim: To find out about the information seeking behaviours of law students and the role mobile technologies play in this field*

2.    Which information resources do they access via mobile devices?

   *Overall Aim: To develop a strong understanding of the use of various legal information resources, how students use them, what works well, what does not and why*

3.    How has the use of mobile devices changed the information behaviour of law students?

   *Overall Aim: To develop a strong understanding of the use of various legal information resources, how students use them, what works well, what does not and why*

4.      What implications does this have for academic library and information services for law

        students?

        *Overall Aim: To obtain insight into the challenges Law Librarians face in the light of Law*

        *Students' use of mobile technologies within the Law Library domain.*

To answer research questions 1 - 3, we carried out an extensive literature review, which has

helped us understand how law students use information resources for their academic studies.

Studies on students in general have highlighted their usage of resources including mobile

devices for academic information needs. Although we have not fully answered these questions

we will use this knowledge gained to help identify a more aligned information behaviour model

for law students' use of mobile technologies for academic information seeking.

The model could be either an existing one within the literature, or an adaptation of one of our

own which may incorporate attributes of other established models.

We also undertook empirical research into how information resources conveyed by mobile

devices were used by law students and identified any significant changes from traditional

information behaviour. We then looked at our model (built from our knowledge of existing

established models and then attributes within these together with learnings from the research to

build one and be proposed by us) to see if any adaptations are required, to incorporate and

reflect additional information behaviours. Methodologies for the empirical research were

identified from the literature, and our method was justified. We then tested the new model –

which required an engaging approach - to see if it is viable and uses this also as a basis to

make recommendations for library services.

To answer research question 4, additional research was carried out as described above, to

identify the impact that delivery of information resources via mobile devices will have on current

services.

## 3.2 Research Objectives Overview

The research objectives were created to help guide this project towards addressing the research questions that were proposed. The objectives were set so to provide a rational means of achieving answers to unknown areas that this specific research project would be working with. In addition to this, the objectives sought to provide a value-add to the project where possible by seeking to deliver tangible evidence to the participating cohorts of the value of this effort and set the ground for future research in this area. With mobile technologies creating a significant disruption in the legal profession, the academic world and society in general, it was only natural to create a structured arena where additional study could leverage the findings of what would be uncovered and build upon that knowledge.

### 3.2.1 Research Objectives

For this study to answer the research questions stated, research objectives had been set which will provide a supporting parameter and scope so that the study remains on track to address what it originally set out to do so. As our examination of the literature progressed and our identification of the gaps therein evolved, it became apparent that we would also need to expand the number of objectives if we were to successfully answer the research questions as posed in Section 3.1.1. These objectives were mapped back to the overall objectives originally outlined in Section 1.3.  as well as the location of the findings within this thesis;

1.    To investigate the current legal information resources law students, use for their
       academic information needs, focussing on electronic resources used for the same
       purpose – in the context in which these are utilized.
       *Overall Objective: Carry out an initial investigation into the existing information seeking*
       *behaviours of law students using mobile technologies for their information retrieval*
       *needs. Found in Chapter 6 – Exploratory Study.*

2.     To examine the drivers of behind the use of these electronic (both mobile and non-mobile centric) resources by law students by obtaining background on the different types of technologies law students use and in what context.

*Overall Objective: Investigate the information seeking behaviour of Law Students using mobile technologies for their information retrieval needs. Found in Chapter 6 - Exploratory Study.*

3.     To assess the challenges law libraries may have faced on their existing work practices to meet students' use and expectations of mobile devices for study-related information retrieval.

*Overall Objective: Investigate Law Student academic information seeking and the use of legal information resources. Found in Chapter 8 – Detailed Investigation Phase I & Chapter 9 – Detailed Investigation Phase II*

4.     To outline any strategies law libraries may have adopted to incorporate mobile device technologies within their domain and future proof their space through this approach.

*Overall Objective: Carry out a detailed investigation for the same as above but with more emphasis on academic information seeking and the use of legal information resources. Found in Chapter 6 – Exploratory Study and Chapter 8 – Detailed Investigation Phase I & Chapter 9 – Detailed Investigation Phase II*

5.     To propose, develop and test a new model which will outline the information seeking behaviours of Law Students in the context of Mobile Devices using the research outputs from the Law Librarians, Law Students and literature review

*Overall Objective: Build a comprehensive information seeking model that will outline these behaviours of the said cohort and provide a greater understanding of the use of different technologies to access legal information resources in several contexts. Found in Chapters 6 – Exploratory Study and Chapter 9 – Detailed Investigation Phase II*

6. To use the model and research outcomes to deliver a set of recommendations to help Law Libraries be better informed on the information seeking behaviours of Law Students

*Overall Objective: Deliver a comprehensive list of recommendations for Law Librarians and Legal Information Providers on the use of legal information resources and how these can be refined and further developed. Found in Chapter 9 – Detailed Investigation Phase II*

## 3.3 Benefits of Research Study

The literature review showed a gap in knowledge in the understanding of how law students use mobile technologies to fulfil their legal information seeking needs. The approach, methodology, tools, findings and deliverables helped to provide a reference platform upon which study of students in other academic areas could be carried out. The research study retained its focus and worked to develop a strong understanding of law students' information seeking behaviours, using this knowledge to both propose a model that would provide a more focussed and centric illustration of this cohort as well as using this model and the understanding obtained to deliver a set of recommendations to the cohorts included within the project as well as give legal resource providers insight into a key market for their products.

## 3.4 Research Deliverables

A succinct and detailed review of the existing information seeking behaviours of law students within the HEI in the U.K. is delivered in this report through (Chapters 5, 6, 8 and 9). This was done by engaging with various parties within these organisations, including both law librarians and law students themselves. The review gave a balanced opinion on the use of mobile device technologies inside this context as well as outlines on the existing perceptions of the direction that this technology is taking in relation to legal information service provision.

The review also highlights feedback on the services delivered by legal information providers and given that several institutions participated in this study - a well-rounded and comprehensive outcome was obtained. Combined, these learnings provided us with the capability to deliver a set of recommendations for law librarians and legal information providers on the information seeking behaviours of law students in context of using mobile technologies. Adding to this, a need for a model specifically targeted towards the topic of information seeking behaviours of law students using mobile devices was required. With the knowledge gained form the existing models available in their respective subject areas and the output from the research, the model outlining this research study's cohort focus was formulated, drafted and proposed. Overall the key deliverables do not only serve to better inform HEI on the information service provision to law students, they also provide beneficial insight into law students' use of resources in the law library domain to both law students themselves and to vendors who provide these services. There is also the added benefit to the legal industry who can use this new knowledge to gain insight into the current developments in the learning scope of future legal professionals. Ultimately this research, it is hoped, will bring benefit to the LIS community in general.

## 3.5　Formulation of The Deliverables

The deliverables were formulated from the literature and the feedback from the research cohorts that took part in this study. The deliverables were built and refined throughout the study phases as our learning of the legal information behaviours of law students developed.

### 3.5.1　Building an Additional Information Seeking Model

The proposed model was built based on feedback from the cohorts that contributed to this study as well as using literature reviewed to provide a basis for the model's construction.

The model also sought to address gaps in the understanding of law students' information seeking behaviours and how they interact with the various technologies at their disposal and what drives these actions.

The model was built incrementally from feedback obtained from the research cohorts. This feedback coupled with the models already covered in the literature review was refined as the research study progressed and the understanding of how law students use various resources and the different technologies to access them developed. At each state of the research, we outlined our findings that would help in building the relevant attributes of the model so that it's evolutionary construction could be made clear. We also used the opportunity in the later stages of the study to refine the model for completeness.

The model was first constructed at the end of the exploratory study (See Section 6.8), following this, the model was refined throughout the reviews of the detailed investigation, with the focus group study (Research Instrument VI) (See Section 9.4). Here it was refined, and necessary adjustments made based on the feedback from law students who were invited to comment on the design and construction of it.

The proposed model was validated by asking law students to confirm their agreement or disagreement with the various attributes that it comprised of. A validation benchmark was established which outlined the addition of a new attribute if the threshold of law student participants reached a certain percentage of participation or rejection of the attribute if the percentage of participants was below the said threshold. (See Section 4.10.5 and Section 4.14.4).

## 3.5.2  Recommendations for Law Librarians

As mentioned, the recommendations were assembled from feedback obtained from the cohorts who will participate in the study. The recommendations were refined during the study phase and compared with feedback obtained from the research instruments regularly.

Input from law student participation was also considering as this provided a holistic perspective as well as a balanced view of the landscape this study examines (See Section 9.6).

The recommendations could be passed onto law librarians and Legal Information Service providers to help them better understand the wider view of how legal information resources are perceived, used, applied and expanded within the ever-changing mobile digital scene.

### 3.5.3  Recommendations for Legal Information Providers

Like the recommendations for law librarians, this list was specifically geared towards the design of legal information resources and will be the result of feedback from law students as well as law librarians. Functionalities, barriers, drivers, positive interface design, negative interface design as well as other "wish-list" items will be clearly articulated (See Section 9.7).

The attributes that will be the result of the recommendation list will, it is hoped, play a leading role in delivering a list that will better inform vendors on the strengths, weaknesses and future opportunities of design aspects of legal information products. It will also outline the level of maturity in using mobile devices for academic legal information seeking and enable vendors to harness these technological capabilities to deliver an improved end-user experience not only for law students but for the Legal Profession.

# 4  Methodology

## 4.1   Methodology Overview

We considered several methodologies before we embarked upon our research activities. Given the scope of the investigation we were conscious as not to limit ourselves to a particular methodology unless that said methodology would provide us with the flexibility and appropriate toolset which could help us address all the research questions we had proposed to answer together with the objectives we sought to meet.

## 4.2   Grounded Theory

Strauss & Corbin (1990) describe grounded theory as a "*general methodology for developing theory that is grounded in data systematically gathered and analysed*".

And that "*Theory (grounded) evolves during actual research, and it does this through continuous interplay between analysis and data collection*".

Grounded theory is termed to be well suited for examining integral social relationships and the behaviour of groups where there is limited exploration of the contextual factors that may impact individuals (Crooks 2001: From Calman 2015). Also (Glaser 1978: From Calman 2015) notes that this methodology can help in identifying the underlying process of what is going on, so that intervention to resolve the research participant's concerns can be facilitated. These statements did appeal to this study due to the key focus of this research being to explore the information seeking behaviours of law students in the context of using mobile devices for their academic information needs. Already through initial discussions with law librarians this specific research topic had started to accumulate significant interest, something which was not anew given the level of technology that had established itself within the fabric of a student's daily life (Anyangwe 2012).

Borgatti (2006) outlines Grounded theory as a method to develop a theory inductively from a corpus of data and Ke & Wenglensky (2010) describe grounded theory as *"…an investigative research method with no preconceived hypothesis and used continually comparative analysis of data"*, furthering that research utilising this method results in theory emerging inductively.

## 4.3   Deductive & Inductive Reasoning

Elliott & Higgins (2012) details the use of inductive and deductive inquiry as part of this methodology which aids in the analysis of the data gathered. And thus, we found that Grounded theory enables inductive enquiry to be used so that new theory and understandings can be obtained and asks for the research effort to identify the research questions/challenges from the participants' standpoint. This contrasts with traditional research methods which provide for deductive enquiry where existing theory is either proved or disproved with the research questions being identified from existing literature.

Our approach, however had previously utilised traditional research methods at the initial phases of the effort where we outlined our research questions and objectives; which in turn were refined after the literature review was completed. We also considered deductive and inductive reasoning within our research. Deductive reasoning, which at an elevated level, begins with the general theme and ends with more specific focus. It works from a more generalist perspective of a topic or argument towards a more specific goal – often referred to as a "top down" approach. The conclusion from the findings then ascertain whether the hypothesis proposed is proven or not (Burney 2008). The latter, inductive reasoning on the other hand moves from a more specific perspective to a more general one and works in the opposite manner, in that observations are made, patterns established, a hypothesis proposed and theory being the outcome – this is referred to as the "bottom up" approach (Burney 2008). For our investigation, we employed both deductive and inductive reasoning based on the use of identifying themes which we expected to find from the initial outputs of our research activities.

These themes would either be extracted from these reasoning methods and hence the use of Grounded Theory being applied in most part to this project. It should be noted that whist the utilisation of inductive and deductive reasoning is applicable, this research project does not have a proposed hypothesis, nor did it seek to develop one (Elliott & Higgins 2012) & (Hedarian 2016).

## 4.4   Delphi Methodology

The Delphi methodology was also considered given its application as a qualitative research methodology (Ali 2005). Skulmolski et al (2007) argued that the Delphi research methodology was well placed to develop an effective strategy to examine information systems. And even though this research project was not primarily concerned with the study of information systems per-se, given the context in which information systems were included within the topic, it appeared to present value and insight into building a good understanding of information systems. Which from thereon would help build further understanding upon the information seeking behaviour component – key to this project.

Poirier & Robinson (2014[B]) state that the Delphi method is well positioned to be used with a cohort which has expertise in the field being studied – in this case, law librarians who were one of the key cohort groups, with feedback from each participant being examined individually. Adding to this was the iterative nature which was employed within this methodology and this appealed to the way in which the questionnaires for the research cohort could be developed as the research progressed. This approach would allow the project to mature its research instruments as its understanding of the subject's landscape strengthened.

Also, due to the intrinsic nature of mobile technologies this was viewed as a more relevant approach and provide a framework through which the research instruments could be allowed to evolve, still within the research questions and objectives' remit.

There are other elements of this project that can be considered somewhat Delphic in approach and this includes (Hsu & Sandford 2007);

- **Anonymity** of participants and the basis of evaluating output on merit as opposed to the individual who made the feedback. In this research context law librarians and law students have been anonymised accordingly and by taking this approach more have been willing to participate in the research.

- **Iteration** of research methodology and research questions & objectives by way of reviewing previous output and refinement of said approaches to develop a stronger focus on the topic.

- **Controlled feedback** by informing the participants of the other participants' perspectives and provide opportunities for contributors to clarify or revise their feedback. The anonymised output from initial interviews with law librarians will be shared with other partakers and provide a neutral platform for much rich discussion and shared areas of interest within this research context.

- **Statistical aggregation** of the cohort response by way of taking responses from all the law librarians and all the law students who participated in this research to deliver a fair, comprehensive, all inclusive, nation-wide, holistic and diverse series of deliverables.

In their paper, Hsu & Sandford (2007) also state that;

"*The Delphi technique is a widely used and accepted method for gathering data from respondents within their domain of expertise*", they further that *"...to develop a full range of alternatives, explore or expose underlying assumptions, as well as correlated judgements on a topic using a series of questionnaires delivered using multiple iterations to collect data from a panel of selected subjects*".

In this research context, there is no ultimate desire to converge towards a specific opinion or consensus, nor to iterate the research tools upon the same specific members of the research cohort.

Since this research seeks to find out the information seeking behaviours of law students using mobile devices, even though some parts of Delphi were incorporated such as anonymity and controlled feedback, overall it was not applied entirely.

### 4.4.1 Slow Delphi

Slow Delphi (Poirier & Robinson 2014[A]) & (Poirier & Robinson 2014[B]) was also briefly reviewed but not applied. However, given that it (Slow Delphi) was a novel approach to Delphi, and had been devised to suit around a specific study, provided the motivation to incorporate the various research methodologies studied. Slow Delphi as a methodology itself was not applied but it's emphasis to innovatively apply the various segments of its method was leveraged in the form of us using this approach to incorporate parts of methodologies reviewed (Grounded Theory, Delphi and Empirical) so to provide a structured approach from which further research could be conducted – albeit in a procedural manner.

## 4.5   Empirical Research Methodology

Finally, the empirical research methodology (Moody 2002) was examined for consideration. It was found that this methodology was also applicable since its practice consists of using observations or collected data to answer research questions. These research questions had already been outlined before, during and after the literature review and thus provided that flexible framework from which further investigation could be carried out. Furthermore, the research instruments initially being that were used consisted of both qualitative and quantitative elements so that as many aspects were captured as possible from the output. Explorable.com (2009) states that this methodology helps build up on knowledge that is already known and that it can help better understanding and respond more appropriately to dynamics of situations. As for the specific elements that can be used for this type of method, (Moody 2002) provides guidance for this by stating that;

"*Qualitative methods tend to be more appropriate in the early stages of research (exploratory research)….*" And "*Quantitative methods tend to be more appropriate when theory is well developed, and for purposes of theory testing and refinement*".

Hence, given that our high-level plan was to employ a three-phased research cycle consisting of pilot, exploratory and detailed investigation stages, we chose to apply some elements of the Empirical methodology given the progression of our understanding of the law students' information seeking behaviour landscape that would be matured as our research advanced.

## 4.6  Mixed Methodology Application

Given the scope of the research topic, utilising mixed methods of both qualitative and quantitative data extraction together with inductive and deductive reasoning from the results as well as other elements of the three previously stated methodologies was employed. Guidance on how to apply these through various strategies was influenced by the literature found covering Grounded Theory, Empirical research as well as Delphi methodologies.

Grounded Theory

Elements of Grounded Theory were utilised when we obtained results from the questions fielded to the cohort. By using the data to provide a concise information set for analysis which was done using narrative responses as well as both numerical and graphical data, we could use inductive and deductive reasoning to identify key themes from the results. This output was also then summarised in the form of charts and graphs, then assessed for patterns and any behaviours that would go towards answering the research questions and corresponding objectives (Bruns 2010).

Delphi

Some influences from the Delphi methodology were also applied, in that, the research instruments used within the pilot study were given an opportunity to be refined and evolve; being re-applied in their adjusted form to the other stages (exploratory study and detailed investigation) of the research so to capture more relevant responses pertinent to the research questions and objectives (Skulmolski et al 2007) and (Poirier & Robinson 2014[B]). Additionally, the strategy of participant anonymity was used to encourage both law librarians and law students to contribute to the research (Ali 2005). The use of the Delphi methodology also helped justify the approach of having three stages of the research study which would mature and develop as we gained a better insight of the research topic at hand and aligned our research instruments accordingly to provide a stronger focus – which in turn would be used to help address the research questions and objectives already outlined.

Empirical

The rationale for selecting elements from the empirical approach was down to the relevance within which the methodology could be applied given the proposed observations from the cohort that would be obtained (Moody 2002). Many assumptions had been made from the initial literature review which in turn gave way to the formulation of the research questions and objectives. This included looking at the best way to employ both quantitative and qualitative methods to meet the said research questions and objectives. This approach also provided a framework to deliver a well-grounded analysis of the result output and then allow for investigation to be conducted from the various data obtained from further studies.

Mixed Methods

These observations were then used to, initially, establish a proposal outcome or delivery of the research study and secondly, to test this delivery and its validity within the context of the research questions. Thus, although several methodologies were examined, various components from the methods were extracted and applied to this project, some more than others.

As our knowledge gained from the outputs of the research instruments evolved, this, together with the learnings from the literature review helped build a proposed information seeking model which was then tested with the detailed investigation phase of the research (Moody 2002). Moreover, the results from both the exploratory and detailed investigation stages provided a holistic perspective of the research landscape so that the set of recommendations for the cohort as previously outlined as one of the objectives of the study, could be drafted. McCallin (2009) suggests that research approaches should not be limited to a research methodology if it (the method) is felt to be constraining. Given that this project sought to benefit from the utilisation of many different methods and approaches, we elected not to strictly apply a single methodology but exploit several aspects from a variety of them. The approaches to obtaining the content that comprised of the research instruments is outlined in the following section within this chapter and the corresponding illustration (Fig. 40) highlights the various elements from the three different methodologies that were utilised for this purpose.
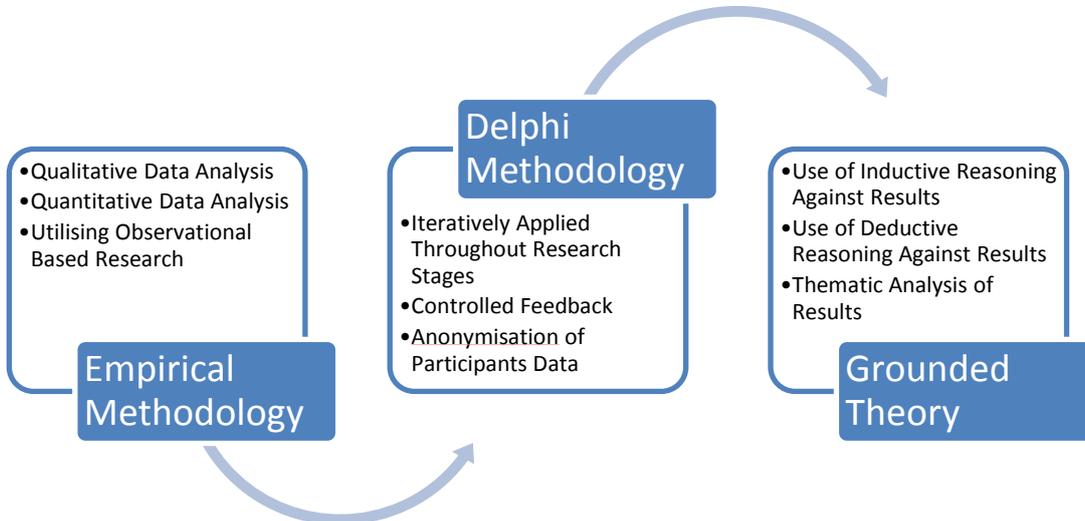


Figure 41: Mixed Methodologies & Their Attributes

## 4.7 The Research Cohort

This section outlines the research cohorts which participated in the study. It also provides a brief on the makeup of each cohort, the group's background and why it was chosen as such.

### 4.7.1 Rationale for Selection

The first thing we needed to do is find a suitable cohort for participation. The natural choice was to work with institutions where legal resources were most used and as a result our focus began on engaging with higher education institutions (HEI) and ask for their participation.

Within HEI we had two parties would regularly come into close contact with legal information resources, academic law librarians and law students. Both groups were chosen so that a balanced view of the existing state could be obtained. Our research required inputs from law librarians as well as law students. The former was to provide a service provision perspective of the use of mobile technologies to access legal information resources, whilst the latter cohort would give insight into the actual user-experience of such services and accessing them in a mobile context.

By engaging both law librarians and law students; be it from either a provision viewpoint (Law Librarian) or a customer's viewpoint (Law Student), their respective outputs could present a comprehensive opinion and insight in the topic being researched. This in turn would feed into the deliverables that would-be part of the outcome of this research project and give both law librarians and law students a stronger understanding of the use of mobile technologies in this landscape. It would also help better inform legal information service providers on the user behaviours of their products when accessed through mobile devices through feedback gained on resource use, functionality and preferences.

The rationale can be best illustrated in the following Venn diagram (Fig. 41) which shows the overlaps these two groups have with legal resources;
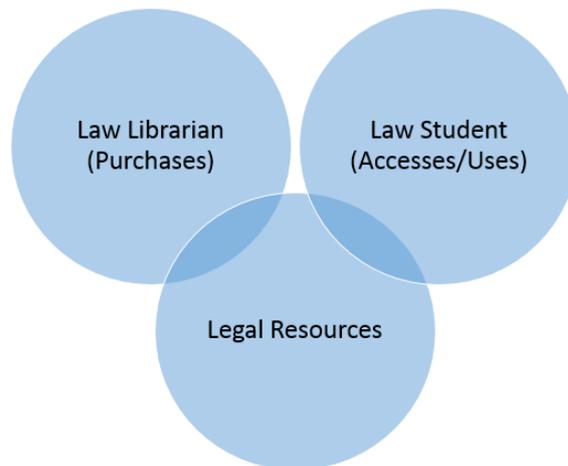


Figure 42: Venn Diagram on Rationale for Cohort Selection – Showing Overlaps

With us now having a balanced research cohort that would provide perspectives from both service provider and service consumer, we would have a stronger chance of obtaining a balanced understanding of the user behaviours of mobile technologies in the context of accessing legal information resources for academic study.

## 4.7.2  Higher Education Institutions (HEI)

HEI were chosen to provide the cohort as the emphasis of the research was to investigate the Information Seeking Behaviours of law students in the context of mobile devices. Thus, it was natural to look at HEI within the U.K. where Law was taught. The number of HEI that were approached for the pilot study showed the significant interest on the topic which the study proposed to cover. The pilot study (See Chapter 5) consisted of only one participating law librarian whilst a further 12 law librarians from a variety of HEI took part in the exploratory study phase (See Chapter 6). Of these 13 bodies, 12 were based in England with 4 located in London alone (1 London based HEI was already covered in the first pilot study), 1 was based in Scotland. 11 were classified as "Old Universities" [A] and 2 were classified as "New Universities" [B]

For the detailed investigation part of the research project (See Chapters 8 & 9), initially, over 30 HEI had expressed an interest in contributing and this group consisted of institutions from England, Wales, Scotland and Northern Ireland – giving a fair representation of the UK student and HEI body. These institutions were engaged once that phase of the study was in progress and out of these, only 13 eventually took part. The total HEI breakdown of participants for the pilot, exploratory study and detailed investigation phases can be summarised as shown in (Table.1).

| HEI Location | University Type | Count | Percentage (%) |
| --- | --- | --- | --- |
| England | Old University **A** | 12 | 46% |
| England | New University **B** | 8 | 31% |
| Wales | Old University | 2 | 8% |
| Wales | New University | 0 | NIL |
| Scotland | Old University | 3 | 11% |
| Scotland | New University | 0 | NIL |
| Northern Ireland | Old University | 1 | 4% |
| Northern Ireland | New University | 0 | NIL |
| **TOTAL** | | **26** | **100%** |

Table 1: Higher Education Institutions (HEI) Participant Breakdown

**NOTE**:

**A**: Old Universities are defined as HEI founded prior to 1992, **B**: New Universities are defined as HEI founded after 1992

*Source:* http://www.thecompleteuniversityguide.co.uk/universities/choosing-the-right-university/type-and-size-of-university/ *[20 September 2014]*

## 4.7.3  Academic Law Librarians

Academic law librarians were selected to be included in the research cohort due to their role within the academic legal information provision domain. Law librarians were often viewed as the "Gatekeepers" of legal information (Allbon 2012) and (Kerins et al 2004) between the source of information and the Law Student, working in law libraries; widely regarded as the research laboratory of the law school (Fariss 2012). Law librarians are at the forefront of legal resource provision given their role in maintaining information sources that form the corpus of legal knowledge.

Their exposure to the variety of legal resources, types and formats is widely documented and acknowledged (Fariss 2012) & (Wu 2005). It was therefore determined that the input of this group of specialists (law librarians) would provide another dimension to the research study and give them a platform to voice their professional opinion on the impact mobile technologies had made in the law library domain. They would also help provide a stronger insight into their existing resource and information service provision together with the holistic perspective around how resources were procured, delivered, managed, promoted and utilised.

## 4.7.4  Law Students

Law students formed the second part of the cohort group, even though Law Librarians could provide a significant amount of feedback on the insights of Law Student's Information Seeking Behaviours within the legal academic information scope, and the context of using mobile device technologies, the inclusion of law students' feedback would add value and depth to the results. The amongst the key benefits for making this choice were;

- Law students would be able to give feedback on their interaction with mobile device technologies in both social and academic contexts

- Law students would outline the other technologies used to obtain legal information

- Law students could give insight into their use of these technologies and provide more structure to the perception and perspectives that would be ascertained from the feedback from law librarians

- Law students may provide a differing opinion on topics within the realm of this research subject to that of law librarians and this would be of interest

Law students overall would provide value add to the usability of legal information retrieval systems and their position when used in the mobile device context.

Law students may also use this research as an opportunity to provide their views on their academic institutions legal information service provision and provide the said academic institution with feedback that could help towards developing a strategy or strengthening an existing one that would address the use of mobile technologies within the law library domain. Law students would help give a greater understanding of how the various information resources (be it paper-based or electronic) provided to them were seen, used and exploited together with their self-observations on how these resources fitted with their personal academic research scope in the context of mobile technologies. For this study, a law student was someone who was engaged in a course whose major component consisted of the study of the law, at a higher education institution in the UK.

## 4.7.5   Cohort Summary

Given that we had obtained participation from a total of 26 HEI spanning the U.K., our research was provided with as fair representation of the U.K. academic law library landscape as possible within the timeframes that this project was allocated. From each of these institutions, an academic law librarian participated, representing their department and providing highly valued and immersive feedback on their respected employers role in the procurement, management, support, service, provision and promotion of legal information services to their law student population. Products that these institutions stocked included a variety of types, formats and delivery methods, these would be covered in the discussions that followed as part of the research activities. For law student participation, not all HEI were represented due to the logistical challenges of obtaining student engagement in the studies, hence only a subset of the participating HEI's law students took part in the research study. And whilst the law student cohort was not as geographically diverse as that of the law librarians, we still managed to obtain a sizable amount of law student engagement which also helped provide a significant representation of the country's law student corpus. Our rationale and strategy for this approach can be summarised in the following illustration (Fig.43).
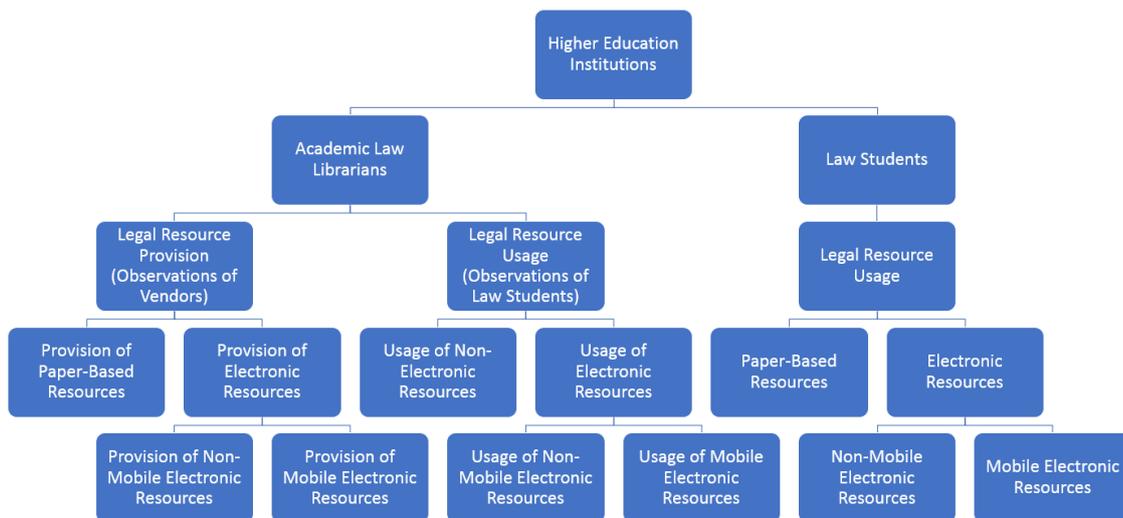
Figure 43: Cohort Research Inputs Summary

## 4.8 Risks & Ethics

It is known that with every research study involving individual subjects as participants there is a certain element of risk. This is more so in longitudinal studies which span a considerable period and the potential loss of participants can inadvertently bias the research results (Guralnik & Kritchevsky 2011). However, to mitigate this risk, each component, be it people or technology was identified, and its respective risk was assessed with measures taken to mitigate accordingly.

### 4.8.1 Cohort Risk

The cohort consisted of both academic law librarians and law students. Given the geographical spread of the participants as well as the anticipated changes that come naturally in the courses of these individuals' lives such as law students completing their courses during participation in the research or academic law librarians leaving their positions during their contribution in the questionnaires and interviews. These risks were overcome by capturing feedback as quickly as possible and completing any activities that required the input of the respective persons who were part of the research.

### 4.8.2  Higher Education Institutions (HEI)

There was a risk of the academic institutions withdrawing from the research study, consequently to mitigate this risk a total of 38 HEI where law courses were taught had been approached from across the U.K. Whilst 28 agreed to take part, only 2 HEI from within this group withdrew from the research due to unknown reasons and this risk was duly mitigated - given that we managed to have active input from a total of 26 HEI overall for the research study – providing us with a sizable cohort.

### 4.8.3  Academic Law Librarians

Academic law librarians were key contacts within the realm of HEI that we approached, these individuals thus represented the HEI and their respective participation throughout the study. Hence if the law librarians participated in the research study, they were also asked to obtain approval from their respective bodies to approve their organisations' participation for both themselves and their law students' where required and possible. It was noted that some law librarians could only offer their participation and not that of any law student, however this risk was mitigated by the fact that many HEI had been able to allow their law students to contribute to the study.

### 4.8.4  Law Students

Most HEI that agreed to take part in the research also agreed to allow their law students to also be included in questionnaire sampling if needed. Although given the high numbers of HEI who agreed to join, only a select number of law students from some of the HEI were eventually included in the research study. The number of student participants, together with the diverse study modes, gender and other attributes went towards ensuring a fair representation of the law student cohort for the U.K.

## 4.9  Technology Evolution

Mobile technologies have been developing at unprecedented levels over the past few years and the scope on which they penetrate society and organisations is ever expanding (Toffler 2014), (Pullur 2014) & (DeGusta 2014). Adding that already informal discussions with members of the cohort revealed that it was not only smartphones that were being used in a mobile context but also tablet devices and to a limited extent, feature phones. Therefore, it was decided not to limit the scope of this research towards a subset of mobile device technologies but retain the reference to mobile device technologies in general so that any new development that may arise due to technological innovation within the duration of the research study could be fairly accommodated into the research itself.

### 4.9.1  Mobile Technologies

The mobile technology landscape continued to change over the duration of this research project. Products that were market leaders when the study was initiated had a notable change of their positioning by the time the research reached its near-end. This was anticipated given the quick-changing nature of this market segment. Thus, the reference to smartphones was widened and included mobile devices and this was noted in the exploratory study after evidence suggested that both law librarians and law students were already referring to other devices outside the smartphone category to their responses.

### 4.9.2  Smartphone Development Risk

When this research project was first planned back in 2012, the Blackberry smartphone was one of the leading devices on the market at that time. Its popularity was initially driven by its ability to utilise email functionality in a portable and secure format via its Blackberry Exchange Server technology – this played a key role in making this device a staple for many corporate entities.

However, it was not until the advent of RIM (Blackberry's parent company) who decided to enter the consumer market by producing more varieties of its handsets. Services also started to appear popular amongst the consumers, namely Blackberry Messenger – though these proved to be more counterproductive in some extreme cases where BBM was used to organise civil disorder (Hill 2013). Unfortunately, poor corporate decision making and highly competitive rivals such as Apple and Samsung led to the Blackberry device losing its market share for both consumer and corporate markets. It failed to make that critical change in its product line and provide consumers with what they really wanted – choice. That choice was largely driven by both IOS and Android's ability to channel a multitude of applications and games through a comprehensive collection library. Blackberry struggled with this due it is rigid procedures and methods which stifled creativity and product design. Consequently, it found itself in the hands of a new consumer trend, society's taste for technology had considerably matured and the desire for a highly functional and capable device put pressure on employers to provide just that and not simply hand out, a perceived, dated technology simply to avoid the change (Ladurantaye et al 2013).

Blackberry's failure was due to its inability to adapt to a quickly changing consumer market driven by the thirst for more technology and innovation (Arthur 2013). The manufacturer feeling "safe" simply due to its traditional dominance of the mobile email market together with ill-fated attempts to compete with more seasoned manufacturers in the consumer market was a poor approach which played a significant part in its eventual demise (Vauhini 2013) and (Ladurantaye et al 2013). Android and Apple IOS based devices quickly became the dominant players in the smartphone market and this too was mired in shifts which often resulted in either platform losing or gaining ground to the other. The key difference between the two being that whilst the former licensed its operating system to be used by third-party manufacturers of smartphones i.e. Samsung, the latter used a more proprietary approach and build both operating system and hardware end-to-end.

What has been noticed is that the market continues to expand and become more segmented as an increasing number of manufacturers enter the domain to compete in a highly lucrative business area. Android is a platform that continues to dominate the market – due to its non-proprietary approach in allowing third-party manufacturers to use its operating system on their handsets (Statista(i) 2017). Apple IOS' loss of market share against Android led to calls for the former to license its operating system to other hardware manufacturers to become more competitive;

"*If Apple shared its software … it could own a decent share of a large market instead of dominating a small market.*" (Thakker 2016).

These suggestions raised more uncertainty in the market and did have an impact on this research project as our initial aim was to focus on the use of smartphones by law students in an information seeking context. Furthermore, both Android and Apple based devices entered the tablet market, this shift was again replicated in the wearables sector, with the Apple iWatch facing competition from the likes of Samsung, LG, Sony, Fossil, Asus, Huawei and Google (O'Malley & Faulkner 2017). Altogether these activities led to the research project shifting its focus from smartphones to that of Mobile devices – this would then include smartphones as a subset of a larger group of technologies that would include tablet devices and if required, wearable technologies.

### 4.9.3  Ethics & Anonymisation of Participants

Research ethics was a key aspect to consider prior to us engaging with any external parties regarding our research. We accounted for the need to ensure that risks associated with research of this type were identified, recognised, described, addressed and mitigated as best as possible (George 2016). A well summarised line as written by Israel (2015) illustrates our efforts;

"Protecting Others, Minimizing Harm and Increasing the Sum of Good"

<u>Anonymisation</u>

Our approach to consent involved sending a correspondence to the law librarian upon learning of their contact details openly available on their respective academic institutions' website. We introduced ourselves by way of email and provided an overview of our research, efforts, purpose together with assurance of our commitment to maintaining high ethical standards throughout our approach and engagement. We also informed potential participating law librarians that their inputs would be anonymised given our realisation that there was a hesitation of most participants in working with us as they simply did not want to be identified. We took appropriate measures as a result to ensure the anonymity of all participants. Our goal here was to establish trust which would lead to greater cohort participation becoming achievable (Kaiser 2010) & (Israel 2015).

<u>Research Integrity</u>

Considering of the risks that any breach of participant anonymity posed through consequentialism (UKCEN 2017) we sought to ensure that participant integrity was secured. This was achieved by assigning both academic law librarians and law students a two-digit alphabetical code which was then assigned to the HEI they were from. This code was then used when referring to participants from this specific HEI through the study. Equally qualitative and quantitative research parts were checked to ensure that no identification could be made possible of the participants, be it by direct, or deductive disclosure. And whilst it could be relatively easy to report inaccurate data and falsification of results to make it easier to align with our research objectives and questions given that our results would be anonymised, we addressed this risk by enclosing our raw data and submitting our written research results as evidence of our works.

We also used electronic tools for some of our questionnaires and these were fully traceable to the original participant who was assigned a participant code from the outset. Interview questionnaires and other non-electronic result gathering means were also stored electronically and verified with the participants for validity with evidence of this also submitted digitally within the appendices of this report (Stuart 2011), (Hill et al 2014), (Sinaga 2015) & (Stacey 2016),

Participant Availability

We also took into consideration the availability of participants given the timelines of academic calendars and so planned our research activities around these as best as possible.

Fair Representation

Sample representation was also a concern we recognised and as such looked at including law librarians from a wide range of HEI throughout the U.K. and correspondingly sought to engage with law students from within the same group of HEI that the law librarians were part of.

Informed Consent

Our approach to obtaining informed consent was through the use of written correspondence with the academic law librarians where they would be sent copies of the research participant form and they would be given an opportunity to either opt-in or opt-out of the study, they were given a further opportunity to opt-out after the interview with them and when they received a draft write-up of the interview notes. For the participating law students, given that our engagement was via electronic questionnaires, we incorporated an appropriate "tick-box" which made it explicitly clear that by proceeding with the questionnaire they are agreeing to taking part in the research study.

Our research considered harm in the sense that participants may sense that they were inconvenienced, their time was lost, the research intruded on their personal space and they felt uncomfortable participating in the research activities (Laerd 2012) & (Israel 2015). We also considered that the research needed to avoid any practices that may give rise to allegations of deception. Thus, we employed the practice of anonymisation and informed consent and the right to withdraw to address these risks

## 4.10  The Research Instruments & Methods

In this section, we introduce the research instruments that were employed for our research activities and then move onto the rationale for their inclusion and describing them in detail as well as the methods used to field, retrieve, extract and analyse our results.

### 4.10.1 Research Instrument Strategy

To provide a visual illustration of the research approach a triangulated tactic (Fig.44) was eventually employed whereby the quantitative and qualitative analysis was split into groups and their deliverables identified accordingly within the scope of the research study (Poirier & Robinson 2014[A]). For the pilot and exploratory stages, the tools used were limited to electronic questionnaires and face-to-face interviews. For the detailed investigation, this was expanded to include more of the same as well as the use of a focus group exercise. These instruments were laid into the following diagram to show our research strategy and how these instruments related with the research questions and objectives with the focus areas being;

- Device usage and preference
- Library resource provision and strategy
- Law student information seeking behaviour and search preference
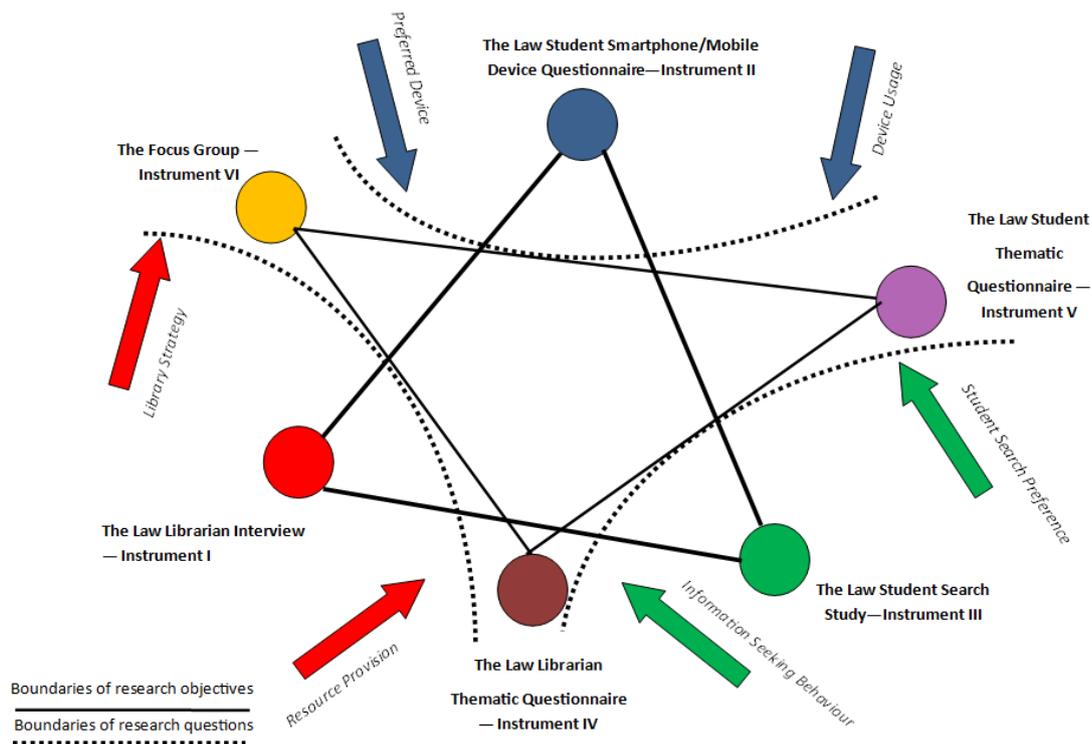
Figure 44: Dual Triangulated Diagram – Showing All Research Instruments

## 4.10.2 Interviews

One of the research approaches used was that of interviews; which have been widely recognised as a suitable means to obtain qualitative data (Edwards & Holland 2013). We sought to ascertain responses in a semi-structured format which would allow law librarians to respond to questions in their own terms as well as provide us with reliable qualitative data (Cohen 2006). This method was utilised as we sought to provide a relatively open platform from which a meaningful discussion could take place where law librarians could speak about the research topic whilst use the questionnaire to maintain a structure which would ensure that the output was as relevant to the research as possible. Given that our cohort was in various parts of the U.K. the use of telephones to hold these interviews seemed to be a logical choice as this allowed law librarians from a diverse geographical location set to participate in the study and within the project timelines (Opdenakker 2006). The tools used for this research instrument included;

- A Smartphone; to record the audio output of the interview with the law librarian

- A notepad and pen; to take notes during the interview

- The interview questionnaire printed out with spaces for the interviewer to take notes of the law librarians' responses to each question

- An information sheet for the interviewee outlining the research project and other associated details

- A consent form for the interviewee to read and sign

The actual content of the questionnaire remained the same for all three research stages (Pilot, Exploratory Study & Detailed Investigation) albeit some minor changes outlined in (Section 5.2.7).

Research Instrument I - The Law Librarian Interview; aimed to provide background information on the participating higher education institutions (HEI) existing resource portfolio, service delivery methods, provisions for mobile devices (if any) and strategic perspectives and planning on smartphone technology being used within the library context. Any challenges that mobile technologies and their resultant use within the law library landscape was also captured. This research instrument was of qualitative substance through which an engaging and content rich discussion could be built. The output was coded in an inductive way with themes developed through emergence from the discussions with the law librarians (Fereday & Muir-Cochrane 2006) & (Gabriel 2013) and the data analysed to provide a flexible method from which the content could be examined (Braun & Clarke 2006). Even though there were risks that the themes may not be correctly identified, efforts were made to ensure that the themes outlined were those built through wider consensus amongst the responses from the law librarians who participated (Stables 2014).

### 4.10.3 Questionnaires

Our second approach included the use of questionnaires which was utilised with research instruments II and III; albeit in an electronic format. These were built using the eSurveyCreator tool that was available to the research student as part of City University's annual student subscription plan. Using electronic questionnaires to obtain feedback from many law students covering a variety of study modes, geographical locations and working schedules provided the flexibility needed so to assure as much participation as possible (DeFranzo 2012) & (University of Sheffield 2012). Although there was a risk that using electronic questionnaires would require the participants having access to the internet and a device that would facilitate the engagement, it was assumed that most if not all the participants would have access to such technology that would allow participation. Checks were also carried out on the formatting of the questionnaire on many different technologies to ensure the questionnaire displayed correctly, access to it was tested on a smartphone, tablet device and laptop for preview purposes. Also, there were risks which covered incomplete results, non-participation and students creating multiple responses between themselves (Vaske 2011), but these were overcome by using a tool that would be able to identify each unique participant as well as responses that were incomplete and mark them for discarding accordingly (Schenk 2014). The research instruments themselves consisted of mainly quantitative questions with research instrument III also containing qualitative enquiries to help build more of an observational output for thematic analysis (Mora 2010).

This in turn would help us build a more comprehensive examination of the information seeking behaviours of law students using mobile technologies and facilitate further research opportunities where identified. As a motivator to contribute, law students were offered a £5 Amazon gift voucher for completing the questionnaires comprising Research Instruments II and III; this approach was pre-approved from the City, University of London's Ethics Committee and can be found in Appendix B.3.

Research Instrument II – The Law Student Smartphone Questionnaire; was proposed to provide the quantitative outputs for the research. This comprised of a multiple choice set of questions and was fielded to many law students from a subset of the HEI who participated in the research study. The students consisted of as many different study modes and academic groups as possible thus providing as fair representation of the law student population as possible. Logistically, distributing paper-based questionnaires would have proven to be very time consuming and challenging so an electronic format and distribution method was utilised; and this too was made available via a Web link so that participation would be as accessible as possible. Some questions within the research instrument were based on a Likert Scale. This approach was taken due to the potentially large amount of quantifiable data that could be extracted, providing attitudes towards the subject in discussion together with frequency output as well as the opportunities of further deep analysis that quantitative data could present (LaMarca 2011) & (McLeod 2008). An appropriate tool for formatting the questionnaire was chosen so that it could be accessed from a mobile device to maximise the chance of student participation and leverage mobile technologies effectively as an example for this study itself. And, we ensured that the questionnaire was not excessively long yet was organised in such a way so to obtain as much data from the participating law students as possible. It was also noted that the use of radio buttons would allow law students to respond quickly to some questions for this very reason.

Research Instrument III – The Law Student Search Study; designed to establish the information seeking behaviours of law students when searching for information to "fill the perceived knowledge gap" faced in the given situation (Ruthven 2010) also to help establish why law students may consult a set of resources over another.

A combination of both qualitative and quantitative elements was utilised to provide some structure to the question set yet also empower students to make open comments within the context of the study.

Themes were inductively outlined (Gabriel 2013) with the corresponding analysis of the qualitative data also conducted during the examination of the results for this research instrument (Fereday & Muir-Cochrane 2006).

This research instrument sought to find out about law students use of various resources, tools and technologies available to them when conducting research for their studies.

Hence a fictional scenario was presented to the partakers to provide context. The approach was to ask law students to complete the questionnaire with the mindset as if they were researching for an assignment and sought to scope out their information seeking behaviours as such.

The questionnaire also sought to ascertain whether smartphones and other mobile devices had a played a role on this specific research experience in context of the question and if so, what the focus would be and to what extent. By using a variety of both closed-ended and open-ended data collection methods, we managed to collect a set of data that could be compared to the qualitative findings from research instrument I and help ascertain any similarities or differences in the observations between both cohorts (Wisdom 2013).

## 4.10.4 Thematic Interviews & Questionnaires

The outputs from research instruments I, II and III were used to identify key themes that were appearing to be consistent amongst the law librarians and law students. These themes were then used to build further questions which would help us explore these topics in depth and went onto become research instrument IV – law librarian thematic questionnaire and research instrument V – law student thematic questionnaire.

Research Instrument IV – The Law Librarian Thematic Questionnaire: like research instrument I, research instrument IV took an interview-based approach and the participating law librarians were a subset of those who had already contributed to research instrument I in the detailed investigation.

Research instrument V however was an electronic questionnaire based on a similar structure to that of research instruments II and III.

It was distributed to a subset of law students who had participated in research instruments II and III in the detailed investigation and had expressed their willingness to be part of a further study. Research instruments IV and V were applied in the detailed investigation stage of the study only (see Chapters 9 and 10).

The questions were created after a thematic analysis of the inputs of Research Instrument I (The Law Librarian Interview) in the exploratory study and detailed investigation revealed many consistent matters that continued to arise throughout the responses received (See Section 6.4.7). These results were then grouped into "themes" which were then used as a basis to build the interview questionnaire that formed this research instrument.

The primary focus of this thematic questionnaire was to look firstly at how law librarians perceived the growth of electronic resources, the aspect of access vs. ownership and secondly law students' use of electronic resources via Smartphones and other mobile technologies and how this was impacting their (law students') information seeking behaviours.

These two themes were identified through the summary of the results of the three study phases and the discussions with law librarians who participated in these stages of the research. These themes were repeated throughout the discussions and were ascertained in the conclusion of the exploratory study where they were selected as a basis for further question fielding. The first theme was inductively identified from the responses to the interview questions. Whilst the second theme was deductively outlined due to our desire to answering the research questions of the project (Elliott & Higgins 2012) & (Hedarian 2016).

Research Instrument V – The Law Student Thematic Questionnaire; was an electronic questionnaire built to extract qualitative responses. Like research instruments II and III, the rationale for using electronic media to distribute this questionnaire was to capture as many responses from law students as possible.

By the time this questionnaire was ready to be deployed many law students had completed their exams and were unavailable for participation. Hence face-to-face interviews or any similar inter-personal type of interaction method was proving to be difficult. Using electronic questionnaires provided more flexibility.

This questionnaire was designed based on the responses received from research instruments II and III. The two emerging themes were found from the analysis of the results during the exploratory study and detailed investigation, these were rationalised to;

The use of mobile technology - In that whilst research instruments II and III had provided us a lot of information about the use of mobile technologies by law students, the questions were not as concentrated so to provide us with a more relevant and direct response which could be mapped onto the research projects questions and objectives. By designing questions with a more concentrated focus, we could leverage the responses and gain a more detailed insight into this specific area.

Design of electronic resources - Whilst responses to research instruments I, II and III provided understanding into the use of electronic resources for academic studies, we still found gaps in our understanding. And where some legal information resources were mentioned by law students, we still required details on what made these resources popular and what didn't, thus another inductively introduced theme based on the design of electronic resources for law students was employed in this research instrument (Elliott & Higgins 2012).

## 4.10.5 Research Instrument VI – The Focus Group

Our third approach was that which included the use of focus groups - which in relation to this research - was hoped to deliver a more in-depth discussion platform from which law students' perspectives of legal resources and mobile device technologies could be extracted (Von Seggem & Young 2003).

The rationale was to use the opportunity to compliment the findings from the other research instruments. The results of the discussion were evaluated and manually coded so that themes could be built and if possible aligned to the research questions (Von Seggem & Young 2003). To obtain participation in the study, law students were offered financial remuneration for their time and approval for this was obtained from the relevant governing authorities beforehand.

This final component formed research instrument VI – which was used during the detailed investigation phase of the study and it was constructed on the approach model like that of research instruments I and IV – both interview-based methods. Although the questions were structured, the discussion permitted a free-flowing format provided the meeting remains within the scope and remit of the research. Results previously obtained from research instruments II and III from the exploratory study were summarised and shown to the focus group participants beforehand to use as a basis from which the meeting could build upon to formulate a productive discussion. During this time, the proposed Law Students Information Seeking Behaviour (LSISB) model was also presented and partakers were invited to comment on the various attributes which formed part of the model.

Their feedback and recommendations were used to refine the proposed model accordingly. We were conscious that the students could become intrigued with each other's opinions and observations when discussing mobile technologies and the use of these in the context of academic study, thus we encouraged energetic debate where possible, provided the effort remained within the remit of the subject boundary (Barbour 2007).

The focus group interview lasted for approximately 2 hours and participants were reimbursed for their time with the general theme being to solidify the understanding of law students' information seeking behaviours using mobile devices in the academic context.

Research Instrument VI – The Focus Group; was a paper-based questionnaire that would be structured around a group-discussion. The question content and structure were assembled from outcomes provided through the responses to all the other research instruments, especially IV and V.

Where not only would law students be asked to provide further granular yet exploratory feedback on their view of legal information resources and their use of mobile technologies to access them but also to find out what they would deem as the ideal information resource and outline any key drivers that would encourage the use of such services. Like research instrument III, the focus group questionnaire contained both qualitative and quantitative elements.

The approach and setting was also emphasised as this would be a group exercise where peer responses based on qualitative data could guide the overall discussion. Law students from a variety of stages within their courses were approached so to obtain as fair representation of the cohort as possible. This instrument was used to gain more holistic and user-centric feedback on the legal information resources and the various tools and technologies law students used to access them. A qualitative method was applied for this part of the instrument. Whilst to take the opportunity to obtain first-hand feedback on the proposed Law Student Information Seeking Behaviour (LSISB) model. There were also a number quantitative set of questions based on the attributes contained within the proposed model that were presented and the responses used to quantitatively analyse for any validation or changes that would be required to the model.

This approach helped us refine the proposed model further for completeness before formally proposing it as part of a research objective.

## 4.11  The Three Research Stages

The research was conducted in three stages, first, the pilot study provided a broad background of the area that this study sought to research upon, lessons were learnt, and innovative approaches applied whilst existing methods updated, only research instruments I and II were utilised here. (see Chapter 5).

Second, this was followed by the exploratory study which covered a larger spectrum of the cohort and delivered a far more focused output on the topic of discussion. At this stage, research instrument III was introduced in addition to instruments I and II (see Chapter 6). And third, the detailed investigation study was carried out using the output from the exploratory study as a basis for more focus and concentration on the topic. Here it was decided that another 3 sets of research instruments consisting of two further questions towards law librarians, law students and a research instrument providing a focus group discussion would be employed. These were research instruments IV, V and VI respectively and were applied in addition to the existing research instruments for the detailed investigation throughout (see Chapters 8 & 9). Overall, our research journey consisted of using a mixed methodology approach which included elements from Grounded Theory, Empirical Research and Delphi methodologies, utilising both manual and electronic methods of data gathering combined with evaluating the results through both thematic analysis for qualitative feedback and numerical analysis for quantitative data; which in turn would be analysed through both inductive and deductive reasoning. Summarising the research instruments together with the respective research stages that they were part of we provide the following outline;

- **Pilot Study**

  - Research Instrument I – The Law Librarian Interview - Qualitative

  - Research Instrument II – The Law Student Smartphone Questionnaire - Quantitative


- **Exploratory Study**

  - Research Instrument I – The Law Librarian Interview - Qualitative

  - Research Instrument II – The Law Student Smartphone Questionnaire - Quantitative

  - Research Instrument III – The Law Student Search Study – Qualitative/Quantitative

- **Detailed Investigation**

  - Research Instrument I – The Law Librarian Interview - Qualitative

  - Research Instrument II – The Law Student Mobile Device Questionnaire - Quantitative

- Research Instrument III – The Law Student Search Study – Qualitative/Quantitative

- Research Instrument IV – The Law Librarian Thematic Questionnaire - Qualitative

- Research Instrument V – The Law Student Thematic Questionnaire - Qualitative

- Research Instrument VI – The Focus Group – Quantitative/Qualitative

## 4.12 Rationale for Research Approaches Outline

An outline of the rationale behind the research approaches utilised for this study is provided below. It must be noted that the same research approaches were used both for the pilot study (See Chapter 5) and the exploratory study (See Chapter 6), those being interviews and electronic questionnaires. Although several additional research methods were also considered such as heat maps (Chapman 2010), diarised studies (Corti 1993), (Sohn et al 2008) & (Jacelon & Imperio 2005) and focus groups (Walden 2006). In the end, apart from using interviews and electronic questionnaires, only the use of hosting a focus group (See Section 4.10.6) was used and this was restricted to Research Instrument VI and applied during the detailed investigation phase (See Chapters 8 & 9).

### 4.12.1 Recruitment of Participants

Obtaining participation from law librarians was initially challenging as many HEI were hesitant to take part due to concerns about their opinions being widely identifiable.

Thus, the use of anonymisation was implemented right from the outset and this was used to provide an assurance to participating HEI that neither their staff nor their students would be identifiable from any of their responses. Law librarians were approached initially after being introduced through the law librarian at City Law School, City, University of London. This provided much needed momentum and buy-in for the research project. On the back of this we followed up with the contacted parties to confirm if they were willing to be part of this research project.

All correspondences were conducted via email and examples can be found in Appendix B.1 and B.2. For the majority of HEI, details of their law librarians were found from their websites and they were sent a polite email introducing the researcher, the research project, what we sought to find out and how we were proposing to go about doing this.

Upon receiving responses from the law librarians, they were followed up with an introductory telephone meeting where more details would be provided about the research project as well as allow the potential participating law librarian to ask any questions they may have. During this telephone call, the interview date and time were set and confirmed, and this call was followed by the distribution of the interview sheet, a copy of the questions together with the consent form for the law librarian to sign and return. Assurances on anonymity as well as the opportunity for the participating law librarian to be able to vet their responses to the questions in the interview before they were applied, were also made known.

## 4.12.2 Research Recruitment & Participation Process

With the Research Instruments outlined (See sections 4.10.2 – 4.10.5) we provide a graphical outline of the process through which the law librarian and law student cohorts were engaged and recruited to participate in the various stages of the research (Fig. 45).
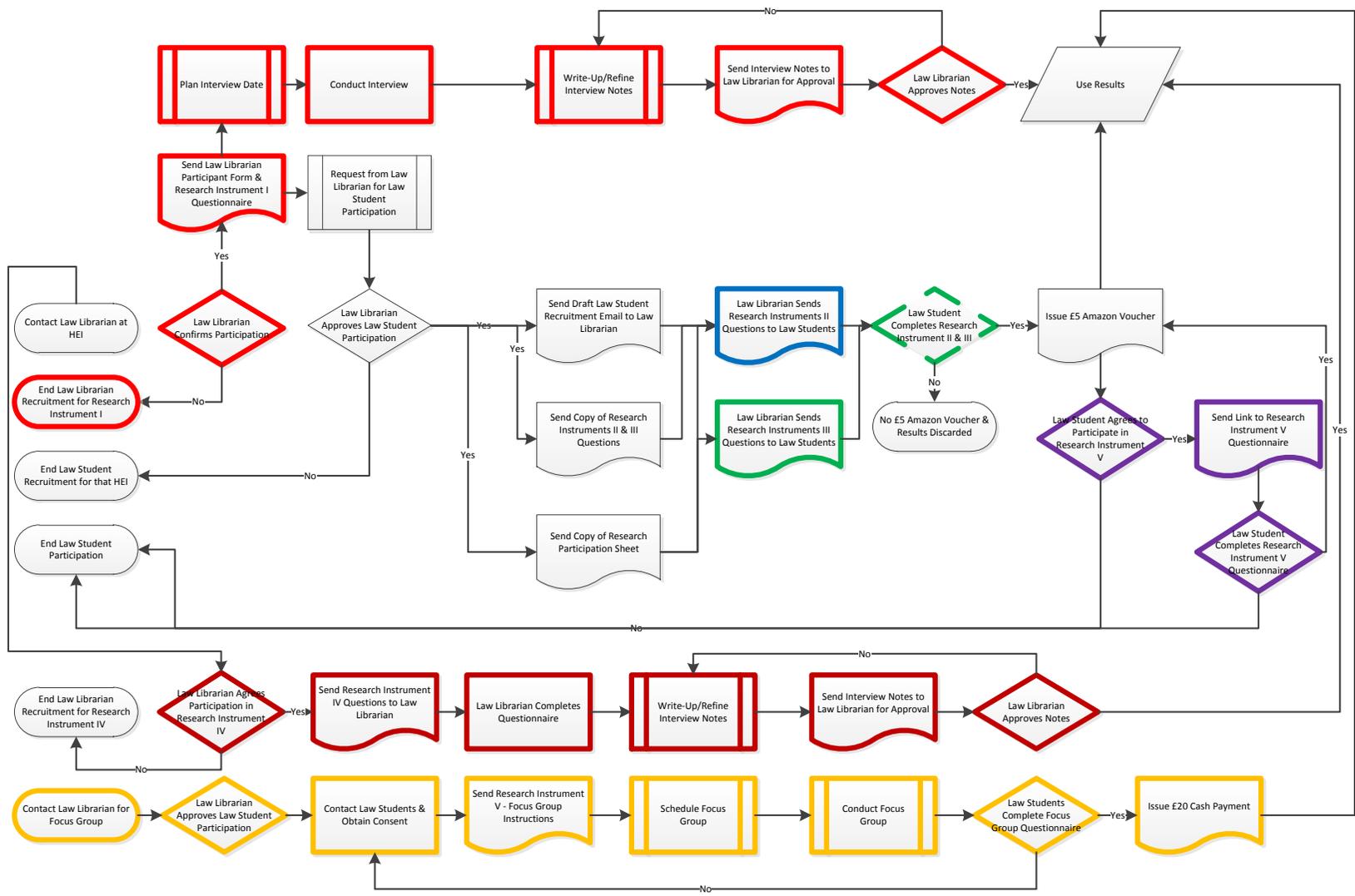
Figure 45:  Research Recruitment & Participation Process

## 4.13 Research instrument Changes – Summary & Outline

The research instruments utilised throughout this study comprised of both qualitative and quantitative elements with an evolutionary approach to their build and application as we progressed through the project. As discussed, some research instruments were only applied to certain research stages (see Section 4.11) and within that, slight modifications were made to the research instruments themselves during these stages, as we refined our data gathering approach to best answer our research questions and address the objectives (Table 2).

### 4.13.1 Research Instrument Changes

The rationale for each of the changes that were applied to the research instruments is outlined in the table below;

| Research Instrument | Changes | Rationale |
|---|---|---|
| *I – The Law Librarian Interview* | References to "Smartphones" was changed to include "Mobile Devices". From the Exploratory Study to the Detailed Investigation. | Law librarians would be limited to only discussion a sub-set of mobile devices (Smartphones) and may not elaborate on other related technologies. |
| *II – The Law Student Smartphone Questionnaire (Pilot Study)* | For the Pilot study, the questionnaire was too "consumer focused" and didn't address most of the research questions. It was completely revised, but the name of the instrument remained as "The Law Student Smartphone Questionnaire". | Law students' feedback would only articulate their use of Smartphones from a consumer perspective with responses outlining items like carrier choice, cost of contract etc. completely irrelevant for this research project. |
| *II – The Law Student Smartphone Questionnaire (Exploratory Study)* | The questionnaire was adjusted significantly to include more questions that would help better address the research questions and objectives. | Building the research instrument so to extract information that would help provide responses focused towards addressing the research questions provided a more concentrated set of data. This would provide a stronger chance of us addressing the research objectives of the project. |

| II – The Law Student Mobile Device Questionnaire (Detailed Investigation) | The name of the questionnaire was changed to include a wider range of mobile technologies. | The name of the questionnaire and references to "Smartphones" throughout in the Pilot and Exploratory studies led law students to restrict their responses to these said devices whilst excluding the opportunity for the research to capture other mobile technologies which were also being discussed such as Tablet Devices. Hence the name of the research instrument and its question content was adjusted to provide a more inclusive approach to mobile technologies in general. |
|---|---|---|
| III – The Law Student Search Study (Detailed Investigation) | References to "Smartphones" was changed to include "Tablet Devices", "Laptops" and "Desktop PC's". | Law students' use of a variety of technologies was becoming more apparent during the exploratory study phase where these technologies were unilaterally mentioned. Thus, we sought to capture their use of a wider collection of technologies, from this we could build a broader consensus of information seeking behaviour. |
| IV – The Law Librarian Thematic Questionnaire (Detailed Investigation) | Built from the outputs from Research Instrument I. | A thematic analysis of the results of the interviews with law librarians highlighted many repeated topics. These topics were grouped together to form "themes" and a new questionnaire set was built to help address these said themes and corresponding feedback on them. |
| V – The Law Student Thematic Questionnaire (Detailed Investigation) | Built from outputs from Research Instruments II and III. | A thematic analysis was conducted on the outputs from both research instruments and used to build a new set of questions which would help provide more granular details on the use of technologies and design of legal information resources. |
| VI – The Focus Group (Detailed Investigation) | Built from the outputs from all the research instruments above as well as the literature review. | Used to obtain information on law student resource and technology use behaviours as well as refine and test the proposed LSISBM. |

Table 2: Research Instruments Outline Together with Adjustments Made Through the Research Stages

## 4.13.2 A Narrative of the Research Instruments & Corresponding Activities

To combine the research instruments together with the research phases, a narrative was created which illustrated in greater detail how all the associated activities fitted together (Fig. 46). The narrative also outlines the outputs from the activities and how these outputs would be used towards meeting the research questions and objectives.
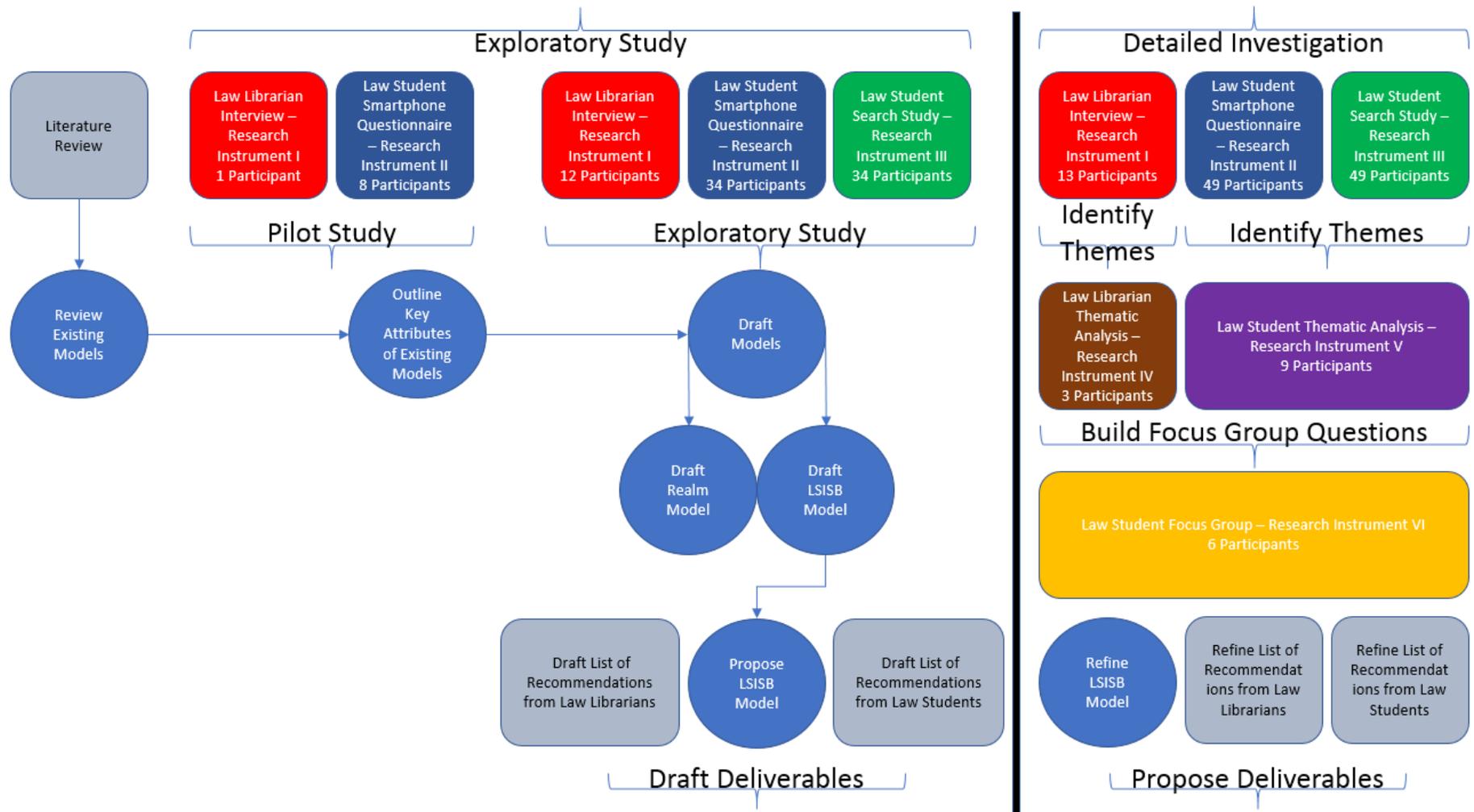
Figure 46: A Narrative of the Research Instruments & Corresponding Activities

## 4.14  Analysis of Interview Output

The research instruments that involved interviews were conducted either in person or by telephone. For the interviews with law librarians, each participant was sent a copy of the interview question sheet beforehand and the interview was conducted by talking through the questions in order and then noting down the law librarians' responses. To supplement the capturing of the data, we used an iPhone to record the audio component of the discussion.

For the focus group with law students the responses were also noted down, and the sessions audio output recorded for the same reason as previously mentioned; In all events permission for doing so was obtained beforehand from the participant. Analysis of all output from interview-style questions was conducted in a comparable manner as described below.

## 4.14.1 Research Output Assembly

Once the interview was completed, the notes would be typed up together with the playback of the audio recording to provide additional content that may not have been captured in writing during the meeting. The document was then sent to the participant to verify and upon confirmation of this, the results would be ready for analysis. Given that the above instruments were interview-based questionnaires, it made sense to utilise the same analysis method for all of them. The results were reviewed using Framework analysis and used elements from the methodologies already outlined (Lacey & Luff 2009). Framework analysis was examined as this helped "identify specific information needs and provide outcomes or recommendations, often within a short timescale" (Lacey & Luff 2009). The stages of this analysis method include;

- Familiarisation – Reading the transcript of the data
- Identifying a thematic framework – The initial coding basis which can be developed from both existing understanding and emerging issues identified in the familiarisation stage.

- Indexing (or Coding) – Where we apply the thematic framework to the data, using either numerical or textual codes to identify specific pieces of data which correspond to differing themes.

- Charting – Creating charts from the thematic framework stage to help provide a format from which graphical analysis can be conducted.

Taylor-Powell & Renner (2003) strongly emphasise the repeated reviewing of the raw data to build a strong understanding of the information at hand. This was rigorously applied when evaluating the responses from the law librarian interviews and to provide a structure for analysis of the results the question sheet was first split into shorthand sections with acronyms (Table 3). These acronyms were then used to name the different tabs in Excel where the responses to the questions were outlined, e.g. for the assessment of the interviews with Law Librarians as part of Research Instrument I;

| Research Instrument I Interview Question Number | Acronym |
|---|---|
| Existing Library Setup Question 1 - 7 | ES1 – ES7 |
| Mobile Information Retrieval Question 1 - 5 | MIR1 – MIR5 |
| Proposed Future Situation Question 1 - 7 | PFS1 – PFS7 |

Table 3: Research Instrument I – Law Librarian Interview Questions Mapped to their Acronyms

Thus, in the Excel worksheet, each tab had its own corresponding question result data set (Fig.47);
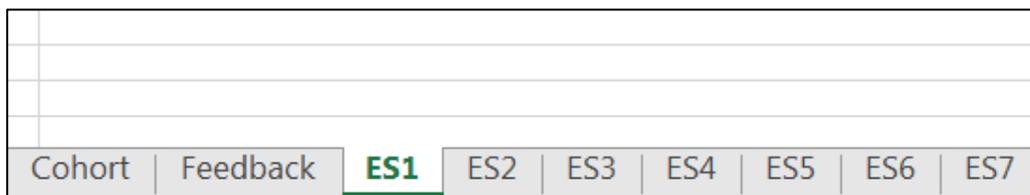


Figure 47: Research Instrument I Response Worksheet - Tabs

This made organising and referring to each of the responses very simple.

## 4.14.2 Research Output Coding

Each of the responses from the interview notes write-up were pasted into the relevant cells in the worksheet (Fig.48);

| HEI Code | 1. What type of non-electronic resources do law students use in the Library for retrieving information for their studies/legal research (i.e. paper/book/journal based activities)? [RQ4]/[RO3]/[RO5]/[RO6] | Text Book | Monographs | Journals | Law Reports | Digests | Newspapers | Other Resources |
|---|---|---|---|---|---|---|---|---|
| ST | We still make a huge amount of use of **monographs**, books and so forth. We have tried very hard to make electronic books available but for these resources there is never 100% coverage available so we end up purchasing a lot of textbooks as well. This applies more so to more specialised legal topics and historical **law reports** – particularly Scottish ones that may not be available in electronic format or if available then the format is not as user friendly as one would hope. Even when electronic versions are available, we find that students use these to source the information they need then refer to the paper-based versions for further study. I think that some law reports are quite complex and reading them online is quite tough. It is easier to look at print copies and what we find that students would have the paper-based version on their desk and the summary of the resource on their computer screens. So I think that Law reports, especially, is one area where print is still popular. | | Y | | Y | | | |

Figure 48: Research Instrument I Response Worksheet – Numerical Analysis

Coding commenced once the instances of where specific resources, technologies or items were mentioned, these were highlighted and marked with a "Y" in the relevant column. In the cases of the numerical analysis where the focus was on the mentioning of specific types of legal information resources, the occurrences when these products were mentioned was counted. These "categories" were somewhat pre-set as we already had a good understanding of the various legal information products that law librarians had kept stock of for law students through our literature review. Hence the approach of using "pre-set categories" was utilised (Taylor-Powell & Renner 2003). Once this exercise was completed for all law librarian inputs, the occurrences were counted (Fig.49) and then graphically displayed in a chart.

| HEI Code | 1. What type of non-electronic resources do law students use in the Library for retrieving information for their studies/legal research (i.e. paper/book/journal based activities)? [RQ4]/[RO3]/[RO5]/[RO6] | Text Book | Monographs | Journals | Law Reports | Digests | Newspapers | Other Resources |
|---|---|---|---|---|---|---|---|---|
| | | 23 | 10 | 20 | 20 | 5 | 5 | 8 |

Figure 49: Research Instrument I Response Worksheet – Numerical Analysis Count

Emerging ideas and opinions were also noted, and this approach was found in (O'Connor and Gibson) & (Taylor-Powell & Renner 2003) where themes that were outlined as categories, began to emerge as familiarisation of the content was achieved through re-reading of the raw outputs. This was followed by categorisation of repeated words and/or sentences with similar meanings that were noted and then counted. Supporting guidance was also found in (Akinyoade 2013) where it was highlighted that;

*"(Coding) is therefore a process of categorizing the data into meaningful segments. A sort of coding is what we do when we mark text we are reading and write words or notes by the margins to describe their meanings."* (Akinyoade 2013).

In most instances, emergent categories consisted of topics that we did not plan for, such as law students using non-electronic resources at times largely due to electronic versions not being available and consulting print resources when consulting large volumes of text but referring to electronic resources for short summary texts.

## 4.14.3 Research Output – Categorisation

The strategy of using "emergent categories" was applied (Taylor-Powell & Renner 2003). And then for each question, themes were identified through an inductive method within the responses and these too were categorised and marked accordingly next to each question (Fig.50). If a law librarian's response was fitting with a theme, then a score was placed against it (Gabriel 2013). These themes would go onto provide analytical results which would fit over the research questions and provide a greater drive towards answering them.

| HEI Code | 1. What type of non-electronic resources do law students use in the Library for retrieving information for their studies/legal research (i.e. paper/book/journal based activities)? [RQ4]/[RO3]/[RO5]/[RO6] | Students use non-electronic resources because the electronic versions are not available | Students find non-electronic resources easier to use if the content is text-heavy | Students use non-electronic first and then move to electronic resources | Library is moving away from non-electronic resources towards electronic resources | Library maintains an equal balance of both non-electronic and electronic resources |
|---|---|---|---|---|---|---|
| ST | We still make a huge amount of use of monographs, books and so forth. We have tried very hard to make electronic books available but for these resources there is never 100% coverage available so we end up purchasing a lot of textbooks as well. This applies more so to more specialised legal topics and historical law reports - particularly Scottish ones that may not be available in electronic format or if available then the format is not as user friendly as one would hope. Even when electronic versions are available, we find that students use these to source the information they need then refer to the paper-based versions for further study. I think that some law reports are quite complex and reading them online is quite tough. It is easier to look at print copies and what we find that students would have the paper-based version on their desk and the summary of the resource on their computer screens. So I think that Law reports, especially, is one area where print is still popular. | Y | Y | Y |  | Y |

Figure 50: Research Instrument I Response Worksheet – Thematic Analysis

Like the numerical analysis of the responses to research instruments I and IV, these counts were also used to create charts which illustrated the landscape from a graphical perspective (Fig.51).

| HEI Code | 1. What type of non-electronic resources do law students use in the Library for retrieving information for their studies/legal research (i.e. paper/book/journal based activities)? [RQ4]/[RO3]/[RO5]/[RO6] | Students use non-electronic resources because the electronic versions are not available | Students find non-electronic resources easier to use if the content is text-heavy | Students use non-electronic first and then move to electronic resources | Library is moving away from non-electronic resources towards electronic resources | Library maintains an equal balance of both non-electronic and electronic resources |
|---|---|---|---|---|---|---|
| 26 |  | 15 | 13 | 14 | 9 | 17 |

Figure 51: Research Instrument I Response Worksheet – Thematic Analysis Count

Specifically, for research instrument IV, the responses were all qualitative in nature and the analysis was all thematically based with the themes focussing on the ownership vs. access of legal information resources and the design of resources. The questions that included more specific tone and focus on these two themes as opposed to obtaining a more generalist view of the law library resources and law student information seeking behaviour landscape. Again, the themes were counted and then totals were used to provide graphical illustrations for analysis (Fig.52).

| Ownership vs. Access [Law Librarians] | Fears about loss of access due to technical faults | No control over the situation | Larger vendors of electronic resources expanding - making matters worse | Lack of continuity within electronic resources | Electronic resources are not owned, access to them is given subject to subscription |
|---|---|---|---|---|---|
| **1. Do you feel that there are differences between collections of physical and electronic resources? Please give specific examples to illustrate your answer wherever possible.** | | | | | |
| In my view, the current situation of electronic resources makes me very uncomfortable as I feel Law Librarians have no power and if vendors have a technical issue with their database and we lose access to it temporarily then we don't get compensated for this. There is also a concern that the larger legal database providers are seeking to incorporate more specialist material within their collection and then use this as a justification to charge more fees for the larger collective group.  Problem here is that if, for example our faculty only has 20 students out of 600 who may need that specific resource then we would need to pay for the entire 600 to access it, since it will be part of a larger collection of more general legal material. Thus consolidation on this level with this type of pricing strategy is not welcome. What Law Librarians would like to see is all vendors, especially the two largest ones to sign up to the EDUSERVE agreement which promotes a more transparent pricing structure throughout all the HEI's in the UK and ensures that we get the same deal. Westlaw and Lexis are not part of this process and thus are at liberty to charge individual HEI's what they like.  Additionally, it's a case of physical ownership, if we subscribe to legal material for many years and we have copies of it, we keep it, even if we unsubscribe. With electronic resources, regardless of the duration of subscription, once we unsubscribe, that's it, we lose access. From my standpoint, vendors have all the power in this process and we have none, we are at the mercy of the vendors and this is very uncomfortable. | X | X | X | X | X |
| No I don't feel we own them online or not. | | X | | | X |
| The main different I see is that with physical resources, we own them and this gives us the confidence that we will retain access in perpetuity. With electronic, we don't have this advantage and constantly fear losing access to the information.  This issue arises from time to time, especially when we take into account where specialist legal information providers seek to deliver their products via aggregator platforms. Should the relationship between the specialist information provider and aggregator be changed for some reason and the content removed, then ultimately it is us who lose out. Our charges don't change and we are then left with the situation where we have lost access to information that we need and forced to pay more to retain that access through another electronic channel - often the original provider seeks to develop their own delivery platform, so this is where the issue tends to stem from. | X | X | | X | X |
| 3 | 67% | 100% | 33% | 67% | 67% |

Figure 52: Research Instrument IV Response Worksheet – Thematic Analysis Count

Where possible and relevant outputs from law librarians were quoted within the results, especially where comments were of a key interest or they supported/conflicted with the viewpoints of law students. For research instrument VI – the focus group, the approach to analysing the results was similar, in that the responses law students provided were directly written down by them on the answer sheets that were handed out to them prior to the start of the session. These sheets were collected and then digitised into a spreadsheet with the format arranged as follows (Fig.53).

| | Focus Group Participant 1 | Focus Group Participant 2 | Focus Group Participant 3 | Focus Group Participant 4 | Focus Group Participant 5 |
|---|---|---|---|---|---|
| If you could design an ideal information support/service, what would it look like? | All cases, readings available in ebook versions which are easy to download (in the same manner as bookshare) with a choice of background colours and selection of speaking voices for the interface. Direct access to a knowledgable IT department for problem solving and a full induction to explain how the software can be used. Easy access to dragon naturally speaking software for all students. All cases and text books available in youtube clips explainin topcis folling an example of a harvard professor. | A list of legislation for each module. A list of cases for each module such as which topics they link to. A list of revision notes in a mind map for each module with this topic. Essay samples as an ideal response. | A website with links to all major resources (Westlaw) and where to best find articles or books based on the area of law. Possible an overview of the most important cases for that particular area. Also information on which books are available and where (if the website is confined to a particular university). Perhaps a search function where it is said which cases/articles etc. can be found on which resource (eg. Westlaw and/or Lexis). It is important not to spoonfeed all the infromation the students might need. After all, we also need to learn how to do research and find information that is normally difficult to locate. For ebooks, these should be already downloaded into the University system and provide an overview of what to look out for depending on your search. | It would be like a database of all journals, cases etc. Just type in the name and everything comes up. You can then keep tabs on the cases, journals and use it offline. It would be like a law verion of Spotify. You choose how to access the files, read out loud, highlight etc. and it enables that for you. A single site that would bring up everything on a search. | I would like to have everything on a single page or website. Allow us to look up cases, academic sources and have it like an overall law student board for infromation, where e can answer all our potential questions in one page. You would be able to save time trying to find multiple resources if all could be sourced into one location. A module handout in electronic format with all the resources in a single place. |
| Theme | A better trained IT Support function with improved user-guides for induction. More use of video and audio to explain legal topics. | A single place where all relevant resources for the particular module can be found. | A single place where all relevant resources for the particular module can be found. | A single place where all relevant resources for the particular module can be found. | A single place where all relevant resources for the particular module can be found. |
| Theme | Resources should be kept locally on University infrastructure so it is readily available. | Recommended standards for assignments and examples. | Resources should be kept locally on University infrastructure so it is readily available. | | |

Figure 53: Research Instrument VI – Response Worksheet – Thematic Analysis Grouping

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Additionally, like the thematic analysis for research instrument I, for the focus group exercise (research instrument VI) each participants response was outlined and then any themes were determined and logged at the bottom of the response columns. These themes were charted after reading all the law students' responses to the question several times and then once the emerging pattern was determined, the themes were noted accordingly (Taylor-Powell & Renner 2003).

## 4.14.4 Research Output – Narratives, Proposed Model Feedback & Vignettes

Narrative analysis was used, given the small size of the group and the qualitative responses to the questions (Cohen & Crabtree 2006), it was also decided that quoting the most relevant remarks would help provide a greater focus towards answering the research questions of the project. Hence the student participants were each given an identifier for this purpose (Taylor-Powell & Renner 2003) and their responses can be found in (See Section 9.4).

<u>Focus Group – Review of the Proposed Model</u>

For the review of the proposed LSISB model, at each stage where the participants agreed with an attribute, these were marked, if the total groups agreement or disagreement reached >50% then the attribute was changed accordingly to either leave it in the model or remove it respectively, we took this approach after reviewing literature in this area and our benchmark was concluded after considering findings from (Stewart 1998), (Nyumba et al 2017) and (Clark et al 2017). Law students were also asked if there were more attributes that could be included within the model, again, where the count towards the proposed attribute was >50% then it was incorporated, where not, it was discarded. These changes are outlined in detail in Chapter 9 where the focus group and the rest of the detailed investigation are discussed in great depth. With all the outputs from research instruments I, IV and VI charted, these were then analysed, explained and discussed.

Findings were also outlined within the relevant sections in this report.

<u>Vignettes</u>

To provide more context and help give the reader a more personalised view of the cohort's opinions on the questions posted, the use of Vignettes was utilised. This helped us provide clarity over the law librarians opinions and enable them to voice their views based on their own terms. Barter & Reynold (1999) note that vignettes enabled to leverage a technique that;

> *"…can elicit perceptions, opinions, beliefs and attitudes from responses or comments to stories depicting scenarios and situations."*

Hence this method was applied to complement our existing method and give us as much insight into our results as possible (Jenkins et al 2010). Though, we were conscious as to be selective on the text we would choose to comprise of the vignettes given the high amount of expected qualitative data we elicited from the cohort during our research stages. Vignettes were used for Research Instruments I, III, IV and VI.

## 4.14.5 Analysis of Questionnaire Output

These three research instruments were primarily geared for quantitative data, although significant portions of research instruments III and V were qualitative. The key difference between these and the other instruments used with the law librarians and the law student focus group was that of distribution and how results were gathered. As previously mentioned, obtaining feedback from law students proved to be more of a logistical challenge in terms of their availability as well as enticing them to participate in responding to the relevant research instruments posed at them. To achieve this, a three-pronged approach was used;

- ▪ Obtain support and buy-in from the law librarian at the said HEI where the law students would be invited for participation.

- Provide an incentive to the participants so that they would be enticed into taking part whilst ensuring that there was no bias.

- Utilise a method to deliver the questionnaires which would not hinder participation but enhance it and make it as convenient as possible.

The law librarian who was interviewed in the pilot study was the first to see this approach being applied. During this time, the librarian was asked to nominate law students who would be interested in participating in responding to electronic questionnaires (Section 5.2.2). However, this questionnaire which was a pre-cursor to research instrument II was completely overhauled for application to both the exploratory study and detailed investigation phases of the research. Hence analysis of the output itself is only briefly described here. The incentive of a £5 Amazon voucher for every completed questionnaire proved to be very popular and helped in the participation. The use of E-Survey Creator to design, deploy and harvest the information for the research instruments provided a convenient and rapid way in which law students could participate in the study whilst the results of their responses would be provided as and when the questions were answered.

## 4.14.6 E-Survey Creator

Research instruments II, III and V were built using the electronic research questionnaire tool named E-Survey Creator. This tool enabled an electronic questionnaire to be built with a range of question types such as;

- **Yes/No** – Used for short responses

- **Open Questions** – For more qualitative questions

- **Closed Questions** – Used when required to select from a pre-determined list of options

- **Ranking Questions** – To obtain a score for specific items, products or services listed in a question

- **Table/Matrix** – Useful when needed to combine several questions into one and provide a more holistic perspective on a situation

The tool also allowed for a pre-question sheet to be displayed, this was used to provide both instructions and to gain the participating law students' consent (Fig. 54).
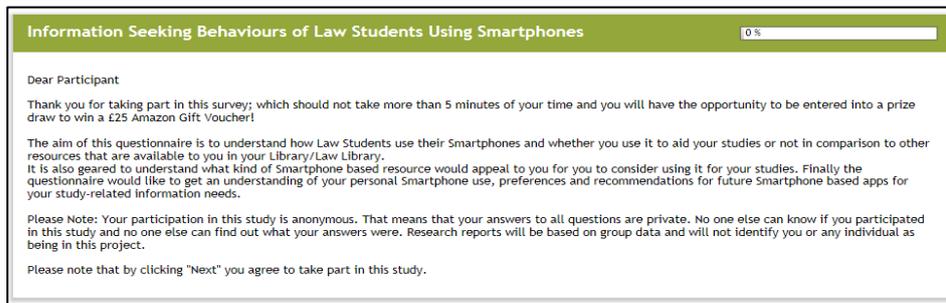


Figure 54: E-Survey Creator Consent Form – Desktop/Laptop Screenshot

The questionnaires were also tested on a variety of mobile devices to ensure that their formatting remained in-tact as well as provide assurance that law students would be able to participate whilst using mobile technologies without any hindrance (Fig. 54);
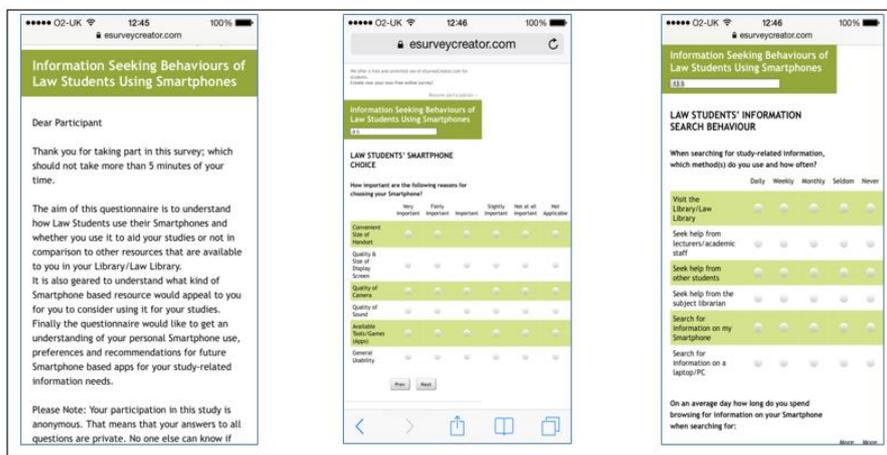


Figure 55: E-Survey Creator Consent Form & Questionnaire – Smartphone Screenshots

The results from the research instruments were extracted in the form of Excel CSV files and then arranged in a table format so that further analysis could be conducted on them.

## 4.14.7 Excel Analysis of Results

The CSV file was arranged so that its output correlated to the questions that were responded to, each participating law students' response was provided with an identifier that was used to indicate the uniqueness of the response.

Adjustments were made to the table that was automatically generated so that the results would be in good preparation for analysis as well as the creation of graphical illustrations for further study and examination (Fig. 56).

Where the questions were quantitative in nature then the analysis preparation was relatively straight-forward in that the responses and their respective categories were counted and then graphs produced to illustrate the findings. And where the questions were more qualitative, then, like the method used for the other qualitative research instruments (see Section 4.14.1) themes were created after several iterations of reading the law students responses (Fig.56).

| | 1 | User Friendly Interface | Depth Of Information | Portability | Reliability Of Information | Quick To Use | Convinient To Use |
|---|---|---|---|---|---|---|---|
| User interface is easy to get used to with lots of reliable information. | | X | X | | X | | |
| Improved my understanding & Convinient | | | X | | | | X |
| Broad and clear analysis of the subject | | | X | | X | | X |
| Convenient, quick and plenty of information | | | X | | | X | X |
| Transportable, lots of details, easy to use and convinient | | X | X | X | | | X |

Figure 56: Excel Results & Identification of Themes

Then a percentage of each of the themes was obtained by dividing the count of occurrences by the total number of responses made for the question (Fig. 57).

| 13. What did you like most about your most preferred resource for this information (3 reasons)? | User Friendly Interface | Depth Of Information | Portability | Reliability Of Information | Quick To Use | Convinient To Use |
|---|---|---|---|---|---|---|
| Count | 30 | 35 | 11 | 24 | 19 | 38 |
| Percentage | 19% | 22% | 7% | 15% | 12% | 24% |

Figure 57: Excel Results of Themes & their Count

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Following this, the results were used to create graphs where appropriate and these are outlined in the relevant section of this report where the exploratory study and detailed investigation stages are discussed in detail.

## 4.14.8 Likert Scale Analysis & Weighting

We also obtained ordinal data using Likert Scale questions for most of Research Instrument II, III and V. Our driver for this selection was the simplicity in which questions could be fielded to the participating cohort and results obtained. However, we were conscious of the need to interpret the results carefully using the most appropriate methods to measure and describe them (Bertram 2007) & (LaMarca 2011). We chose to use median as opposed to using the mean for most of our results given that ordinal data could not be quantified for averages and there is plenty of debate on the validity of using means against these types of values where obtaining averages for categories such as "Strongly Agree" and "Agree" cannot be logically defined (Norman 2010), (Kostoulas 2013), (Sullivan 2013) & (Sauro 2016). Median values provided us with a measure of the central tendency of our datasets. Modal values provided us with the most popular responses per question. We also allocated numerical values to each of our Likert Scale question types so that quantitative data could be obtained and provide the required modal and median values. The structure was as follows (Table.4);

| Likert Scale | Very Important | Fairly Important | Important | Slightly Important | Not at all important | Not Applicable |
|---|---|---|---|---|---|---|
| Weighting Score | 6 | 5 | 4 | 3 | 2 | 1 |

Table 4: Likert Scale Weighting - Level of Importance

These values were then taken and assigned to each law students' response, hence if a law student made the following response to the question taken from Research Instrument II – Law Student Mobile Device Questionnaire (Table.5);

| Law Student Participant | Convenient Size of Handset | Quality & Size of Display Screen | Quality of Camera | Quality of Sound | Available Tools/Games (Apps) | General Usability |
|---|---|---|---|---|---|---|
| 1 | Important | Very Important | Important | Important | Not at all important | Important |

Table 5: Sample Law Student Response to Question with Likert Scale values for Importance

Applying the weighting categories as shown in (Table 4) would make the above table look like the below (the Likert Scale choices being replaced by numbers) (Table.6).

| Law Student Participant | Convenient Size of Handset | Quality & Size of Display Screen | Quality of Camera | Quality of Sound | Available Tools/Games (Apps) | General Usability |
|---|---|---|---|---|---|---|
| 1 | 4 | 6 | 4 | 4 | 2 | 4 |

Table 6: Sample Law Student Response to Question with Likert Scale Weighting Applied

Thus, the responses to this specific question were each assigned the weighting number as per the Likert Scale as follows and this allowed us to calculate the Mode and Median values, e.g. (Table.7);

| Law Student Participant | Convenient Size of Handset | Quality & Size of Display Screen | Quality of Camera | Quality of Sound | Available Tools/Games (Apps) | General Usability |
|---|---|---|---|---|---|---|
| 1 | 4 | 6 | 4 | 4 | 2 | 4 |
| 2 | 3 | 6 | 5 | 4 | 6 | 6 |
| 3 | 6 | 6 | 2 | 6 | 4 | 6 |
| 4 | 6 | 6 | 4 | 4 | 5 | 4 |
| 5 | 6 | 6 | 5 | 6 | 5 | 6 |
| 6 | 6 | 6 | 6 | 6 | 3 | 6 |
| Mode | 6 | 6 | 4 | 4 | 5 | 6 |
| Median | 6 | 6 | 4.5 | 5 | 4.5 | 6 |

Table 7: Total Responses with Mean and Standard Deviation Values

Other Likert Scales applied were also adjusted with their relevant Weighting Scores and used to calculate the Mean and Standard Deviation values where possible.

These scales also included (Table.8-10);

| Likert Scale | Daily | Weekly | Monthly | Seldom | Never |
|---|---|---|---|---|---|
| Weighting Score | 5 | 4 | 3 | 2 | 1 |

Table 8: Likert Scale values for Frequency

| Likert Scale | Strongly Agree | Agree | Somewhat Agree | Disagree | Strongly Disagree | Not Applicable |
|---|---|---|---|---|---|---|
| Weighting Score | 6 | 5 | 4 | 3 | 2 | 1 |

Table 9: Likert Scale values for Level of Agreement

| Likert Scale | Very Useful | Useful | Somewhat Useful | Not Very Useful | Not Useful At All |
|---|---|---|---|---|---|
| Weighting Score | 5 | 4 | 3 | 2 | 1 |

Table 10: Likert Scale values for Level of Usefulness

So, each response to these respective questions was assigned a weighting number which in turn was counted and used to provide the arithmetic average and standard deviation of the responses for the specific questions. However, to provide context, the responses were still analysed for their categorical replies and shown in the relevant sections within the Exploratory Study and Detailed Investigation chapters (see Chapters 6, 8 & 9). For calculating the median and mode values, we used Microsoft Excel's native functions, and these were shown to illustrate the values which the cohort group believed in most.

## 4.14.9 Significance Testing

Although our analysis of the results was descriptive, and any patterns found within the results were noted, we were aware that there was still opportunity for further examination of the statistical data we had retrieved, and thus additional analysis would be required. Thus, to find any patterns in usage behaviours for the different technologies law students used we chose to utilise significance testing methods including the t-test and Chi-Squared tests. Most of literature covering these types of tests came from the areas of medical and social research where studies of populations against various experiments are plentiful.

In both cases we set null hypotheses which would indicate that there was no significant difference or association between the data sets and the alternative hypotheses which indicated that there was a significant difference between the data sets and this was not due to chance or sampling error (McHugh 2013).

Students t-Test

The paired students t-test was used for checking the statistical significance of technology usage between the two main contexts of academic and non-academic information seeking for the same group of law students (Shier 2004), (See Section 6.5.3).

This approach was chosen given its appropriateness in being applied to two related sample groups with differing usage scenarios. It also had an ability to prove whether the results differed from the mean values of a null hypothesis and given the sample groups were small, made this test all the more appropriate (Skaik 2015) & (Yang-chun et al 2017). As per process, we proposed a null hypothesis which stated that there would be no significant difference between the two sets of data to which the test was applied. As a result, the t-test was relevant to only a specific set of results from the questionnaires where quantitative data could be appropriately extracted, prepared and processed through the calculations.

Chi-Squared Test

For Chi-Squared tests, these were applied to results where we sought to find the usage of a technology in a physical location and the specific type of information seeking function carried out in that context. With several categorical variables, the Chi-Squared test was chosen to find out whether there was a significant difference between the data that was not due to chance alone and again, whilst we described the basic outputs of our results, we sought to obtain further clarification of the data through the utilisation of an effective means from which categorical variables from the same sample population could be analysed (Sullivan 2015), (Jain 2017) & (Stat Trek 2017).

We also used the Wilcoxon test for further checking for significant differences when a comparison between the different technologies' usage was carried out using Likert-Scale questions. Correspondingly, this was to provide a more balanced viewpoint of our results (LaMorte 2017), especially given our sample sizes were small and checking for significant differences between the question categories was still required to further validate our results (Hole 2011).

## 4.15  Methodology – Summary

The research consisted of three phases, the pilot study, exploratory study and the detailed investigation. Each of these phases had research instruments that were used within and duly applied to the participating cohorts of law librarians and law students to gain their feedback respectively. The research instruments themselves were based on both qualitative and quantitative data gathering, whilst some straddled between both types depending on the level of information we sought to obtain from the cohort participating in the studies. This use of mixed methods research instruments was justified given them significant scale of the research topic at hand and the need to first gain a firm overview of the subject. Some instruments were built from either inductive or deductive approaches that were extracted into themes (Gabriel 2013). Taking influences from Grounded Theory, Empirical and Delphi methodologies to provide support to our approach helped guide our journey through the research stages.

The instruments were structurally applied, results examined and discussed through a "lessons learnt" approach to outline any remaining gaps in our understanding as we progressed our work.

Then adjustments were made to provide a better fit to aid in the addressing of the research questions and objectives of the project, where applicable, these research instruments were re-applied in the following stages of the research effort.

Thus, to conclude our method;

The Pilot Study

A small-scale investigation which focused on only a subset of the research cohort. Both qualitative and quantitative methods were employed here through research instruments I and II respectively.

The Exploratory Study

Here qualitative and quantitative types of research methods were utilised as well as a mixture of both in another instrument; research instrument III. Additionally, research instrument II was significantly revised to align better with the research questions.

The Detailed Investigation

Following the critical analysis of the exploratory study, more research components were required to have the greatest chance of addressing the research aims and objectives of this study. And like the exploratory study, both qualitative and quantitative types of instruments were used as well as instruments which employed a mixture of both. Hence in addition to research instruments I, II and III, qualitative research instruments IV and V were built from thematic analysis of the results from the exploratory study (see Chapter 7). The reasoning behind this approach being that the corresponding outputs of these instruments would steer us towards answering the research questions, thus helping to meet the research objectives (Braun & Clarke 2006). Finally, a mixture of both qualitative and quantitative questions was posed in the form of research instrument VI – which was based around a focus group exercise.

For completeness, the following table (Table.11) provides an outline of our analysis approach

for each of the Research Instruments we employed.

| Research Instrument | Data Type | Analysis Method |
|---|---|---|
| *I – The Law Librarian Interview* | Qualitative | Coding, Charting, Numerical Analysis, Thematic Analysis, Vignettes |
| *II – The Law Student Smartphone/ Mobile Device Questionnaire* | Quantitative | Numerical Analysis, Charting, Likert Scale, T-Test, Chi-Squared Test, Wilcoxon Ranked Sum Test |
| *III – The Law Student Search Study* | Qualitative | Coding, Charting, Numerical Analysis, Thematic Analysis, Vignettes |
| *IV – The Law Librarian Thematic Questionnaire* | Qualitative | Coding, Charting, Numerical Analysis, Thematic Analysis, Vignettes |
| *V – The Law Student Thematic Questionnaire* | Quantitative/Qualitative | Coding, Charting, Numerical Analysis, Thematic Analysis, Vignettes |
| *VI – The Focus Group* | Quantitative/Qualitative | Coding, Charting, Numerical Analysis, Thematic Analysis, Vignettes |

Table 11: Research Instrument Analysis Methods Summary

# 5  A Pilot Study into Law Students' Information Seeking Behaviours

## 5.1  Overview of Research

The results from the pilot study highlighted the need to revise many tools and methods that were being used. It also provided insight into how best to gear the focus towards the research questions and objectives for completeness. Initial studies had to be conducted to obtain an idea of the cohort landscape before embarking upon a more detailed exercise, consequently several research components were built over the duration of the study as the engagement with the cohorts continued.

## 5.2  Pilot Study & Cohort Overview

The pilot study was focussed on one HEI, thus the participating academic Law Librarian and law students were all specifically from this same institution and no other academic establishment was involved for this exercise. The pilot study comprised only of research instruments I and II. Both instruments were subject to updating and changes in the exploratory study and resulted in the introduction of research instrument III; which was designed to gauge output on legal information resources that students used, in both electronic and non-electronic contexts (see Section 6.5).

## 5.3  Design & Use of Research Instrument I – The Law Librarian Interview

This research instrument consisted of 19 questions formulated to facilitate a semi-structured discussion. Firstly, to obtain a background on the law librarians existing work environment, focussing on the various electronic and non-electronic resources that were provided to law students within this domain.

We then moved into a discussion more concentrating on mobile information retrieval and corresponding activities that the participant may have engaged in themselves within an academic or work-related context or witnessed law students using mobile technologies for academic information retrieval. The participant was then guided towards providing a deeper insight into their own perspective and approach to mobile technologies in their work environment and how they were addressing the changes that these devices were conveying into their domain. The demographics of the librarians who participated were limited to the details of the HEI they represented and an example of this is illustrated in (Table 13).

The structure of the questionnaire as well as the mappings of each question against the wider research questions and objectives is outlined as follows;

Existing Library Setup: 7 questions to gauge the "Existing Library Setup" or current state of the law library, with a focus on the current electronic and paper-based resources available to the law students. This section also aims to get an understanding on the use of these materials, the changes witnessed by the law librarians in terms these said material and of research trends and expectations from the law student body. The questions include;

1.      *What type of non-electronic resources do law students use in the Library for retrieving*

*information for their studies/legal research (i.e. paper/book/journal-based activities)?*

This question helps provide background into the non-electronic resource pool that law libraries may have and helps build a baseline from which other resources can be analysed. This question partly meets research question 4 and research objectives 3, 5 and 6.

2.      *What e-resources (non-mobile) are available for students' use in the Library for the*

*same activities?*

This question provides background on the existing electronic resource pool that the law library may have and partially meets research objectives 1, 2 5 and 6.

3.      *Which of these electronic resources in particular are most popular amongst students?*

Here we start focussing more on electronic resources and seek the law librarians' own perspective on the subject matter. By doing so there is an opportunity to see if there are any correlations or conflicts with law students' own electronic resource use versus law librarians' opinions of law students' electronic resource use. Here we partially address research objectives 1, 2, 3, 5 and 6.

4.    *Do you find that one type of search method (non-electronic vs. electronic) is more popular with the students than the other?  If so, please state which one in particular and why?*

By asking the Law Librarian to differentiate between both types of resources and their respective use by law students, we establish a clear outline as to which resource group is more utilised and why, providing an opportunity for more focus towards the drivers behind the use of resources. Partly meeting research objectives 1, 2, 5 and 6.

5.    *How is your law collection arranged within the Library domain? (I.e. Do you have a physically separate collection in a dedicated building or is your law collection part of the greater academic Library?*

This question provides more background on the geo-spacial aspects of the law library and possible enquiry as to whether the location of the law library has any bearing on law students' use of resources, technologies or tools. Here we partially meet research objectives 3 and 4.

6.    *How many students do you have in the law faculty? (This includes both part-time and full-time undergraduate, postgraduate, and research and CPD students).*

This was a demographic question.

7.    *What changes have you seen on the non-technical resources, technical resources and third-party service provider's resources over the years?*

In this latter question, we start to move more towards the research questions and provide an open forum for law librarians to discuss the topic – which could lead to the mention of mobile technologies. As a result, we partially meet research questions 1, 2, 3 and 4 as well as research objectives 5 and 6.

Mobile Information Retrieval: 5 questions to obtain insight into the law librarians understanding of "Mobile Information Retrieval" and any corresponding activities that either the participant or their respective institution may have engaged in that include the use of mobile devices. This section also looks at finding out the impacts the use of mobile devices by law students may have on the library domain.

1.      *What is your understanding of mobile information retrieval and in what context have you used it?*

This is the first question that begins to explore mobile devices and seeks to find out the law librarians' own exposure to this technology and information retrieval method. Thus, partly meeting research question 2 and research objective 2.

2.      *Have you used a smartphone to retrieve work related information in the Library/law library? If so, what was the experience and outcome?*

<By "work" we mean legal information that may be deemed fit for students' information retrieval needs>

Now the interview starts to focus more on a specific mobile technology which is more likely to be in the possession of the cohort than most other mobile technologies on the market. Furthermore, the question seeks to find out if the Law Librarian has used their mobile device as a work-specific information seeking device in their domain. Here we partially meet research questions 2, 4 and research objectives 1 and 3.

3.      *Are you aware of law students using smartphones in the Library/law Library to retrieve information related to their studies?*

Now the discussion moves more towards finding out about what law librarians may have experienced in relation to law students' use of mobile devices within the law library. With this we partly meet research questions 1, 2, 3 and 4 as well as research objectives 1, 2, 5 and 6.

4.      *Have you, your department encouraged students to use their smartphones for legal information seeking?*

Here the questions look to find out if law library has played a role in influencing the information seeking behaviours of law students and their use of mobile devices in this context. Thereby partially meeting research questions 2, 3 and research objectives 2, 3, and 4.

5.      *How do you think the take up of smartphones by students has impacted your department? (Particularly in relation to the way your department provides information services to the students)*

The discussion moves to look at what law librarians think of the impingement of mobile technologies (smartphones in this instance) within the law library domain. Thereby partly meeting research questions 3 and 4 as well as research objectives 3, 4, 5 and 6.

Proposed/Future Situation: The last section of the interview question set consists of 7 questions looking at the "Proposed/Future Situation" within the law library in the context of mobile device technologies. This section seeks to extract any high-level strategic approach the participant, their department or their institution may have taken to leverage if not incorporate mobile devices within their surroundings and information service provision. The section also further explores the participant's views on the benefits and challenges mobile technology use by law students would bring to both the law students study habits and the law library domain itself. Finally, there is a question which looks to obtain a personal view on the future of law libraries in the context of the discussion, it is especially important as it helps provide insight into how Legal resources have, are and will be used.

1.      *Are you aware of any departmental/organisational strategic plan or initiative that encourages students to use smartphones for academic information searches?*

This question gives the Law Librarian another opportunity to discuss strategy surrounding law students' use of mobile devices within the law library domain and if the department has considered utilising any opportunity for the benefit of information service provision through mobile platforms to the law students. Here we partially meet research question 4 and research objective 4.

2.      *If there are any strategies as such, do they involve third-party organisations such as legal information service providers?*

This is a follow-on question from the previous and partly meeting research question 4 and research objective 4.

3.      *What kind of support do you feel would encourage students to use their smartphones to retrieve academic information as opposed to using a fixed desktop e-resource or even paper-based/non-electronic resources?*

It would be interesting to see if Law Librarian's perceptions of what support law students needed to use their mobile technologies for academic information retrieval as opposed to what the law students felt they required themselves. With this question, we partly meet research objective 4.

4.      *What benefits do you think smartphone use by students for academic information search would bring to the Library?*

Here we focus on the positive aspects of mobile technologies being used within the law library domain and seek to find out the information provider (Law Librarian) perspective on this. This question enables us to partly meet research objectives 5 and 6.

5.      *What do you think are the disadvantages of smartphone use by students for academic information retrieval?*

Now we seek to balance the argument and find out if there are any negative aspects of law students' use of mobile technologies for academic information retrieval in the same context. Again, with this question we partly meet research objectives 5 and 6.

6.      *What challenges do you think active use of smartphones for information searches would bring to;*

        a)      *The students?*

By asking the Law Librarian what their opinions are on potential issues that may impact law students' use of smartphone technologies for information searches, we can obtain a baseline from which students' own perceptions and experienced challenges can be measured against. This provides an opportunity to see if there is any correlation between the two sides of the cohort group and how aligned law librarians' understanding is of law students' use of mobile technologies within the academic information retrieval context. This question helps partially meet research question 1 and research objectives 3 and 4.

        b)      *The department in general?*

Have already asked law librarians to advise on strategic insights in how mobile technologies may or may not be included within the law library domain, this question seeks to engage law librarians on more of discussion about their concerns at the potential problems that may arise out of the use of mobile technologies by law students and how the law library would be best suited to meet this trend. (library/law library). Like the above, here we aim to partly meet research question 1 and research objectives 3 and 4.

7.      *What do you think the Library/Law Library of the future will look like in relation to smartphones?*

This question was included to seek an open and a less restrictive forum on which law librarians could voice their opinions on where their departments', colleagues and even their own professions could develop into given the increasing impingement of mobile technologies within their professional working environment.  By enquiring law librarians' opinions on something that is of such concern to so many HEI, it would be useful to ascertain law librarians' own thoughts and perceptions on this topic. With this question, we seek to partially meet research question 4 and research objectives 4, 5 and 6.

## 5.4 Design & Use of Research Instrument II – The Law Student Smartphone Questionnaire

This electronic questionnaire was largely focussed on obtaining background on the type of mobile device law students used, their reason for their choice and the drivers/barriers that formed this decision. The contents of this questionnaire can be found in the Appendix A.1 and it was very consumer-centric and did not extract as much information which would help address the research questions and objectives. The questionnaire itself consisted of the following format with the relevant research questions and objectives mapped where relevant;

Demographics

1. *Please state your gender?*

2. *Please state the year of your course that you are in?*

3. *Please state if you are a full-time or part-time student?*

4. *Please state if you are an international student or not?*

Usability

1. *How old were you when you first used a mobile handset?*

2. *What is the make of your Smartphone?*

These questions help partially meet research question 1.

Smartphone Particulars

1. *How much do you spend on the contract every month (£)?*

2. *Please state your network provider*

3. *Why did you choose this provider?*

4. *What was the main reason for purchasing a mobile handset?*

These questions also help partially meet research question 1.

<u>Usage of Smartphone on with Studies</u>

1. *Do you connect your mobile device to the Universities' Wireless Network?*

2. *Do you use your mobile handset to help you with your studies?* This question partly addresses research questions 1, 2 and research objective 1.

3. *Do you see yourself using your mobile device for your studies more if your course requires?* This question helps to partly address research questions 1, 2, 3 and 4 as well as research objective 2.

4. *Do you feel the need for more support to assist you in using your mobile device to assist your studies?* This question helps partly meet research question 4 and research objectives 1, 2, 3 and 4.

However, given that this was only a pilot study, it was clear that not all the research questions and objectives would be addressed with the question style and content, hence further refinement of this research instrument was required before we embarked upon the exploratory study phase. This provided an opportunity to refine the approach for obtaining feedback from the law student cohort for a more focussed question set which would go onto being applied in the exploratory study (See Chapter 6).

## 5.5   Approach & Conduct

The interview was conducted with the Law Librarian (YC) at a London based University. The interview took approximately 1 hour and was both transcribed and the interview recorded on the research students' personal iPhone to capture the entre discussion. Prior approval from the interviewee was obtained for this. The interview was semi-structured with the interviewee given opportunities to discuss freely their opinions on the subject matter between the questions. These responses and comments were also noted to provide more context and richness to the discussion. All responses were anonymised, hence the misnomer (YC).

Upon completion of the interview the transcription was typed up using both the notes taken from the interview as well as the audio recording. This document was sent to the interviewee for review and approval before being included in this study.

**NOTE:** The interview notes were relatively voluminous and are available in electronic format, with details of this found in the Appendices.

## 5.6    Results

The results from the pilot study provided an initial starting point for this research. The output from the interview delivered more relevance towards the research questions and objectives than the second research instrument which involved distributing questionnaires to some 8 law students at the same academic institution. However, the latter did highlight the mature attitude towards mobile device technologies, their use and application in general.

### 5.6.1    Responses to Research Instrument I – The Law Librarian Interview

Background

YC was employed as a Law Librarian in a HEI located in the City of London, U.K. YC informed that the law library was a physically separate building within the relatively small University Campus and held many both print and digital resources. On the print side, the collection was quite comprehensive, and it was found that law student's initial search activities would be concentrated on these resources.

*"At the very basic level it is text book; which is the first port-of-call for all students because they feel quite comfortable using them and the library has a wide collection of them. However, there are various levels of text books; comprehensive, monographs and academic texts. They would start their search here initially in a non-electronic way, they then night follow up by looking at law reports…"* (HEI YC 2014)

Digital resources were also quite extensive in variety and all distinct parts of the law student cohort were well catered for, in line to meet their specific academic requirements.

"*The library has lots of databases and Westlaw is most popular, lexis is heavily used.*"
(HEI YC 2014)

For electronic databases, it was found that Westlaw was a popular choice amongst the student's due to its journal collection, user-friendly interface and a near "google-like" feel.

"*Westlaw is the most popular; most students first port of call. It's popular because it is unthreatening in layout and navigation, Google like in streamlined look, not Google like in searching though. Students were comfortable with not too much cluttering in text on the screen.*"
(HEI YC 2014)

Additionally, this resource was good for reading case-law summaries which, for time-pressed students, was an efficient way of retrieving detailed information relatively quickly.

<u>Resourcing</u>

On the printed material landscape, it was found that books had gradually evolved in their appearance and layout to become more graphically enhanced and interconnected to digital resources by the inclusion of web links and other electronic information sources.

"*...the key development around books are the use of differ types of mechanisms to help students learn, until recently books were simply fully of text however now they are written for students containing assorted colours, diagrams for illustration, options for students to test themselves and lots of activities; including links to electronic resources.*" (HEI YC 2014)

Literature had become more interactive and the pedagogic approach could now be perceived as a one-to-one relationship where the book would test the students' learning of the topic by way of end-of-chapter questions or challenges of sort. Also, e-Books had somewhat started to encroach onto the space of traditional texts by way of low procurement costs and considerably flexible access as opposed to the traditional constraints that text books were accompanied with, i.e. physical restrictions of availability, portability and potential vandalism.

Digital resources too had evolved to become more functional, more interconnected with other digital material and more aligned to the legal search environment as opposed to simply being an isolated repository of legal information.

*"Technical, the main shift one is around the value adding information, in the past databases were repositories where students could find their cases, legislation, journal articles etc. however now with the introduction of cross referencing, students can look at a case then very easily find journal articles against that case or practitioner texts for that case; within the same system, so it is seamless."* (HEI YC 2014)

YC did express hope that legal publishers be more mindful of providing digital content in a more pro-active and timely manner as it was often found that print material continued to be prioritised despite the clear preference of electronic by the students.

Mobile Technologies

YC understood mobile information retrieval to be an activity where information could be obtained from a mobile device and used in a variety of contexts. The benefits of these technologies and the potential when aligned to academia were clear in terms of flexibly, ease of access, speed of access and alignment with modern working/study lives. YC mentioned that law students in her experience were mainly concerned with using their mobile devices for social needs as opposed to legal information searches.

*"My impression is that students use their mobiles to look at all kinds of things, academic information retrieval is quite low down on that list and this is mainly due to the services that would allow information retrieval for studies to be available."* (HEI YC 2014)

The department had been actively promoting information, tools, resources and other items available on mobile platforms to the student body as well as making effective use of social media elements which were well established within the law student culture, to quickly communicate with their patrons within the ubiquitous context.

*"So that there are not many legal apps, if there were then there would be a shift towards it, can see an app so students see a case and pull up a case summary quickly."* (HEI YC 2014)

YC added that provision of legal applications on mobile devices would be a driver for encouraging students to seek information on these platforms. However, the screen size of mobile devices was a potential barrier, again this was due to lack of suitable applications, formatting of material on the restricted real-estate and limited functionality as opposed to desktop PC's and laptops.

"*A lot of the materials students need to read is long, so it would not be practical to view on a mobile phone, students tent to use mobile device more for their social uses due to law is quite behind on the provision of mobile apps that can address students' needs*." (HEI YC 2014)

Still the library catalogue was widely accessed by law students through their mobile devices.

"*…they (students) do look at the Library Catalogue on their devices though*" (HEI YC 2014)

Service Expectations

HEI YC had taken steps to encourage students to use mobile devices for their legal studies and this included the use of tools and resources specifically designed for these technologies. Feedback from these courses was positive throughout.

"*The library holds various workshops for legal search techniques and so on and sets assessed coursework, asked them to bring iPads or laptops, borrowed iPads from another department and did the teaching session using tablets, students could wander around and it was over three weeks; intensive course.*" (HEI YC 2014)

One thing for certain was that the inclusion of mobile devices within the student cohort had given rise to the expectation of near-immediate information and the flexibility to be able to access resources within these platforms.

"*…there was an issue the previous night, today it was fixed but no communication was sent to students of this prior but within 2 minutes students were asking about the particular function, so the main impact is that we need to be alert to make sure the technology works as expectations are much higher.*" (HEI YC 2014)

Additionally, students started to develop the expectation of being supported no matter what kind of mobile device they used.

Although a welcomed trend, these devices still presented risks in that they could prevent students from realising the full content of resources, by way of lean content and the limiting screen sizes putting students off from reading for extended periods and simply "skim reading" material. Also, the lack of being able to make annotations was a challenge.

*"…there is the issue of how we read online and how it differs from print, there is the notion that when we read online we skim and the technologies available are not good enough to allow readers to take notes etc., you can do that with a laptop, sort of but with a mobile device annotations etc. it is not possible to that level."* (HEI YC 2014)

It was clear that desktop PC's and laptops still had their place within the deeply multi-resource faceted environment that legal research often consisted of. YC felt that the law library would do well to integrate mobile devices within its environment and do so in a mature and controlled manner where strategies and initiatives placed it in the lead in a pro-active approach as opposed to reacting to consumer market trends and that of students.

*"…probably making sure we can meet their expectations, keeping online services updated, fresh, new and exciting. But also, around helping them (the students) make the best use of their device but we are not at that stage yet."* (HEI YC 2014)

## 5.6.2 Responses to Research Instrument II – The Law Student Smartphone Questionnaire

This instrument of the study was applied on a small sample of law students based at the same HEI as the law librarian interviewed in the previous section. The cohort included both male and female respondents and covered full-time and part-time students. The questionnaire was distributed in electronic format using eSurveyCreator and tests were carried out beforehand to ensure the questionnaire rendered correctly on desktop, laptop, tablet and smartphone devices.

| Gender | Count | Percentage (%) |
|--------|-------|----------------|
| Male | 4 | 50 |
| Female | 4 | 50 |

Table 12: Research Instrument II – Participant Count

A total of 8 students took part on this (Table.12) and there was a 50/50 split between male and female respondents. Most of the students were UK-based, full-time 1st and 3rd year students with the remaining being 2nd and 4th year/postgraduates. A majority reporting using a mobile device since a relatively early age of 10-15 years old (N=5), with 2 students informing their first use of a mobile device was when they were between the ages of 15-20 years of age.

Most of the students owned an Apple iPhone (N=5), with the remaining 3 students possessing HTC, Nokia and Blackberry devices each. In terms of costs there was an even split between students spending around £10-£15 per month (N=2) or £35-£40 per month (N=2), the other 2 students were in the middle bracket of £15-£30 per month with the final 2 students paying £40 – Above per month. O2 was the most popular network provider followed jointly by EE and Orange, then followed by T-Mobile and Three. Students' rationale for choosing these providers ranged from low tariff (N=3) and package options (N=3) to network signal (N=2) and handset choice (N=2).

Almost all students informed that they purchased their handsets to keep in touch with friends, relatives and family (N=7), followed by using the internet (N=5), using apps (N=4) and to listen to music (N=3). Surprisingly 5 respondents informed that they connected their devices to the Universities Wi-Fi with the remaining 3 declining to do so. There was also a 50/50 split between students who used their mobile devices to help with their studies with the result remaining indifferent if students' courses required them to do so. Most students felt the university provided enough support to them in using their mobile device whilst on campus. See Appendix A.2 for raw data.

### 5.6.3 Discussion & Review

The output from the Law Librarian interview was found to have provided some significant insight into the Information Seeking Behaviours of law students. It also highlighted the collection of materials which an academic law library within the U.K. could be expected to provide to cater for the demanding requirements of a modern law school.

The feedback highlighted that publishers of legal resources could do more to leverage mobile technologies in a more effective manner. It was clear that most students had access to these technologies beforehand so making use of this platform provided information providers as well as the law library with a readily-available technology infrastructure. The challenge was how best to utilise this opportunity.

Out of the discussion several items were highlighted, including the size of the student cohort, which was not made clear; this may have had a bearing on the type of resources used and the general approach of the law library in relation to mobile devices. It also would have helped if it was established upfront whether the law library was a physically separate building or part of the greater academic collections as there was a potential for differences in the information seeking behaviours of law students being influenced by those of other subject students in the same space.

Asking the interviewees for their outlook on what law libraries would look like in relation to mobile devices in the future, given the rapid pace of technological advancement and integration within society, would provide insight into the wider scope of the topic, albeit from a distinct perspective. Identification of themes from the discussion would also provide some trends that may be emerging from the discussion.

Also, further analysis between the research questions, objectives and the questionnaire also highlighted some key changes that needed to be implemented with the aim that these corresponding updates will allow any future Law Librarian's input to provide more relevant responses that would be better geared towards the research projects goals.

Finally, there was not much of an impact towards the research questions, this interview had only scratched the surface and clearly a significant level of revision to the tools, method and approach was required. The outcome from the law students' smartphone Questionnaire was found to be too focused on mobile device usage within the University Campus space and an over-emphasis on demographic and consumer-oriented questions. There was little insight into the legal information resources that were used, why they were used, what drove students towards using them and outlining of any barriers for this purpose. Also, the questionnaire isolated law students who used other technologies and limited itself to smartphones only, this denied the opportunity for law students to elaborate more on their information seeking behaviours using mobile technologies in general. Finally, the questionnaire consisted of close-end questions and did not provide participants the opportunity to respond with free-text comments, as a result we were unable to obtain any participant quotes.

## 5.7    Lessons Learnt & Recommendations

Although the Law Librarian Interview component gave momentum to exploring this discussion further, we found from the feedback that more revision was required in the research instruments used.

We noted that Research Instrument II was too focused on smartphones and the consumer-aspects of the device and corresponding services. This ran the risk of leaving the research to be too focused on a specific technology which at this stage was not planned nor felt to be a good approach. Whilst the responses provided a good insight into the law students' smartphone preferences, it did not address any of the research questions – thus requiring a complete revision. This led to us not addressing the aims of the study itself and this was confirmed upon reviewing the results.

We appreciated that the questions needed more alignment with the research projects questions and objectives and so the questionnaire set was completely rebuilt, split into forming research Instruments II and III with each extended somewhat to become;

- Research Instrument II – concentrating on law students' smartphone choice
- Research Instrument III – a more open-ended question set focusing on law students' information seeking behaviours

This change also included the development of the triangulated research methodology model (see Section 4.10.1) which shows all the research instruments and their relationship with each other. The changes gave impetus for research instruments II and III to be actively included the exploratory study and detailed investigation rounds.

## 5.7.1 Adjustment of Research Instruments & Revised Participants

The exploratory study provided more depth to the research by introducing a new element to the research tools – Research Instrument III. This along with a complete refurbishment of the questionnaire in Research Instrument II as well as more participants, went on to provide a very rich set of results for analysis. Overall, the exploratory study required a new set of questions for Research Instruments I, II and III (See Appendices A.1, A.2 and A.3) as well as a significant increase in the number of participants to gain a better response rate and deliver more results for analysis.

For Research Instrument I alone, we had 12 law librarians participating and given they were located in many different parts of the UK some interviews were held in person and some were conducted over the telephone, with the interviews recorded in all cases to ensure a capture of the entire discussion. For Research Instruments II and III a set of electronic questionnaires was distributed amongst the law student faculty at the same institution that participated in the pilot study, this was because all the law librarians belonging to the 12 HEI covering Research Instrument I were unable to recruit law students from their institutions.

Having seen a clear need for revision and alignment with the research projects questions and objectives, Research Part I – The Law Librarian Interview questionnaire was updated to better reflect the research projects goals in the following manner;

Question 5 under the "Existing Library Setup" section was changed from;

*Do you use a third-party e-resource (E.g. Westlaw) for the delivery of information to law students and if so, please provide a brief description of what this system(s) is and how it works?*

To

*How is your law collection arranged within the library domain? (I.e. Do you have a physically separate collection in a dedicated building or is your law collection part of the greater academic library?*

The rationale for this was that during the 3 preliminary interviews with the subject librarians it was found that this question was already answered under question 1 in the same section. Thus, to eliminate repetition and provide an interesting insight from the libraries physical setup the question was changed.

It was also found that this would go to provide some possible indication on potential impact on students' information seeking behaviours dependent on the physical location of legal resources. An additional question was also introduced to provide statistical background on the student population of the participating institutions. This question was inserted in the "Existing Library Setup" section as the new question 6, with the existing question 6 becoming question 7. The new question was;

*How many students do you have in the law faculty? (This includes both part-time and full-time undergraduate, postgraduate, research and CPD students).*

# 6   Exploratory Study

## 6.1   Cohort Participation

For this study, like the pilot and the detailed investigation following, we had two cohort groups, one consisting of academic law librarians and the other consisting of law students who were engaged in the study of law.

### 6.1.1   Law Librarian Participation

12 academic law librarians, each from a different HEI throughout the U.K., took part in the exploratory study, a breakdown of this group is provided below (Table13);

| HEI Location | University Type | HEI Count | Percentage (%) |
|---|---|---|---|
| England | Old University A | 8 | 67% |
| England | New University B | 3 | 25% |
| Wales | Old University | 0 | NIL |
| Wales | New University | 0 | NIL |
| Scotland | Old University | 1 | 8% |
| Scotland | New University | 0 | NIL |
| Northern Ireland | Old University | 0 | NIL |
| Northern Ireland | New University | 0 | NIL |
| **TOTAL** | | **12** | **100%** |

Table 13: Exploratory Study - Law Librarian Participation in Research Instrument I

**NOTE**:

**A**: Old Universities are defined as HEI founded prior to 1992, **B**: New Universities are defined as HEI founded after 1992

## 6.1.2 Law Student Participation – Contributing HEI's

Law students of the same HEI (YC) who took part in the pilot study were approached through the academic law librarian who was initially interviewed (Table 14).

| HEI Location | University Type | HEI Count | Percentage (%) |
|---|---|---|---|
| England | Old University [A] | 1 | 100% |
| England | New University [B] | 0 | NIL |
| Wales | Old University | 0 | NIL |
| Wales | New University | 0 | NIL |
| Scotland | Old University | 0 | NIL |
| Scotland | New University | 0 | NIL |
| Northern Ireland | Old University | 0 | NIL |
| Northern Ireland | New University | 0 | NIL |
| TOTAL | | 1 | 100% |

Table 14: Exploratory Study - Law Student Participation in Research Instruments II & III

**NOTE**:

[A]: Old Universities are defined as HEI founded prior to 1992, [B]: New Universities are defined as HEI founded after 1992

We did attempt to recruit law student participants from the other 12 HEI (Table. 13); whose law librarians were being interviewed but all librarians declined to have their students take part in completing Research Instruments II and III. Some HEI declined for their law students to take part citing that they were occupied with study or examination commitments.

In general, it was appreciated that obtaining law student participation in completing the two questionnaires would be challenging hence the use of electronic questionnaires was utilised to make the participation straight forward. These questionnaires were previewed with the law librarian from HEI YC to obtain end-user feedback on the layout and question style, all was agreed. Also, as an incentive, it was decided to award participating law students at HEI YC a cash payment of £5 in the form of an Amazon Gift Voucher for each completed questionnaire (Research Instruments II and III) that were submitted. This was done in prior agreement with the law librarians from that HEI. Given the timescales and the challenges of law students being heavily engaged in their studies, we were only able to recruit participants from one HEI.

## 6.2    Exploratory Study - Results

The results for Research Instrument I were documented, summarised and reviewed. Research Instruments II & III were collated once the questionnaires had closed within the eSurveyCreator interface and results tabulated and themed if not converted into charts directly where appropriate and possible.

### 6.2.1   Responses to Research Instrument I – The Law Librarian Interviews

The responses to the questions posed to the law librarian cohort are outlined in this section, here we divide the responses up according to the section within the questionnaire.

Existing Library Setup

We used this section of questions to establish an initial understanding of the law library that was being examined and to provide the law librarian with opportunity to become accustomed to the interviewer and commence a semi-structured discussion.

Physical Setup: The physical arrangement of the law libraries in the cohort were split relatively evenly with 54% (N=7) law librarians being in self-contained physical buildings and the remainder 46% (N=6) being part of a greater academic library collection – yet all libraries retained some form of individualistic distinction. In terms of law student body, the largest group had some 6000 students and the smallest up to 800 (averaging 1650 students per institution) and consisting of undergraduate, postgraduate, distance learning, full, part time students and in some cases students from linked overseas institutions.

Resource Collection: The cohort of law librarians informed that they each had an ample collection of print material raging from text books, law reports monographs, journals, newspapers and other hard copy material. Some of the cohort was in possession of historical material which was of high value and to which access was strictly controlled. Some also possessed extensive loose-leaf resources.

*"We have text books as the main resource for our undergraduate students as well as monographs, we also hold many loose-leaf practitioner type materials, but we are trying to move to online resources where we can."* (HEI SW 2014)

Most of the cohort informed that their departments pro-actively sought to phase-out print material in favour of digital; with many this activity taking place within the area of legal journals; of which many were increasingly being digitised.

*"For our journals, we keep both hard copies and digital versions however increasingly the number of hard copies is being reduced in favour of digital format, this is something we are actively moving towards and so most of our journal collection is now online as we proceed to cancel our subscriptions of hard-copies."* (HEI WI 2014)

The cohort retained access to a wide variety of digital resources including the key electronic legal databases of which Westlaw and Lexis were the most popular 54% (N=7). This was largely due to their interfaces having a similar look and feel to that of a web search engine as well as the ability to inter-link with other resources for cases. More specifically, Westlaw stood out as the most widely used one due to its comprehensive nature 59% (N=4), with the following highlights;

*"Westlaw and Lexis have done a lot more over the years to be more user-friendly, these resources also have lots of legal sources within so interlinking results and this has made the search process easier and more streamlined.*" (HEI OL 2014) And

*"Databases are becoming more "Google" like and are increasingly easier to navigate through. I think that the Westlaw database was one of the first to take this approach with other providers following suite."* (HEI CD 2014)

Electronic Resource Use: We learnt that law students would consult electronic resources first often via consultation of the library catalogue from their mobile devices and then onto the designated digital resource or the print material.

*"For journal articles the search is more varied as students have more than one way to access these, either from Google, Google Scholar or our own library catalogue system."* (HEI BQ 2014)

Students were more likely to use digital resources if they were unsure of what specific legal information they needed, if the source of their information was known then they would be more likely to consult it, even if it were in print.

*"Westlaw and Lexis are the most popular as they are very comprehensive, and students are specifically trained to use these resources when they first start the course at the University. Both vendors also employ student representatives who provide training to students and promote the material…"* (HEI UL 2014) And

*"Electronic resources are favoured more over paper-based for searches due to the former being easier to navigate through and more comprehensive."* (HEI SW 2014)

Thus, one of the drivers behind the use of electronic resources was not only the use of mobile devices but more likely the comprehensiveness of the electronic resources themselves.

Ongoing Changes: In terms of development of resources, print material was found to be gradually increasing in cost and most of the cohort were concerned by this especially given the monetary constraints their institutions faced, some felt that Law should be more aligned, in terms of financial provision, to medicine where print material was traditionally known for its excessive cost. There was a concern that law students, often frustrated by the multiple log-in sessions between various independent electronic resource interfaces or overtly complex user-interfaces, would often resort to using un-vetted Web resources – which would lead to the students being exposed to irrelevant and multitudes of information.

*"We do know that Lexis, Westlaw and the like have apps for Smartphone's and tablet devices, but these seem to be geared towards the commercial side of the law and not the academic domain. Our type of setup would not allow these apps to work given the login requirements alone."* (HEI RT 2014) And

*"A lot of information is still accessible through provider's interfaces and many different login accounts. This needs to be made more seamless as access to resources is still not user-friendly nor is it easy to deal with."* (HEI TB 2014)

<u>Challenges from Publishers/Resource Vendors:</u> The cohort found that publishers were at times slow to react to market demands for digital material by way of delaying the release of digital content for resources, hence driving law libraries to procure print copies of resource which would eventually be superseded by digital versions anyway – thus increasing the financial burden on their departments.

*"Print resources are becoming more expensive and their use is reducing, so especially where we see duplication with electronic versions also being available, we consult with the faculty and then decided whether to stop our subscription to the paper-based resource or not."* (HEI CD 2014)

It was becoming increasingly apparent that many law students over-estimated their search skills based on their own experiences of social Web searching activities – it was key that law students learnt that Legal information search was quite complex and not as straight forward as what they were used to.

*"We did see that our Library search service is a comprehensive search system but the problem there is that students tend to end up with a too wide search result output. This tends to happen when students are not that refined in terms of their search skills…."* (HEI BC 2014)

<u>Resource Development:</u> On the form of digital resources, the look and feel of these items had made significant improvements as well as many functions such as interlinking with other digital material – which was a welcomed move. Vendors of the most popular resources tended to have student representatives on the campus; whose role it was to encourage and support law students in using these products; this was a welcomed move and found to be quite popular.

Resource Vendor Strategies: There were mixed opinions over the strategy that digital resource providers were taking with some participants observing a lot of consolidation within the industry whilst others pointing out situations where fragmentation of suppliers was becoming evident given the lower technological costs of providing digital material directly to the customer as opposed to using 3rd party aggregators to meet this fulfilment.

In some isolated instances, it went as far as vendors reneging on their commitment to providing 3rd party content to an institution due to a change in information delivery strategy with the original provider of the said data, leaving the law library of the said establishment to have to source the material from the 3rd party directly through their newly established delivery channel. In this light. the topic covering digital resource ownership continued to be raised throughout the conversations with comments including;

"…*so, the larger legal information providers such as Westlaw and lexis were consolidating a lot of information from other publishers. But in the last 3-4 years we have seen more of a fragmentation of this, so journal publications have, it seems, been pulled from the larger scaled providers because they may have been provided originally by a smaller publisher and the agreement to facilitate this shared provision may have ended.*

*Hence, we now find ourselves having to subscribe to smaller publishers directly, this has placed much greater pressure on our budgets also.*" (HEI BC 2014)

Some were critical over the digital interfaces and the limitations on printing from digital sources that were imposed by vendors upon students – much to the latter's frustration as it was clearly becoming evident that despite the flexibility that digital material provided, print was still something students required from time to time. Overall the feedback was that the pricing model and strategy for digital resource delivery needed to be made more transparent and less disparate and at times, unpredictable.

<u>Sales & Marketing Approach:</u> There was also the mention of the perceived lack of individual focus on the law libraries by the vendors themselves – where previously the vendors would have a more interpersonal business relationship now it was more focused on sales and revenue.

*"As far as specifically law publishers are concerned I would say that they tend of think more in terms of the private sector which is a different kind of model to the academic sector."* (HEI SW 2014)

<u>Summary:</u> Already within the initial stages of our discussion, we found that whilst digital resources were popular amongst the law student body, law librarians were voicing their concerns at how these products were being priced, designed and delivered as well as their management overheads. The nature in which these products were marketed and managed led to calls for the issue of access vs. ownership to be raised. Many participants noted their experiences when they would inadvertently lose access to specific electronic content through little fault or knowledge of their own but due to vendors adjusting their product catalogue. One thing that was clear now with electronic resources and that was they were not owned when purchased but the charges were purely for access to the said information only.

<u>Mobile Information Retrieval</u>

Most of the cohort found mobile information retrieval to be something which allowed the retrieval of information in a ubiquitous manner from any mobile device if there were suitable infrastructures in place to support it and this was something that many law libraries had or were in the process of actively investing in.

*"I guess you would need very good Wi-Fi, that has got to be the basis, also I think with all these things, if the teaching staff recommend it and are seen to be using it, that sends out a very positive message to the students; as they are very heavily influenced by the staff, what they do with teaching resources etc. I think also, training, certainly on the eBooks side would help."* (HEI WL 2014)

Using New Tools: Law librarians did appreciate the rich variety of information that could be obtained from these technologies and many provided examples where their personal lives had been positively impacted as such.

*"I think our academic staff have been very embracing of modern technology but a number of them may still find the use of smartphones for academic information retrieval very alien, but I think as well in terms of using these devices for resources, we have to try to find a way with our providers to make our databases easier to use."* (HEI UE 2014)

Many of the respondents had particularly refrained from using smartphones for legal information retrieval, citing that these devices were not best suited for this purpose due to the small screens which made reading extensive content difficult (Fig: 58).
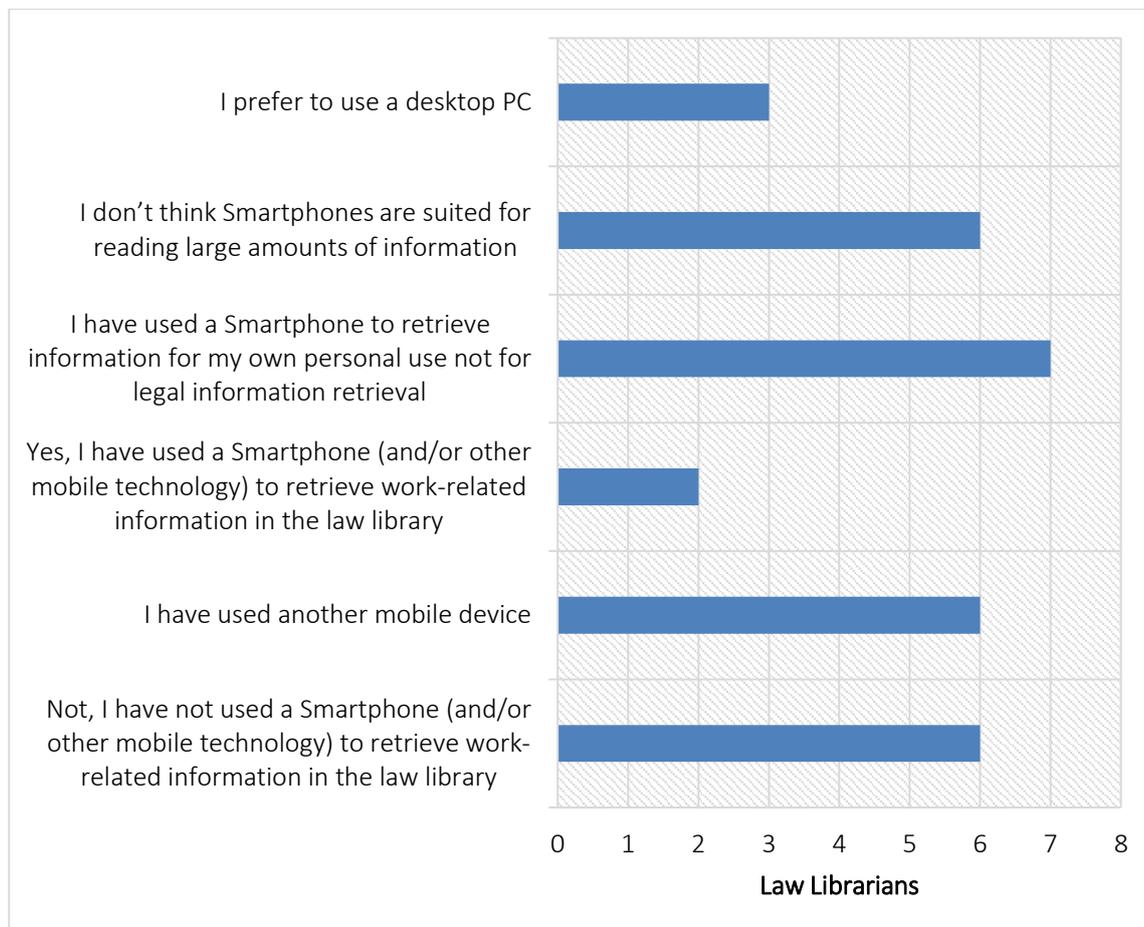


Figure 58: Have you (the Law Librarian) used a Smartphone to retrieve work-related information in the Law Library? If so, what was the experience and outcome?

<u>Mobile Technology Use:</u> Some of the cohort had observed law students using their mobile devices within the law library domain but this was mostly reserved for social information needs and not academic, most of the cohort citing the size of the screen, especially on smartphones as being a potential inhibitor for reading lengthy legal documents. Some also identified that mobile devices in general were not able to carry out multi-task functions, which for legal research given the variety of resources that would normally be consulted in a single session, was a key barrier and would often drive students to using desktop PC's or laptops.

*"Size of device, battery life, ability to manage multi-task resources, citing and copy and pasting, referencing, these things won't work in a mobile operating environment."* (HEI BC 2014)

<u>Changes in Technology Usage:</u> Surprisingly most of the cohort informed that their internal desktop PC terminals were continually in high demand and some law libraries went as far as looking to increase their desktop PC provision spaces to meet this growing need.

*"I have not seen students use their Smartphone's to access legal databases and so forth, this is probably due to the screen size, however we have seen student use their laptops and desktop Pc's provided in the library for this purpose."* (HEI UL 2014)

Many participating law librarians had also observed the decreased use of photocopying and increased use of printers, the cause for this being digital resources were mostly printed off by students for future reference or annotation.

Although one Law Librarian pointed out the hidden costs for law students in terms of printing charges - which this trend may have been a result of. The use of digital resources had also reduced the need for shelf space, it had not reduced the need for print and this was clear throughout the discussions.

*"…in theory, we are moving from a printed material-based entity to an electronic one, we have advanced quite far down this path, but I think from our point of view we would save lots of shelf space as most resources would be electronic and not paper-based."* (HEI BC 2014) And

*"We provide Wi-Fi printing within the library and technologies like this are very popular with the students especially when they use their mobile devices, so we will continue to support these technologies."* (HEI TN 2014). And

<u>Social Impacts:</u> In general, smartphones specifically had made impact to the library space, with some respondents noting incidents where students' social behaviours had been impacted, such as students using their devices more to interact with staff as opposed to direct conversation (Fig:59). There were other perspectives outlining increased pressure on the library itself to provide more mobile-device centric resources if not at least utilise these technologies as a means of communication to the law student body;

*"You are more likely to reach students via twitter on a day-to-day basis as they tend to be checking their twitter accounts quite regularly."* (HEI BC 2014)
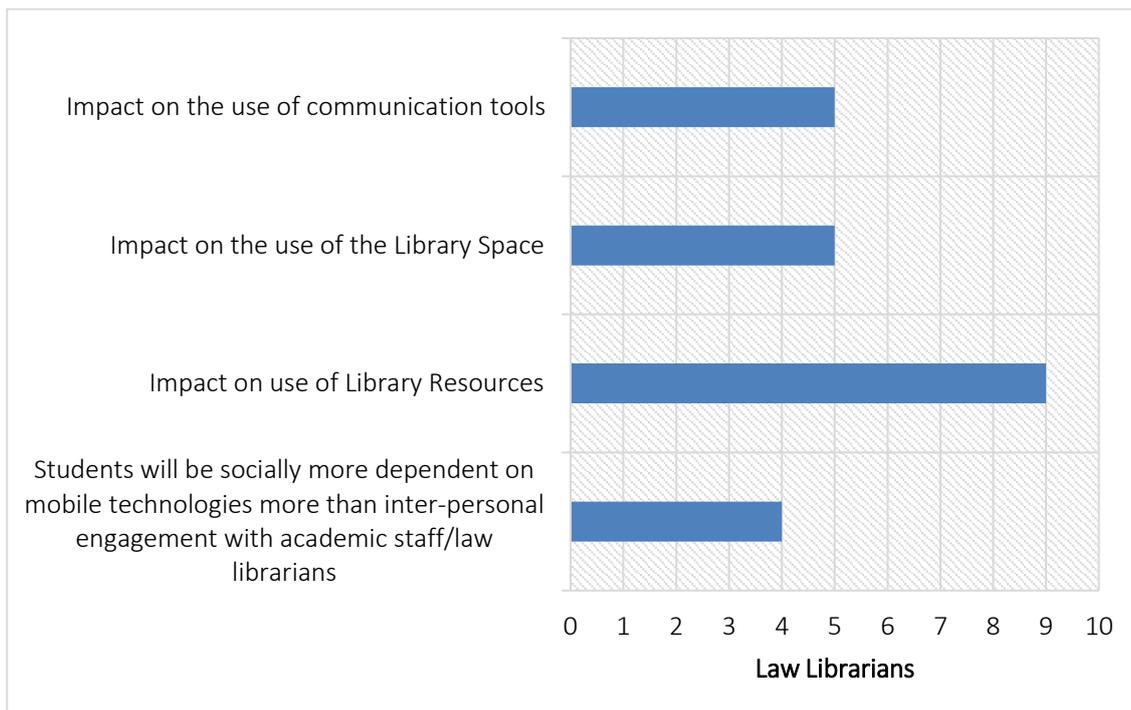


*Figure 59: How do you think the take-up of Smartphones by law students has impacted your department? (Particularly in relation to the way your department provides information services to the students)*

Summary: In this subsection, we found that law librarians were observing an ever-increasing amount of law students using mobile technologies not just for social information seeking but also for academic. The portability of these devices together with their wide-spread prevalence and increased functionality all worked naturally towards driving students to use them for different work tasks. Whilst staff were supportive of these technologies and their application in the learning space there were numerous warnings on the ill-designed resources that could end up being accessed on these platforms and so deliver a poor search experience.

We again noted that the design of resources for mobile technologies was beginning to emerge as a key theme with librarians making their views clear on the need for better functionality, effective use of the smaller screen sizes and intelligent applications that would leverage multi-tasking capabilities so to deliver a better information seeking experience.

Proposed/Future Situation

On encouraging the use of mobile devices within their space, some of the participants remained hesitant to actively encourage this, leaving it to the law students to determine which device was best, given the situation and context.

Active Participations: Some did provide evidence of such strategies with the running of workshops, technology expos and other interactive sessions which would expose students to such technologies but within an academic format. With participants informing that their institution actively issued mobile devices to law students as part of their course - to provide further engagement, feedback and device centric entrenchment – which had delivered a lot of rich feedback and discussions with vendors.

"As mentioned, the law department is actively distributing tablet devices to law students, this offer does not extend to smartphones, and however our library search system is in the process of being ported over to the smartphone and mobile device platform. We hold an annual event open to all students called "Get the digital edge" and here we invite students to attend a series of workshops, displays, and other events to show them how to use electronic resources in general such as LinkedIn, twitter and so forth, this is quite popular and helps improve their -

*digital skills. We also have a website which monitors these events shows videos of the event and other material, showing students how to promote themselves to future employers, social media usage etc.*" (HEI SW 2014)

Two of the participants had well established digital resources of their own, developed in-house, with one having a smartphone App available on the market and another having an extensive Web-based information resource.

A further three institutions had general smartphone/tablet-based Apps which were proving to be quite popular amongst the student body. It was these five institutions which were found to be very technologically integrated yet retaining their traditional views on print resources – which students were still encouraged to use.

Balancing of Digital and Non-Digital: About a third (N=4) of the law librarians voiced their concern at the lack of research skills that students possessed, and some had taken active measures to address this by providing training accordingly. One participant advised that their department had actively been encouraging law students to be well versed in using both types of resources due to regulatory requirements of the Solicitors Regulatory Authority. Others, in general, stated the importance of law students to be able to access both paper-based and digital resources with confidence was essential.

Another participant's institution took the same strategy but for a different reason, that being that many legal practices in their respective region did not have access to as many digital resources as other parts of the country hence there was more focus on print material.

"*Our students - in their information skills training - are taught that they have to know how to use the print law reports because in our part of the UK a lot of our smaller law firms do not have electronic resources at their disposal, so students have to learn to use print material.*" (HEI UE 2014)

Challenges of Mobile Technologies: The law librarians were keen to see how mobile devices would develop further in terms of technological innovation and how this would fit in with law students' lives; with some viewing these devices as complementary to the information seeking activity. On the possible challenges that the increased use of these devices would bring to the law library domain, the cohort felt that mostly it would result in a poorer learning experience for the law student's due to possible over-dependency on specific "Apps".

Or vendor-centric resources which could inadvertently result in students referring to that one "App" for their Legal Information and largely relying on it for most of their legal information content (N=12). Whist the lack of multi-tasking capabilities was also pointed out (N=6) (Fig.60).
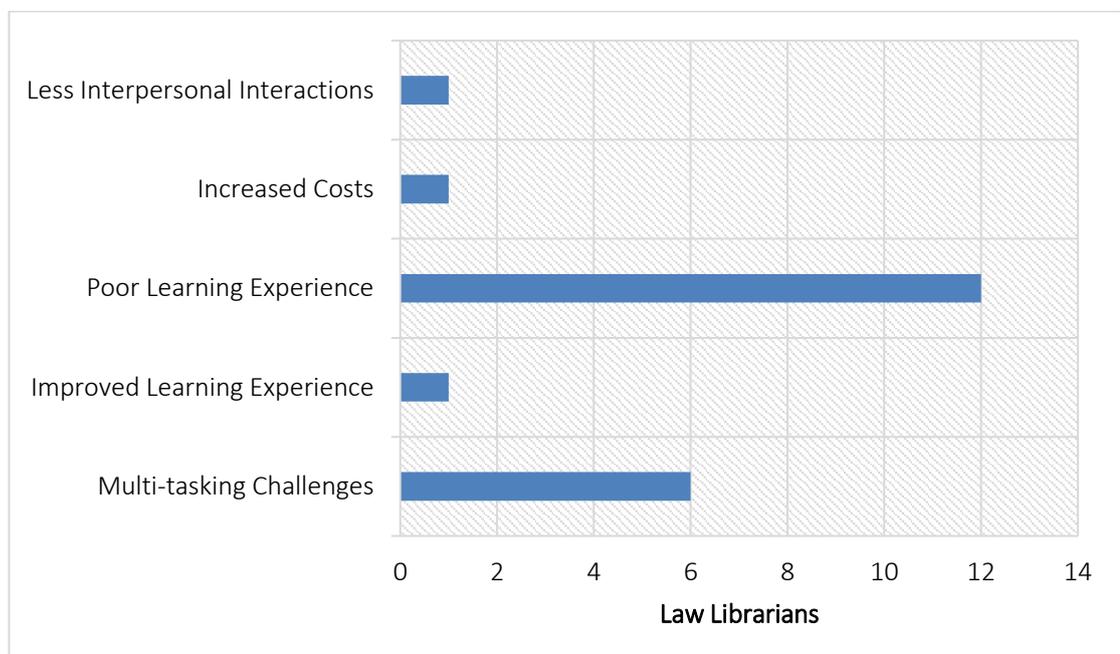
Figure 60: What challenges do you think active use of smartphones for information searches would bring to the students?

Due to the user-friendliness and intuitive approach that mobile device software was taking the driver to use any other resource would be minimal – hence the risk of a "Shallow Research" whereby students could inadvertently be discouraged from consulting other sources of information in the event of the resource being used was highly informative as well as intuitive.

<u>Leading the Change:</u> Most felt it was important to take a pro-active approach and have appropriate strategies through which the technology infrastructure, processes, polices and service delivery methods would be established. With a number providing examples of taking pro-active steps to include mobile devices within the student learning experience and others were leveraging existing technologies to align more with smartphone and general mobile technologies.

*"I think that the university as a whole, law school in particular and information services department are all aware of the potential for smartphone use but as far as I am aware there is no strategic plan as such. I think that will change, we will start to think more in terms of what can we do about this. E.g. ... it is now being proposed to increase the number of fixed PC's in the law library. It could be that smartphones become ever more prevalent in academic information retrieval and it would be up to universities to adjust to how best work with it."* (HEI UE 2014) Some felt law libraries needed to have a more social, collaborative, open-space environment and some disagreed with this concept being applied within the legal domain in that the professions key focus was to ensure its high standard of professionalism, formality and posture were maintained and not to be compromised for more "dot-com" type cultures of casual working.
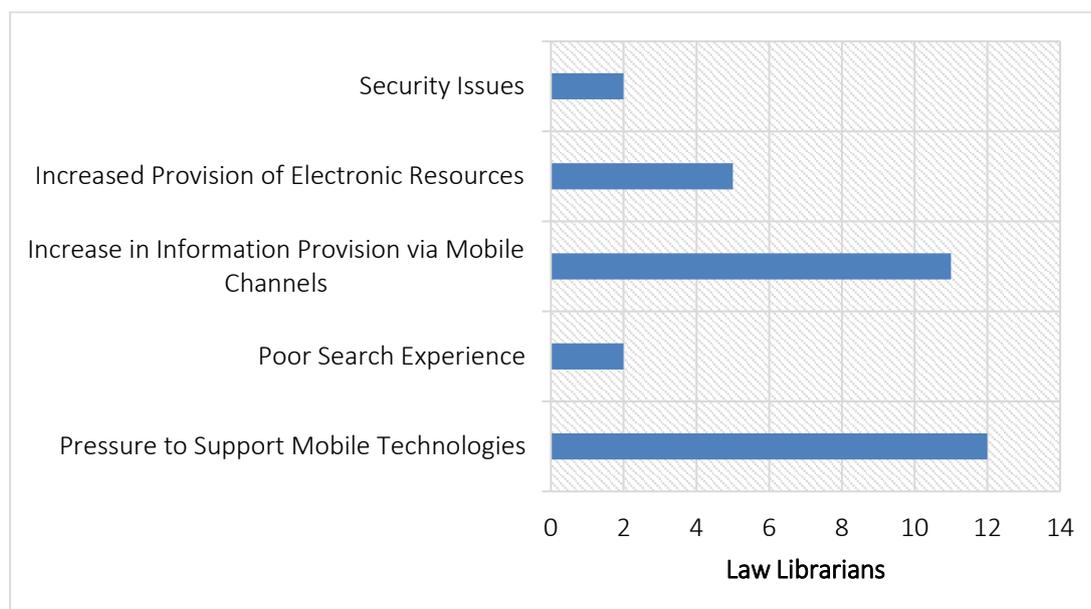


Figure 61: What challenges do you think active use of smartphones for information searches would bring to the department in general (Library/Law Library)?

Pressures for Support: Law librarians saw their domain as facing increased pressure to support mobile technologies (N=12) (Fig.60) whilst witnessing an increase in the provision of more services through these devices (N=11). As a future perspective (Fig.61), digital content was predicted to overtake paper (N=9) with the law library still retaining its place as an effective and socially collaborative ecosystem where legal content could be research for and found (N=9) whilst increasing its foothold in the areas where digital technologies evolve (N=7).
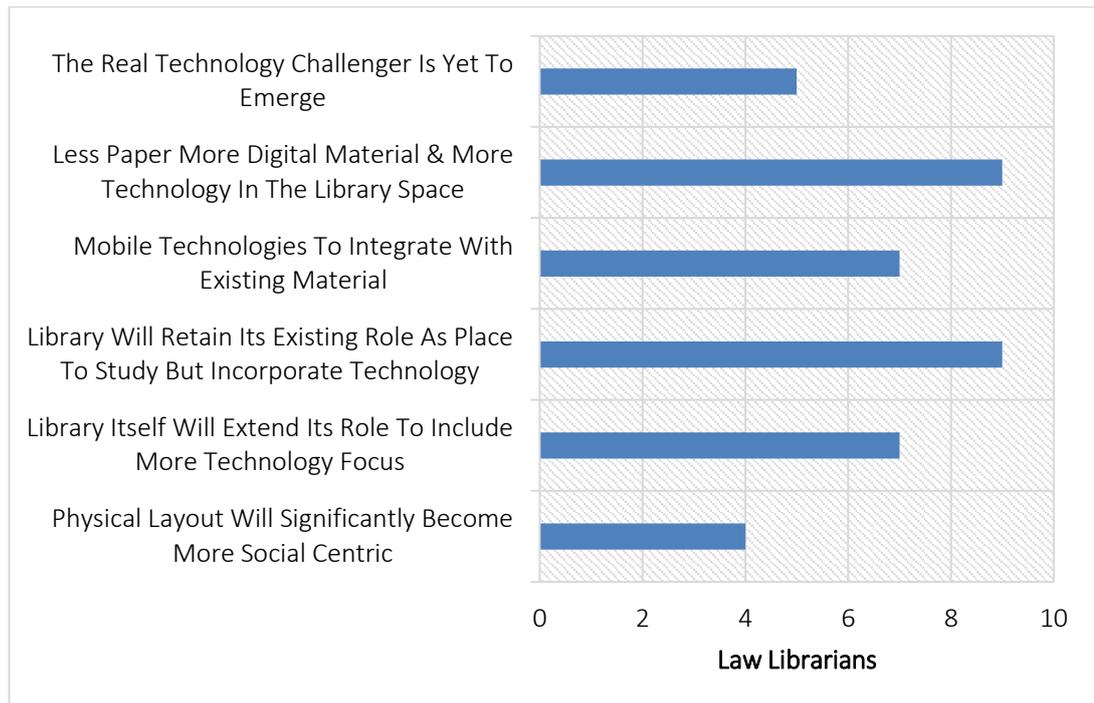


Figure 62: What do you think the Library/Law Library of the future will look like in relation to smartphones?

*"The trend of conducting research online and using digital resources will continue to increase and smartphones will play a part somewhere in this. Our libraries need to be more mobile friendly and we are creating library spaces where students can access resources and materials on their devices in a less formalised and more collaborative environment.*

*However, having said that I think that libraries with hard-copy material will existing for some time to come and that library staff will always play a key role in ensuring students get the required support to access information from the resources given to them whether electronic or paper based."* (HEI SF 2014)

Issues with Digital Formats: The cohorts view was that digital resource providers still had some way to go in terms of providing effective legal resources on mobile platforms with issues such as digital rights management still outstanding. Utilising the limited processing power, screen size and functionality limitations in a succinct yet constructive manner that would not compromise the quality or quantity of information law students could obtain had they resorted to using the same tools on desktop PC's or laptops. The emergence and application of Social Media tools within this space was welcomed with many having actively integrated channels of communication through Social Media tools within their domains. Overall smartphones and mobile devices in general, were viewed as an intermediary device which would find its space within the desktop PC, laptop, notebook or tablet and that the use of any technology would depend on the context it was being used in as well as the content that was displayed on the said platform of choice.

Summary: Whilst many law librarians informed that their department made significant efforts to increase the use of mobile technologies in their space, they remained hesitant somewhat due to several factors which again included the design of resources that would normally be accessed from these platforms as well as the lack of availability of specialist legal content in digital format. There was also the case with law librarians wanting to purposely ensure that law students didn't solely rely on digital resources but learnt to make effective use of paper-based materials – of which there was plenty – especially given the fact that the profession by large remained a paper-based one with most professional lawyers still being expected to succinctly locate legal content through non-digital means. We found that the design and build of legal information resources would be key to ensuring an effective means of providing a managed legal content search experience on mobile technologies whilst maintaining the realistic expectations given the limits of these technologies and intelligently guiding law students to using other alternative resources where appropriate.

## 6.2.2   Discussion of Results

The 12 law librarians' responses to the interview questions provided us with a reasonable overview of the law library landscape amongst the select group of HEI in the U.K. We found several positive and negative aspects that electronic resources had presented to law students and it was useful to see law librarians' perspectives of these common forthcomings. Mobile technologies were also covered into this mix by librarians noting these devices as being increasingly visible in the law library landscape not just for social information seeking, but increasingly for academic research also. Our engagement with this cohort had brought to the surface not just changes mobile technologies were making to the law library landscape but electronic resources and the changes these types of products had brought into the academic information seeking domain. The next stage of research involving law librarians would be in the detailed investigation where more HEI were engaged into the interview process to complement the current cohorts' responses and provided greater representation of the U.K. academic law libraries. To help support our focus we also identified some key themes from the responses to the questions posed to this cohort during the interview process and we outline them.

Ownership vs. Access

Whilst law librarians recognised that electronic resources were paid-to-access whilst paper-based materials were paid-to-own thus presenting a significant and unprecedented shift in the tangibility of law library information assets, they did voice their concern at the charges for accessing digital resources. Here we found that law librarians noted the inconsistent pricing methods applied to digital resources by vendors made financial planning difficult for many institutions who were already pressed for fiscal efficiencies and faced cutbacks (See Section 6.2.1 – Existing Library Setup). Different access methods also compounded the situation and was something we found being mentioned in other subject libraries (Kim & Ball 2011).

Further literature on this topic found arguments supporting more of a collaborative effort where a combining of institutions purchasing power would help in reducing these costs somewhat (Chandel & Mukesh 2012).

Thus, whilst digital resources had reduced pressure on shelf space but ended up increasing printing demand and in doing so the hidden costs for printing had become a growing burden for law students who still, despite the growing prevalence of digital material, still found a need for requiring printed copies; "*Print devices heavily used and oversubscribed*" (HEI UL 2014). (See Section 6.2.1– Existing Library Setup).

<u>The Design of Resources</u>

We found that digital resources were becoming increasingly embedded within the law student psyche and this was driven by their first-hand experiences, habits and confidence in using mobile devices. Given this growing behaviour, consequently, law students expected most if not all their legal information to be readily available through these (electronic) channels. Print material was often seen as a last resort with most students having evidently poor research skills made apparent when using these materials. Digital resources were becoming more intelligence and thus increasing law student's reliability on them to locate the most relevant legal content for them as opposed to the students using other less developed methods to make a best judgment choice from a selection of legal content (See Section 6.2.1 – Mobile Information Retrieval). Law librarians saw this trend as a risk of over-dependence on a specific type of digital resource and the corresponding content to be a dominant influence in the legal understanding and approach of law students;

"*The key risk is that students may end up using the most popular legal resources and avoid using the more specific legal resources, restricting themselves and not obtaining the more detailed content.*" (HEI ST 2014)

We also found that smartphones were not well built for extensive legal research but more for small, short snippets of information to be retrieved and shared, content creation was not something these devices were well fit for either. Students would use them but not for lengthy academic study. Tablets, although better for lengthy legal information seeking periods, lost out when it came to multi-tasking functionalities as well as the abilities to cut, copy, edit and paste. The general pattern was that law students would consult digital resources first as they proved to be more comprehensive, if required they would resort to consulting print material from there otherwise continue to work within the digital realm, within this space results would be printed for future reference. As for mobile technologies, their role would remain, but restricted to that of a complementary function in addition to other means of legal research (See Section 6.2.1 – Proposed/Future Situation). Our following approach involving academic law librarians involved more interviews including questions which were built from the themes identified above. The aim being to focus at a greater depth on the previously outlined areas of electronic resources and mobile technology use in an academic information seeking context.

## 6.2.3  Drivers & Barriers – Research Instrument I

Several drivers for use and barriers against use of the various technologies available to students were identified from the data set, these are outlined in the following table (Table 14).

| Technology | Attribute | Description | Law Librarian - Exploratory Study |
|---|---|---|---|
| Smartphone | Driver | Need quick results/small segments of information | ✔ |
| Smartphone | Driver | Need information retrieval whilst being physical mobile | ✔ |
| Smartphone | Barrier | Lack of battery power on the Smartphone device | ✔ |
| Smartphone | Barrier | Small screen/poorly designed resource interface | ✔ |
| Smartphone | Barrier | Lack of network or Wi-Fi signal in surrounding area | ✔ |
| Tablet Device | Driver | Larger screen making it easier to read legal content | ✔ |
| Tablet Device | Driver | Detailed information need and being physically mobile | ✔ |

| | | | |
|---|---|---|---|
| Tablet Device | Barrier | Lack of battery power on the Tablet Device | ✔ |
| Tablet Device | Barrier | Lack of Wi-Fi signal in the surrounding area | ✔ |
| Tablet Device | Barrier | Need to edit existing and create additional information | ✔ |
| Laptop | Driver | Need to write document | ✔ |
| Laptop | Driver | Require multi-session search | ✔ |
| Laptop | Barrier | Not contextually suitable | ✔ |
| Laptop | Barrier | No power sockets available for charge | ✔ |
| Laptop | Barrier | Lack of Wi-Fi signal in the surrounding area | ✔ |
| Desktop | Driver | Require lengthy information search | ✔ |
| Desktop | Driver | Require multi-session search and other resources | ✔ |
| Desktop | Driver | Need to write document | ✔ |
| Desktop | Barrier | Need quick results | ✔ |
| Desktop | Barrier | Not in location of use | ✔ |
| Desktop | Barrier | Not available for use | ✔ |
| Paper | Driver | Need to annotate printout | ✔ |
| Paper | Driver | Need specialist legal information not available digitally | ✔ |
| Paper | Barrier | Paper resource unavailable | ✔ |
| Paper | Barrier | Student not in location where paper resource accessible | ✔ |
| Paper | Barrier | Resource difficult/laborious to locate | ✔ |

Table 15: Identified Attributes of Information Behaviours Using Technologies – Law Librarians'
Observations from Research Part I (Exploratory Study)

The attributes listed (See Table 14) were used to help draft a model of how law librarians

perceived law students' information seeking behaviours to be, in the context of the technologies

that were available to them (See section 6.8.2).

## 6.3    Re-Design & Use of Research Instrument II – The Law Student Smartphone Questionnaire

The questionnaire was revised and re-aligned to the research questions and objectives. It was

then split into 5 sections and the relevant research questions and objectives mapped to each,

the actual content of the questionnaire is available in Appendix A.2.

Law Students' Smartphone Choice: One section looking at the "law students' smartphone choice" with questions aimed to find out what function(s) of the device was the most appealing to the students. This section helped partially meet research question 1 and research objective 2.

Law Students' Information Search Behaviour: Three questions looking at the "law students' Information Search Behaviour" – by this we mean where students would go to search for their academic related information, what tools and methods they would use and when it came to use their Smartphone's – how long the students would spend on these devices looking for both non-study related information and study related information. This question set would also help outline any specific sources of help that law students would deem useful and provide awareness of popular support resources. These three questions went towards partly addressing research questions 1, 2, 3 and 4 as well as research objectives 1 and 2.

Law Students' Smartphone Use: Two multi-tiered questions seeking out "law students' smartphone use" in general, what functionalities they use, why they use them and in which location. This would provide insight into not only the purpose for using the device but also the locational context in which it may be used. These questions helped partly address research questions 1, 2, 3 and 4 and research objectives 2 and 3.

Law Students' Use of the Law Library: Three questions on "Law Student's Use of the Law Library", aimed to find out why law students use the law library, if they use their smartphones in the law library space and what drivers (if any) would encourage if not deter them from using these devices in this context. This question set would help build up a greater picture of how law students perceived the use of their devices within the law library domain and allow the students to voice their feedback on support and facilities within the said space on the continued use of these technologies. Including these 3 questions helped partially address research questions 1, 2 and 4 and research objectives 2, 3 and 5.

Demographics: Three questions on the participant's demographical information – used to ascertain the attributes of the cohort taking part and to ensure that a fair representation of the law student body was maintained.

Law Students' Preferred Smartphone Resource: Three questions in the concluding section covered the "law students' preferred smartphone resource" in that the participants were given the opportunity to express their opinions on aspects of smartphone-based Apps that would be beneficial if not drivers for use. This section also included an open answer area which allowed the participants to state their views with more freedom. Here we partly met research questions 1, 2, 3 and 4 as well as research objectives 2, 3 and 5.

Further Participation: Finally, the questionnaire ends by asking the participant if they were happy to participate in further research and a space provided for the participant to enter their email address. This was included so that future study of the cohort via other more detailed means could be justified, depending on the responses received.

## 6.4 Responses to Research Instrument II – The Law Student Smartphone Questionnaire

The results from the law student Questionnaire were extracted from the Online Web-site used to collect the results in the first place (eSurveyCreator) and then analysed as outlined in (See Section 4.14). In this section we outline the results from Research Instrument II. For clarity, we have divided the responses into the sections of the questionnaire that was posed to the law student cohort.

### 6.4.1 Demographics

A total of 37 students attempted the questionnaire, 36 were completed successfully, thus providing a 97% completion rate. Of this, female students formed most of the cohort, providing 61% (N=22) of the participants with students at 39% (N=14).

A breakdown of the course types together with the year groups was also created, this was to give a detailed background of the cohort's make-up and the largest participants (Table 15).

| Course Type | N | % |
|---|---|---|
| LLB - 1st Year | 15 | 42% |
| LLB - 2nd Year | 6 | 17% |
| LLB - 3rd Year | 3 | 8% |
| Postgraduate/GDL – 1st Year | 10 | 28% |
| Postgraduate/GDL – 2nd Year | 2 | 6% |

Table 16: Course Type & Academic Year

Here we found that the largest segment of the cohort consisted of 1st year postgraduate LLB students (N=15) 42% and the second largest was 1st year postgraduate/GDL students (N=10) 28%. However, counting the course types as a group and combining the different years together showed that undergraduate students represented over two-thirds of the cohort whilst the remaining third was made up of postgraduate students (Table.16).

| Course Type | N | % |
|---|---|---|
| LLB | 24 | 67% |
| Postgraduate/GDL – 1st Year | 12 | 33% |

Table 17: Course Type with Academic Year Combined

## 6.4.2  Law Students' Smartphone Choice

We collected the results from the eSurveyCreator tool and then summarised them in tables for each question answered. The number of selections made was then divided by the total number of participants who had successfully completed the survey (N=36).

The convenient size of the handset was stated by (33%) of the cohort as a "Very Important" element of their device (Fig. 63) and a further (31%) highlighting it as a "Fairly Important" feature.

We found that the results showed a somewhat correlating pattern with the research output from the Law Librarian interviews (Research Instrument I) which highlighted that Legal Resources tended to be popular if their user interfaces were well-designed thus appealing to the study cohort, here 53% (N=19) of the law students outlined that usability of the technology, within the context of their Smartphone, was "Very Important" with a further 22% (N=7) stating it as a "Fairly Important" feature. (see Section 6.2.1).
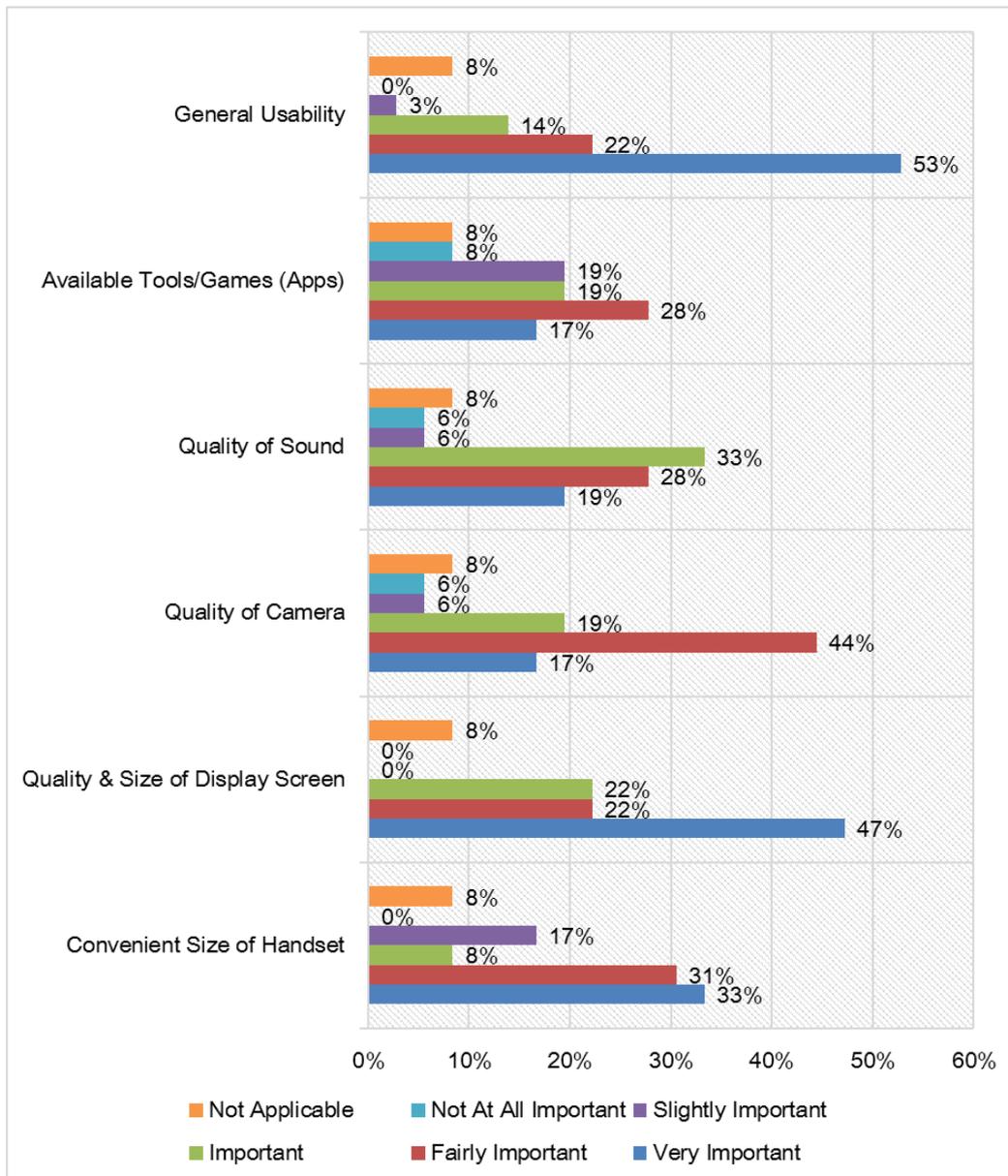


Figure 63: How important are the following reasons for choosing your smartphone?

This would infer that if the usability of the device was suitable as well as the size, then any software interface that made effective use of these features could, by assumption, also be popular. The law librarians had also highlighted from their feedback that the screen of a mobile device would be a significant factor in information seeking activities upon the said device – this also reflected in similar feedback from the law students with 47% (N=17) outlining that the quality and size of the display screen was "Very Important". (see Section 6.2.1)

The quality of sound 19% (N=7) and quality of camera 17% (N=6) were the less emphasised features however the camera feature fared better as a "Fairly Important" attribute 44% (N=16) marking it as a "Fairly Important" aspect of their mobile device. This correlated to the comments made by many law librarians who had witnessed law students using their handsets to take pictures of resources and then approaching the Library Information Desk for assistance in locating the said photographed item. This behaviour also applied to screenshots which students often took from the Internet, with law students clearly making effective use of such features.

## 6.4.3  Law Students Information Search Behaviour

The same cohort overwhelmingly used a desktop PC or laptop for study-related information seeking on a daily basis, at 94% (N=34) (Fig. 64). In our output from Research Instrument I, law librarians informed that despite the increased use of mobile devices within the law library space, desktop PC's and laptops were more popular than ever and the demand for the formers provision was steadily on the increase (see Section 6.2.1).
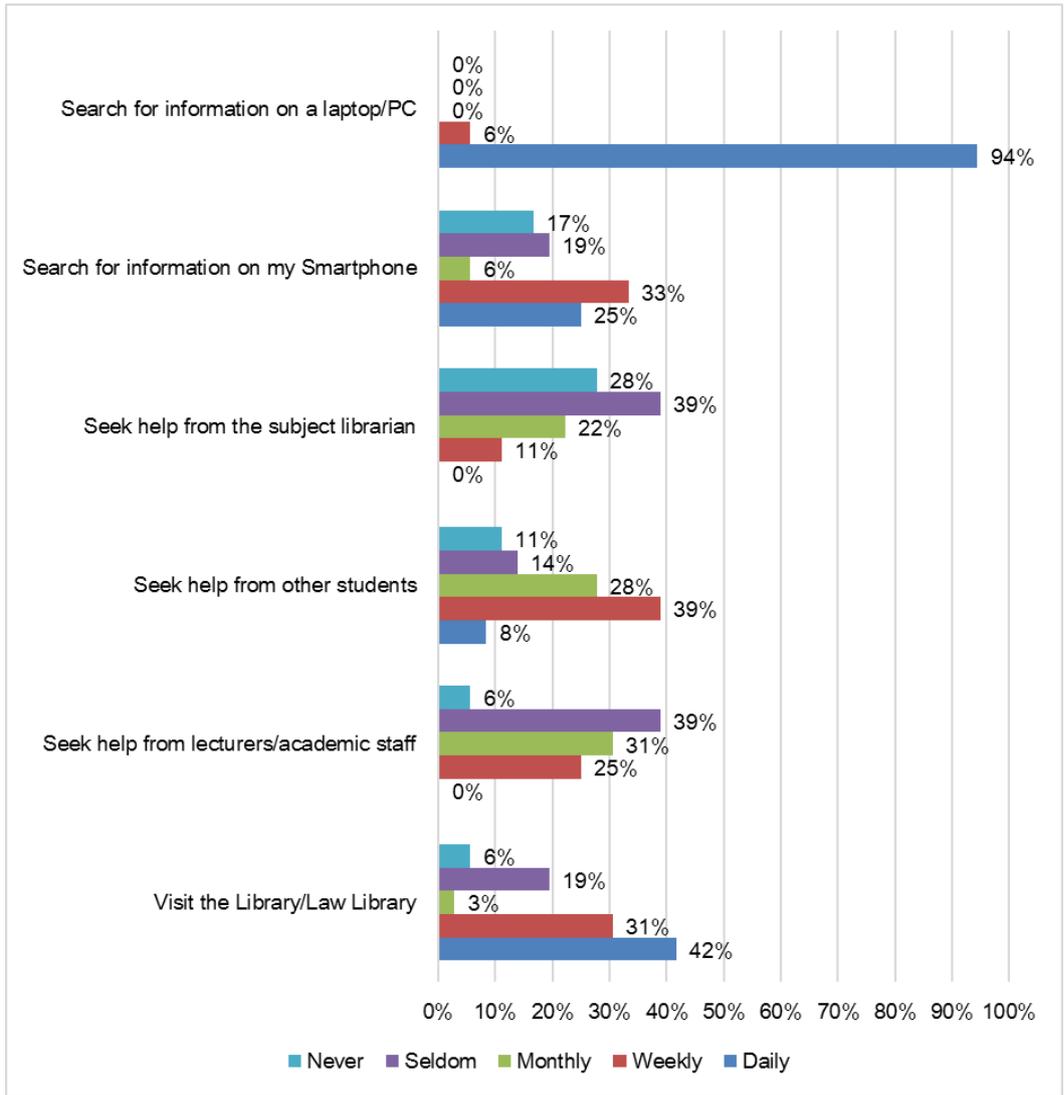
Figure 64: When searching for study-related information, which method(s) do you use and how often?

Similarly, the law library remained a popular place for students to engage in academic information seeking 42% (N=15), followed by using their smartphone as an information seeking tool, third preference 25% (N=9) and engaging with other law students for help 8% (N=3), as the fourth choice.
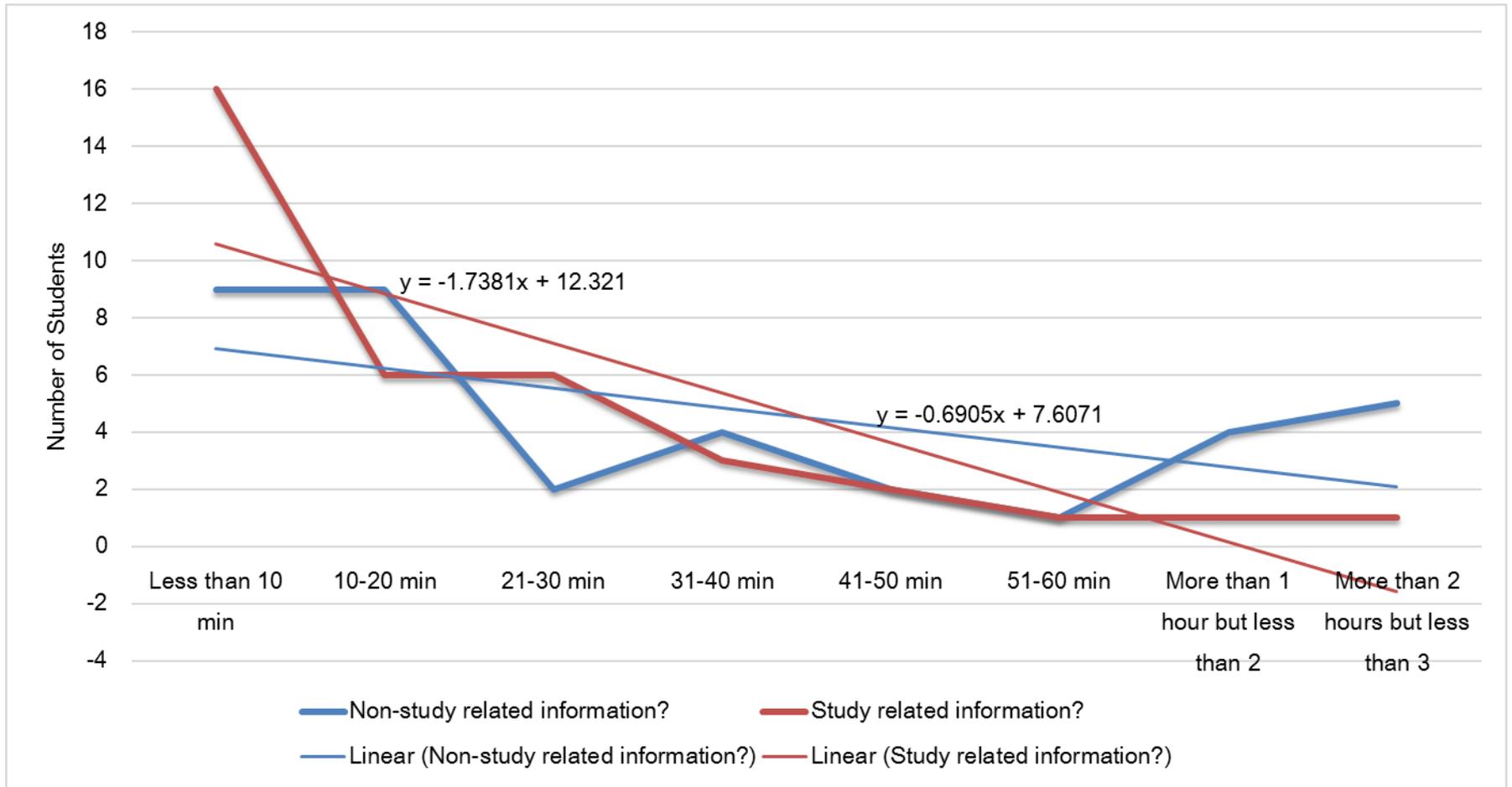
Figure 65: On an average day how long do you spend browsing for information on your smartphone when searching for: (Non-study related information) / (Study related information)?

We also found that most students used their smartphones for study related information seeking 44% (N=16) for less than 10 minutes, for the same time 25% (N=9) did so for non-study related information seeking. The trend for study related information seeking on Smartphones showed a far higher decrease rate than that of non-study related information seeking over the same time periods outlined, with only 2.8% (N=1) using their device for their studies for greater than 51-60 minutes (see Fig. 65 and Table 17).

| | Less than 10 min | 10-20 min | 21-30 min | 31-40 min | 41-50 min | 51-60 min | > 1 hour but < 2 | > 2 hours but < 3 |
|---|---|---|---|---|---|---|---|---|
| Non-study related information? | 9 | 9 | 2 | 4 | 2 | 1 | 4 | 5 |
| Study related information? | 16 | 6 | 6 | 3 | 2 | 1 | 1 | 1 |

Table 18: On an average day how long do you spend browsing for information on your smartphone when searching for: (Non-study related information) / (Study related information)?

For non-study related information seeking the same cohort showed an increase in device use for extended periods with 11% (N=4) using these technologies for more than one hour but less than two and this rising to 14% (N=5) for more than 2 hours of use. We also plotted the trendlines for each of the categories (Fig. 65) and found the following;

| Use Mode | Trendline Equation |
|---|---|
| Non-study related information | Y=-0.6905x + 7.6071 |
| Study related information | Y=-1.7381x + 12.321 |

Table 19: Gradient of usage mode of smartphones

Thus, the gradient for study related information seeking use of smartphones (Table 18) showed a far steeper decline compared to that of non-study related information seeking over the prescribed times. Law librarians' observations did match the responses from law students where the former cohort mentioned in Research Instrument I that whilst Smartphones could be used by law students for their studies, the small screens would inhibit long term use.

These devices were clearly best reserved for shorter periods of academic research and that too at a summary level only. Smartphones were recognised as best placed to serve as social communication tools.

Students T-Test

We furthered our statistical analysis by conducting a two-paired t-test for the two sample means to ascertain the significance of the difference between the two choices (see Table.19).

| Null hypothesis (H0) | $\mu_{Non-Study} = \mu_{Study}$ (we already know this from the above calculations) |
|---|---|
| Alternate hypothesis (H1): | $\mu_{Non-Study} \neq \mu_{Study}$ |
| α | 0.025 |
| Degree of Freedom | 35 (N-1 or 36-1) |

Table 20: T-test Calculation Preparation Values

We ran these values together with the arrays of the numbers for the two Smartphone use categories in Microsoft Excel to find the following output, our hypothesised mean difference was 0 and our observations were at 36 (Table.20).

| Value | Non-study related information? | Study related information? |
|---|---|---|
| Mean | 5.3056 | 6.5278 |
| Variance | 6.7897 | 3.4563 |
| t Stat | -3.6638 | |
| P(T<=t) one-tail | 0.0004 | |
| t Critical one-tail | 1.6896 | |
| P(T<=t) two-tail | 0.0008 | |
| t Critical two-tail | 2.0301 | |

Table 21: T-test for – On an average day how long do you spend browsing for information on your smartphone when searching for: (Non-study related information) / (Study related information)?

Our $T_{stat}$ = -3.6638 and our critical value for the degree of freedom value of 35 and alpha of 0.025 was $T_{crit}$ = - 2.3420 (given that our $T_{stat}$ is a negative value), thus our $T_{stat}$ > $T_{crit}$ .

Hence, we rejected the null hypothesis ($H_0$) and we can therefore conclude that there is a significant difference between the time spent on an average day searching for non-study and study related information on a Smartphone.

### 6.4.4 Law Students' Smartphone Use

The cohort's use of their smartphones on campus (Fig.66) also provided some interesting results with most strongly agreeing that they use their device to communicate with their friends for social needs 53%(N=19), 31% (N=11) strongly agreeing that they used their device more when moving around campus, 28% (N=10) strongly agreeing to use their device for social information seeking on campus.
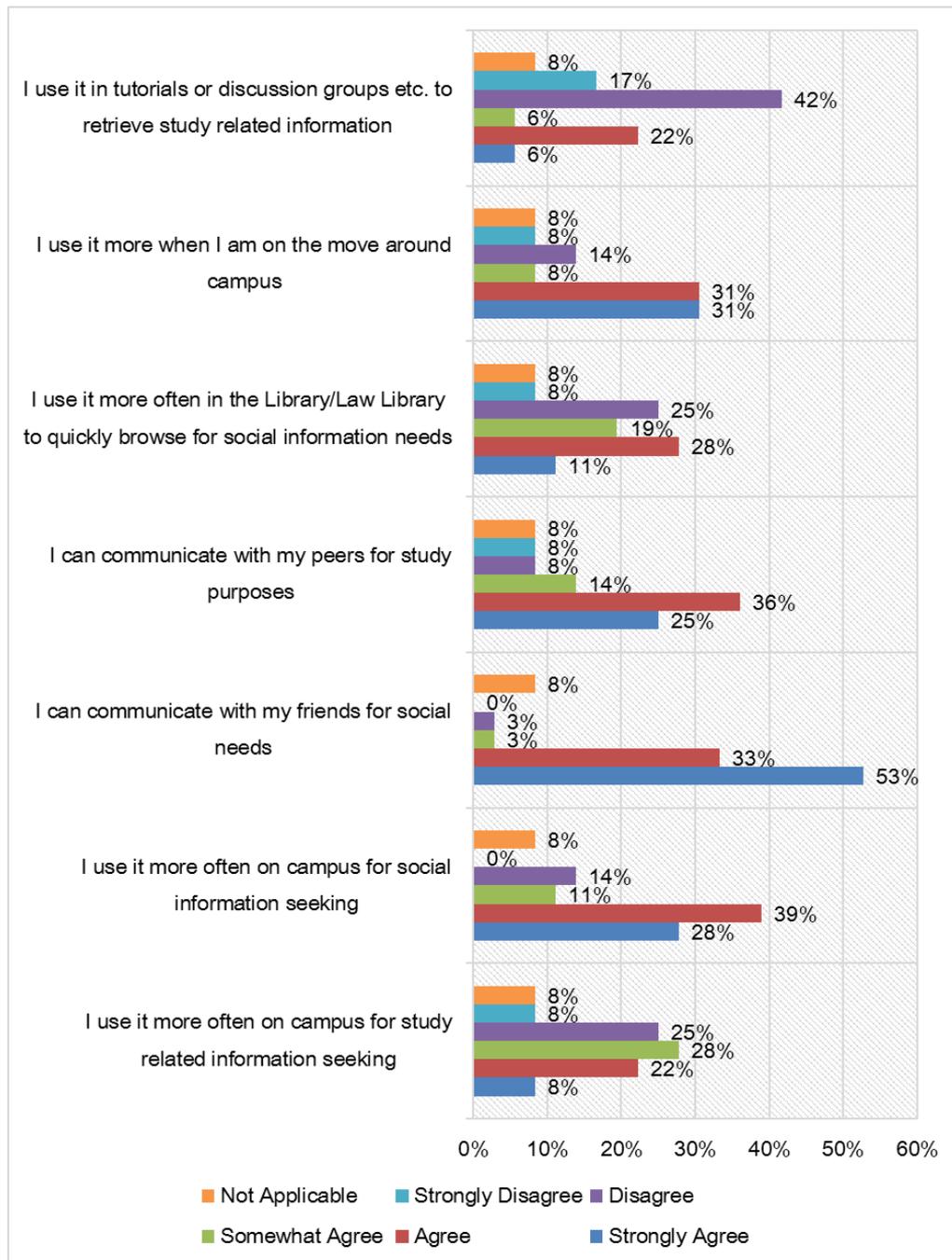
Figure 66: How do you feel about the following statements on using your smartphone on campus?

The most popular smartphone function was that of SMS/Text messaging and this was used widely in open spaces within, outside and around the campus area. The use of social media and internet browsing were also popular in these places with voice calls being the most used function only outside and around campus and making 4th preference in open meeting or café spaces.

Again, this corresponded with the feedback from the law librarians who although appreciated the growing use of these technologies within the HEI environment, maintained that these devices were better suited (and used) for social information exchanges.

Chi-Squared Test: We tested for significance by applying a Chi-Squared test to the same question on law students' smartphone use. Our null hypothesis stated that there was no significant difference between the various functions used on smartphones vs. the location on Campus these functions were used at. We found our final Chi-Squared value ($\chi$) = 42.5 with our degrees of freedom set as 16 and our probability value of 0.05, giving us a P value of 26.296. Since 42.5 > 26.296 then this showed us that there was a significant difference between the observed and expected values for the use of the listed Smartphone-based functions at the given locations in the University Campus. Hence the probability that the difference is due to chance is less than 5% and the null hypothesis can be rejected.

## 6.4.5 Law Students' Use of the Library/Law Library

Most students saw the law library as a quiet place to study 64% (N=23) (Fig. 66), with the other 25% (N=9) using the space to view books, journals or other paper-based material and 11% (N=4) to simply borrow material.

The cohort also indicated that if they were to use their smartphones in the law library then their primary purpose would be for Internet Search 69%(n=25), send and receive Emails 44% (N=16), use SMS/Text 36% (N=13) and access Social Media 33% (N=12).
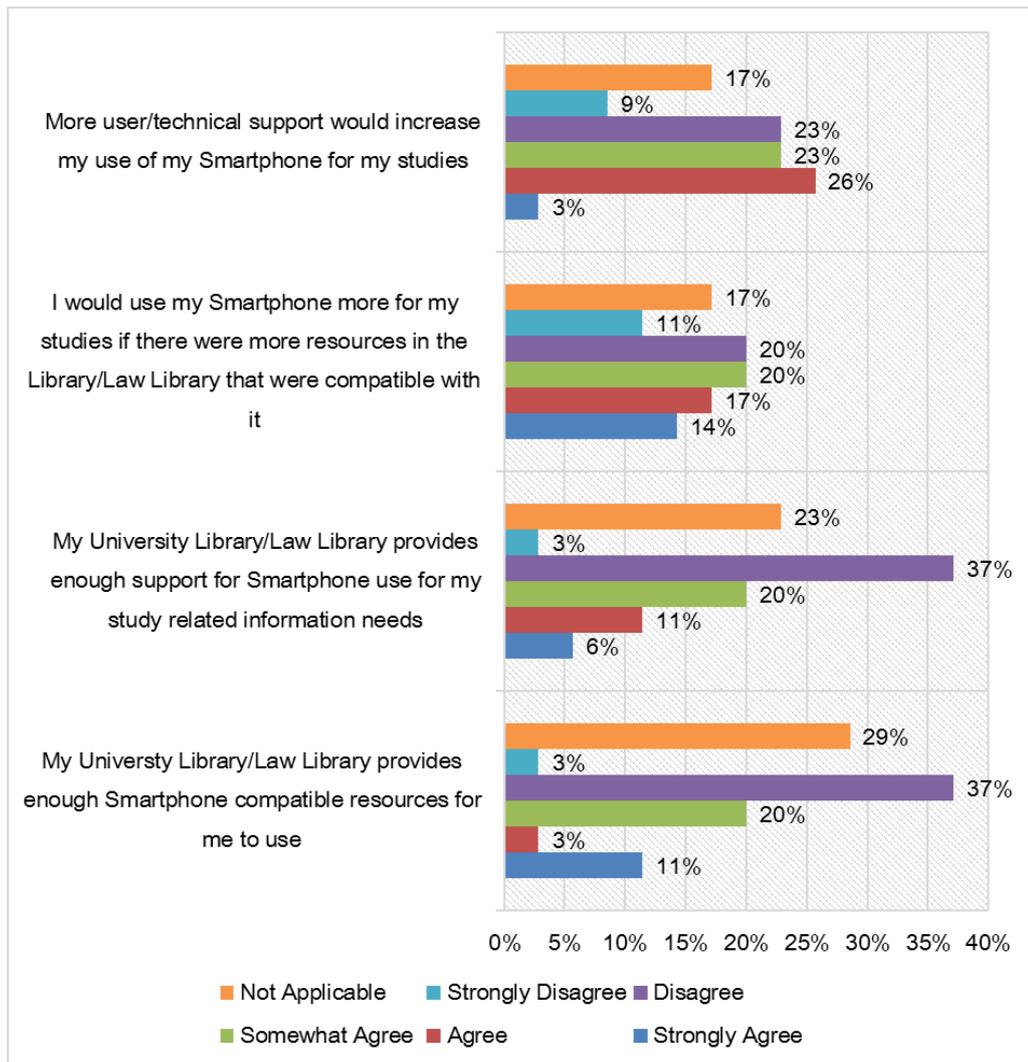
Figure 67: How do you feel about the following statements?

Most of the cohort disagreed that their law library provided adequate support for Smartphone-centric legal information retrieval and the same amount indicated that their law library did not provide enough Smartphone-centric resources for the same purpose (both at 37% (N=13)) (Fig.67). Despite this however, many indicated a willingness to use their smartphone devices for their academic studies, provided there were more suitable resources available; with a total of 51% (N=5 (Strongly Agree), N=6 (Agree), N=7 (Somewhat Agree)) in overall agreement.

Also, we found that law students would also be prepared to use their smartphones more for the same purpose if the provision of technical support was increased, a total of 52% (N=1 (Strongly Agree), N= 9 (Agree), N= 8 (Somewhat Agree)).

## 6.4.6 Law Students' Preferred Smartphone Resource

We asked the cohort to outline what functions would they find most useful for a study-related app to have on a Smartphone device, thus providing details on the drivers that would increase usage in this context. By functions we meant attributes or capabilities that would enable students to perform certain tasks/activities with their devices. They responded with the following attributes (Fig. 68).
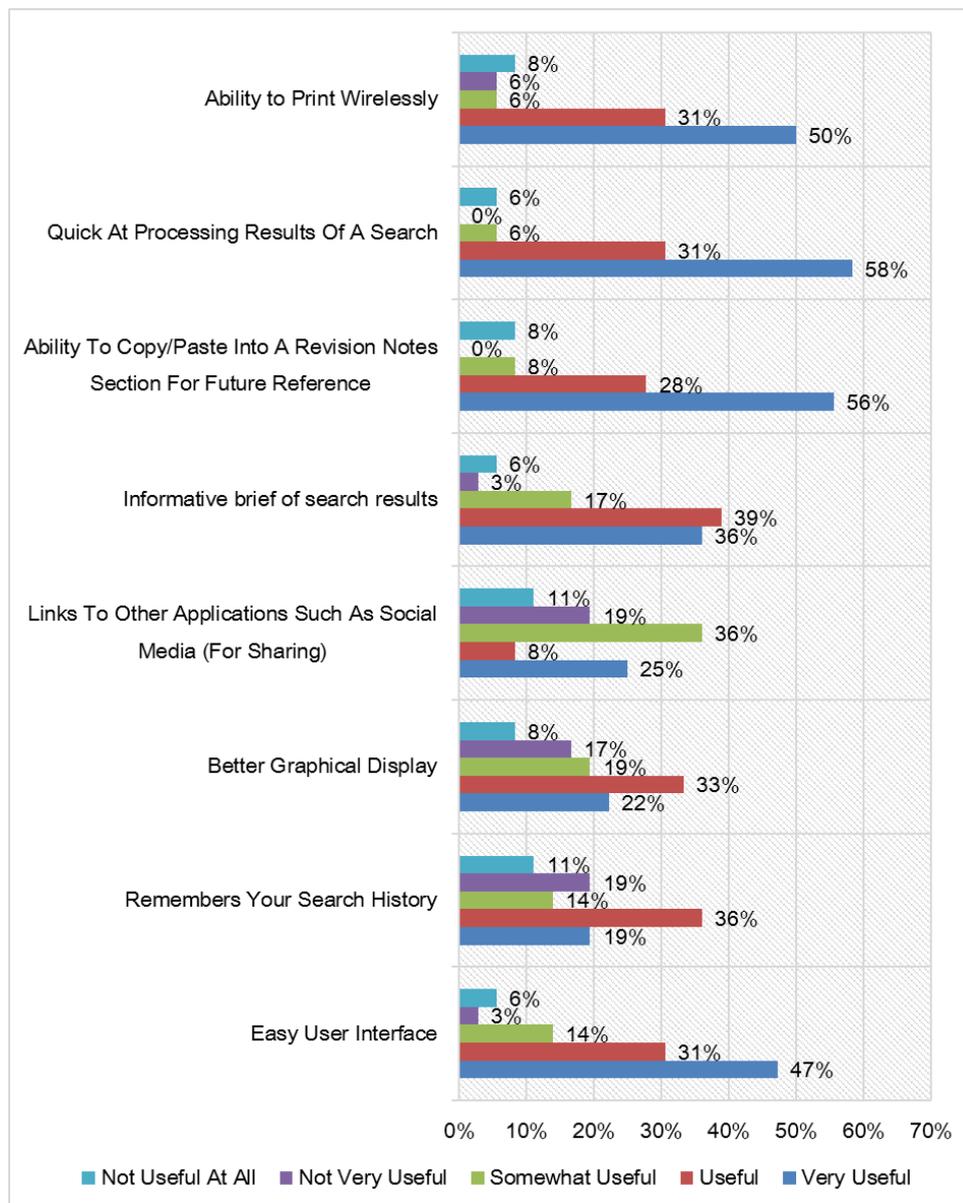


Figure 68: What functions would you deem USEFUL for a study-related app to have for your smartphone?

Here law students cited the speed of processing results of a search to be the most valued attributed 58% (N=21), the ability to copy/paste content into another place for future reference to be valued at "very useful" by 56% (N=20). Wireless printing was also popular with 50% (N=18) citing that as a "very useful" attribute. The responses to this question helped us gain a better understanding of what law students wanted to see in mobile-centric legal information resources, these most valued attributes were focussing on primarily the areas that had already been discussed with law librarians, printing, speed of information retrieval, multitasking and user-friendly interfaces. Our final question sought to ascertain the barriers that law students may outline that would prevent Smartphone use for their studies, here we found the following information (Fig. 69).
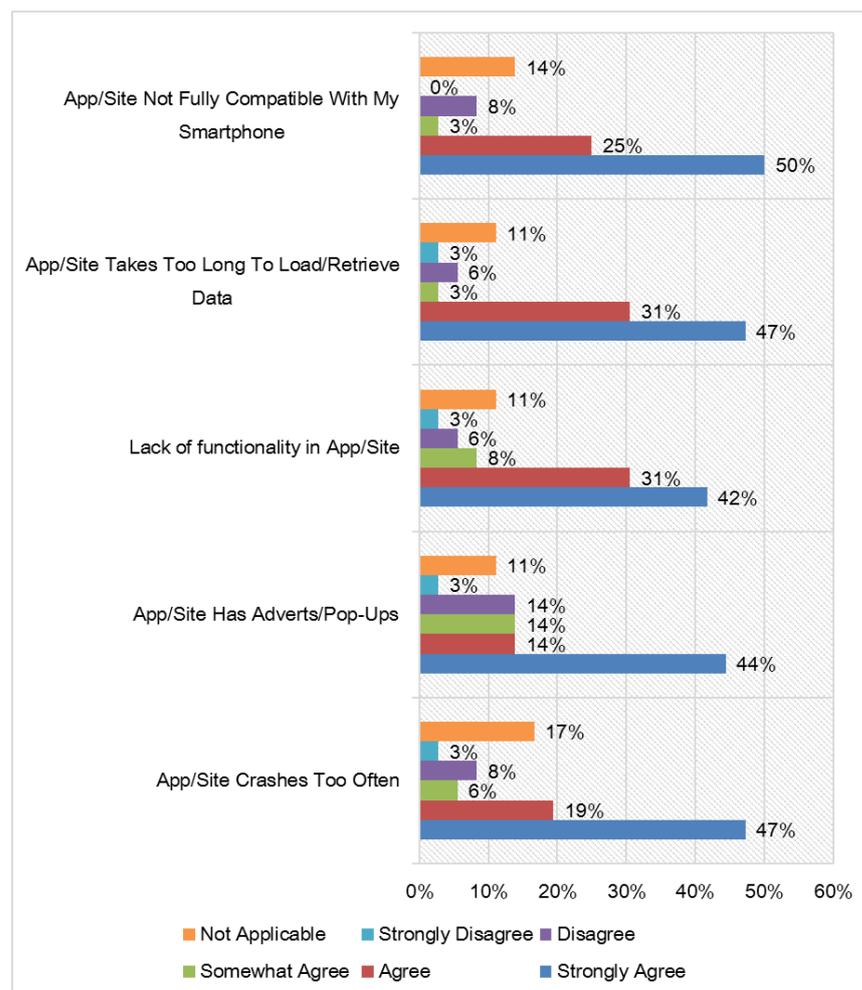


Figure 69: What would prevent you from using an app/smartphone centric website for your study related information needs?

Compatibility was the most popular complaint that the cohort raised with 50% (N=18), slow speed of information retrieval and instability of the "App" followed with both standing at 47% (N=17). Pop-up adverts were also unpopular at 44% (N=16) and the lack of functionality also was voiced strongly as being a barrier with 42% (N=15) stating this. Further detail was provided with law students identifying possible barriers that may prevent them from using their smartphones for academic information retrieval, this included most strongly agreeing to app/site taking too long to retrieve results from a search (45%), app/site instability (42%), pop-ups and adverts (40%) and a lack of app/site functionality with their smartphone (40%).

## 6.4.7  Discussion of Results

The cohort included mostly females with undergraduates forming most of the group overall and whist it was appreciated that this did not provide a fair representation of the law student cohort at large, hence measures were implemented to ensure that this issue was prevented from re-occurring by increasing the diversity of the HEI that were approached to have their law students participate in this research instruments effort.

Differences in Feedback

The results obtained from the questions fielded had a lot of aspects in common to the responses law librarians had provided in their interviews (see Section 6.2.1). Where there was no correlation whatsoever was on the area of access vs. ownership of the legal information resources with law students solely focussed on the access of the material, not on any aspects of ownership of the content. Usability of smartphones followed by the quality and size of the display screen together with the overall size of the handset were key attributes that the cohort opined to be very important. Yet despite these strong opinions, law students informed that they would conduct most if not all their study-related activities on Laptops or Desktop PC's with smartphones being used for the same purpose by only a quarter of the sample group.

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<u>Similarities in Feedback</u>

The use of these technologies for non-study related information showed a lower use for brief time spans but this gradually increased as the duration of use exceeded 1 hour or more. These findings correlated with comments many law librarians made where they cited smartphones, whilst being prevalent within their landscape, would mostly be used for social information seeking needs and academic usage, whilst relatively widespread and active, would be reserved for shorter time periods only.

<u>Mobile Technologies for Social Use</u>

Our statistical analysis of the results also proved that there was a difference in the time law students used smartphones for study vs. non-study related information seeking activities with the former being for shorter time periods and the latter for longer (see Section 6.5.3). We applied weighting to the Likert Scales for time periods quoted and found through conducting a t-Test for two sample means that there was a significant difference between the durations spend on these two types of information search activities by the cohort. These results were further affirmed when the group advised that they would use these devices primarily for social information seeking when mobile.

<u>Demand for Mobile Academic Content</u>

Despite the provision of electronic resources which were accessed through laptops and desktop PC's, the law library retained its place as a popular setting from where students would conduct their studies and research activities. There was a call through for a greater provision of smartphone-centric legal information resources and an increase in support for using such technologies in this context, this matched the findings from research instrument I where the law librarians voiced their concerns at the growing expectations by law students that the law library be providing more resources that would work effectively on smartphone-based formats as well as support these technologies and their usage.

The responses to these questions fed into the next and concluding section of research instrument II where law students were asked to articulate their likes and dislikes of smartphone-based applications (Apps), the responses here provided us with insight into what an ideal legal information resource could be designed to be like.

Better Designed Mobile Resources

The cohort's responses were not too dissimilar to those of law librarians when commenting on this aspect. Speed of information retrieval, ability to multi-task, print wirelessly when needing to examine content for extended periods were all aspects that law students stated to be very useful and law librarians supported these views (see Section 6.2.1). Law students also wanted less distractions, i.e. pop-ups that would sometimes be found on Apps, limited compatibility, slowness in retrieving the results of a search and instability of the resource itself were identified as barriers which would discourage usage in a mobile context.

Summary

The research objectives were partially met through the questions in this research instrument and the use of statistical analysis to provide a more numerical depth to our findings furthered our understanding of how law students used their smartphones and what their perceptions were towards using said technologies for academic information research. However, we learnt that our questions were heavily focussed on smartphones and failed to acknowledge the other mobile technologies that were also being used within this context (Cambridge Dictionary 2015). This research instrument went onto be applied to a wider cohort of law students in the detailed investigation stage which would help address any questions of our current results lacking a fair representative sample of this academic cohort for the U.K. Also, our feedback found that it was not just about Smartphones but other mobile technologies such as tablets were being discussed, hence our aim to include these devices into the next stage of the research exercise.

## 6.5    Design & Use of Research Instrument III – The Law Student Search Study

This research instrument was more focused on qualitative data and sought to elaborate more on law students use of resources and tools when they were seeking legal information for their academic studies. To setup a contextual scenario the preamble of the questionnaire read the following instruction;

*When answering questions in this survey, please do so within the context of you having recently undertaking an assignment, homework, coursework, research work, which required you to search for information to provide you with background/detail for your said task. This questionnaire is designed to understand which resource(s) you used, why and what your views are on the resource(s) itself.*

Then followed 6 sections of open ended and in some cases, multiple choice questions and the questions did not assume law students to use any specific technology but sought to find out what general resources were utilised. It was hoped that this would provide a benchmark from which the use of mobile technologies vs the use of non-mobile technologies and non-technical resources could be measured. References to the research questions and objectives were also applied to each section of the questionnaire for completeness and are illustrated below and the specific questions can be found in Appendix A.3;

Locational

Locational – to ascertain where the student went to find their information and why they did so. This helped partly meet research questions 1 and 4 as well as research objectives 1, 2, 3 and 5.

Resource Focus

Resource Focus – to establish the resources used for the seeking activity and who so. Here we look to partially address research questions 1 and 4 and research objectives 1, 2, 3 and 5.

Result Focus

Result Focus – to find out if the student was happy with the outcome of the search and why or why not. This approach helps work towards answering research questions 2, 3 and 4 as well as research objectives 2, 3 and 5.

Resource Feedback

Resource Feedback – giving the students the opportunity to provide feedback on the resource used, split into 3 positive reasons for and 3 negative reasons against using the resource, thereby allowing us to partially address research questions 2, 3 and 4 and research objectives 2, 3 and 5.

Collaboration & Tools

Collaboration & Tools – would help find out if students engaged in any collaboration during their information search and whether the resource or the technology used was the driver for this. The responses would help partly answer research questions 2, 3 and 4 and research objectives 1, 2, 3 and 5.

Demographics

Demographics – again, to ensure that the cohort was fairly represented, it was important to ask for demographic data from the participants.

## 6.6   Responses to Research Instrument III – The Law Student Search Study

Given that these questions were more qualitative in nature their results were analysed from a comment-centric focus then categorised into a Microsoft Excel spreadsheet. Here themes were sought from the various qualitative responses, like the method used for analysing the responses of the law librarians in the previous section (see Section 4.14). Moreover, the quantitative question responses were also placed in a tabular format and thematically analysed with statistical analysis also carried out where applicable (see Section 4.14).

## 6.6.1 Demographics

The law student cohort who attempted to complete this questionnaire consisted of 48 individuals – all from the same HEI. There were 14 incomplete responses that were discarded leaving a total of (N=34) responses that were analysed or a 71% successful completion rate (Table.21). Specifically, we had a male participation rate of 38% (N=13) and a female participation rate of 62% (N=21). Another breakdown of the course types together with the year groups was also created, this was to give a detailed background of the cohort's make-up and the largest participants (Table 21).

| Course Type | N | % |
|---|---|---|
| LLB - 1st Year | 14 | 41% |
| LLB - 2nd Year | 5 | 15% |
| LLB - 3rd Year | 3 | 9% |
| Postgraduate/GDL – 1st Year | 11 | 32% |
| Postgraduate/GDL – 2nd Year | 1 | 3% |

Table 22: Course Type & Academic Year

Here we also found that the largest segment of the cohort consisted of 1st year postgraduate LLB students 41% (N=14) and the second largest was 1st year postgraduate/GDL students 32% (N=11). We again combined the course types and year groups together and this showed that just under two-thirds of the cohort comprised of undergraduate students whereas the remainder being postgraduate students (Table 21).

| Course Type | N | % |
|---|---|---|
| LLB | 22 | 65% |
| Postgraduate/GDL | 12 | 35% |

Table 23: Course Type with Academic Year Combined

## 6.6.2 Locational

Law students indicated that the law library was their first port of call when researching for information related to an assignment (N=12) (Fig. 70), additionally the internet and electronic resources were consulted (N=10 for both), text books were also used (N=7).
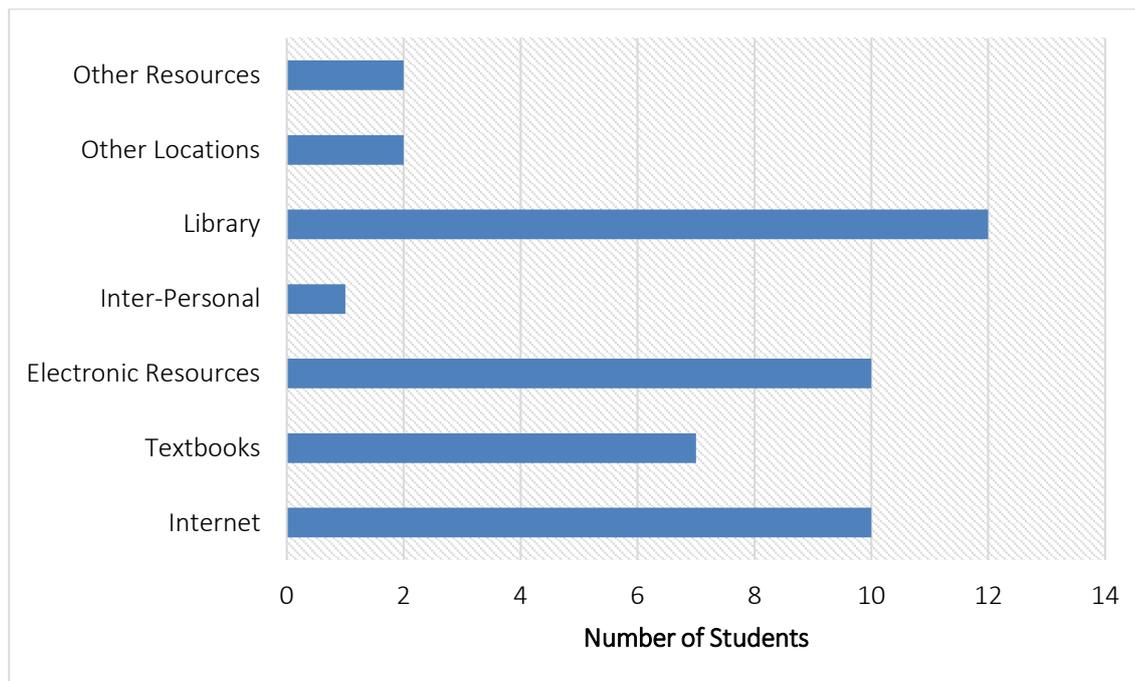


*Figure 70: Where did you go to look for this information for your task?*

When the participants were asked why they chose to go to this location to fulfil their information need, their comments included;

- "*There is a variety of books which I used to complete writing my assigned essay. It helps to know that I can back up things I say from different sources and not just one source. Also, at times I seek help from the librarians or from a friend.*"

We analysed their responses and coded them as to whether the driver for their choice was focused on the resource itself or the physical location/surrounding of the area of their choice. We found the responses coded as follows (Table.23).

| Why did you go to this location? | Resource Focus | Surrounding Focus |
|---|---|---|
| Count | 20 | 14 |
| Percentage (%) | 59% | 41% |

Table 24: Why did you go to this location?

These responses outlined a focus on the surroundings of the resource(s) location stood at 41% (N=14) as being a driver for their approach. Conversely 59% (N=20) students cited the attributes, functionality, reliability and flexibility of the resource(s) itself as being the initiator in their choice of approach, this included web-based, electronic database, text books and other materials used. The sample groups comments on their choices included;

"*I was required to write a case comment. I went on Westlaw because it had details in the facts and judgements of the case, which were essential to the completion of the given task*" Hence, we noted that the choice of location was dependent on the types of resources that students could access from the said setting."

## 6.6.3  Resource Focus

The Internet, electronic databases, text books, statute books, law dictionaries and journals were all popular resources students utilised for their information search. Students cited their reasons for using these resources as being, amongst others;

"*I used google scholar for my undergrad and found it useful for finding things unavailable in the library. Google for things I required less information about just general overviews. Westlaw for more specific detailed accounts or cases. And the library catalogue for any other resources I can find.*"

Students outlined some of the reasons for consulting the resources they so selected, including;

"*I needed details of the facts and judgements of the case which can be found easily on Westlaw instead of going through the written texts.*" And

"*I consulted these resources to look up indentation about cases and gain a wider and accurate knowledge of the subject. I specially used that resources because they are known to be the most reliable, for example the usage of Westlaw.*"

When asked how long it took to find the required information on the said resource, (16) respondents stated 15 minutes or less, followed by (11) stating between 15 – 30 minutes. This matched up with the earlier responses to Research Instrument II where students identified speed as being one of the drivers in their preference for an information resource as well as a key ability for a resource to have in terms of delivering results of their search (albeit that was referring to a resource for a smartphone).

## 6.6.4 Result Focus

Out of the 34 respondents, all stated that they were happy with the results of their search, outlining their reasons to include the following comments;

"*I got all the information I needed in a minimal time and without a lot of effort.*" And

"*I am, more often than not, happy with the results after using both the Internet and textbooks to find information, because legal databases are very insightful, and textbooks are very accessible.*"

The group was equally divided when it came to use other resources as alternatives during their research with 47% (N=16) reporting that they did consult more than one resource and 53% (N=18) stating that they only used one resource.

## 6.6.5 Resource Feedback

Preferred resources were chosen so by law students due to the speed in which the results could be obtained, the convenience, summarised outputs and comprehensiveness of the overall structure in which the information was displayed.

Some of the negative aspects regarding the preferred resource included time consuming, inability to restrict search scope, too much irrelevant information, hard to find keywords and format difficult to read.

Of the 34 respondents, 56% (N=19) disclosed that they had used a smartphone for their search citing reasons such as;

"*I use my iPhone, when I cannot access a computer, to access Lawbore, Westlaw and Lexis Nexis.*" And

"*Sometimes you need little bits of information, googling terms for example that a smart phone is easy for. Also, if you're out and about. My smartphone loads adobe, so I can use it anywhere for larger files and articles as well.*"

A further 18% (N=6) stated that they had not used a smartphone for their search on this occasion but would consider doing so, noting;

"*I have used a smartphone as an aid to research/check basic facts such as case dates, but usually I have my laptop with me and it is more convenient to view results on a larger screen. I am a little bit sceptical as to how well-adapted the law databases would be to smartphone access.*"

And 9 (N=26%) students added that they would not use a smartphone for their information search, mentioning;

"*Seriously? For law, it would just be too goddamn small of a screen and waaay too difficult to organize the MASS of sources you'll be using.*" And

"*Too small, restricted software. Requirement for multiple tabs, copy paste to actual work etc.*"

## 6.6.6   Collaboration & Tools

Of the sampled group, 94% (N=32) stated that they did not collaborate during their search with only 6% (N=2) students admitting they actually did so. Of the majority, the reasons outlined for not collaborating included;

*"I prefer to work alone, because I have my own way of researching and using information."*

## 6.6.7 Discussion of Results

This part of the study found that students were more critical of the resources available to them. 34 students completed the questionnaire and the cohort consisted of 22 undergraduates, 11 postgraduates and 1 postgraduate entry LLB student. Within this corpus most were 1st year students and the majority (20 – 59%) were female with male forming 35% of the group and 6% preferring not to identify their gender.

Drivers for Resource Use

Textbooks and digital libraries such as Westlaw and the Lawbore portal remained popular choices for students seeking information. Law students cited convenience, fast search results and the perception of the said resource being reliable and trusted were outlined as key drivers for usage. Most of the respondents found the information they needed in a relatively brief period (less than 15 minutes – 47% and between 15 – 30 minutes - 32%), also most of the cohort did use a smartphone for their search (55%) with another fair amount advising their intention to use said device if they needed to (17%). Those that did not wish to do so (26%) cited reasons such as "Too small, restricted software…" or "…very frustrating when trying to use a site which is simply too small, and the zoom only operates when you click on a certain link…"

Some of the most popular aspects of resources included ease of use, quick at retrieving results and convenience, whilst the more negative aspects stated were the resource being time consuming, too much output and sometimes not specific enough.

Barriers for Resource Use

Collaboration was a very seldom activity with most of the research being conducted by the sample group in isolation. The reasons for this was cited as because many study activities did not require such study modes and independent research was more of a requirement than anything else.

There was clearly an appreciation of mobile technologies when used within the context of academic legal information seeking however the challenges law students often faced, as cited, included the lack of well-suited information retrieval tools that could be used for said purpose through a mobile device channel. Of the sample group, 15 participants advised that they were happy to contribute to further research should it arise; these students were re-engaged to join us in Research Instrument V – The Law Student Thematic Questionnaire (see Section 7.2). From Research Instruments II and III, we found the following drivers and barriers (Table 24), which also matched those obtained from the observations made by law librarians (See section 6.2.3);

| Technology | Attribute | Description | Law Student - Exploratory Study |
|---|---|---|---|
| Smartphone | Driver | Need quick results/small segments of information | ✔ |
| Smartphone | Driver | Need information retrieval whilst being physical mobile | ✔ |
| Smartphone | Barrier | Small screen/poorly designed resource interface | ✔ |
| Smartphone | Barrier | Lack of network or Wi-Fi signal in surrounding area | ✔ |
| Laptop | Driver | Require multi-session search | ✔ |
| Paper | Driver | Need specialist legal information not available digitally | ✔ |
| Paper | Barrier | Paper resource unavailable | ✔ |
| Paper | Barrier | Student not in location where paper resource accessible | ✔ |
| Paper | Barrier | Resource difficult/laborious to locate | ✔ |

Table 25: Identified Attributes of Information Behaviours Using Technologies – Law Students Feedback from Research Instruments II & III (Exploratory Study)

We noted from the output of Research Instruments II and III that most attributes for the technologies used were mentioned by law librarians, whereas law students mainly discussed their experience in using specific resources and how they went about retrieving information from these said products.

This led us to look at refining our research instruments further and provide law students with an adequate platform upon which they could voice their opinions in the comparable manner but from a more information-user focus as opposed to an information service providers perspective. Outputs from both research instruments II and III in this stage helped us build another set of questions containing a more focussed emphasis on specific attributes of academic legal information resources that would help us ascertain the drivers and barriers of such products from a law students' perspective.

## 6.7    Summary of Results & Findings

In this section, we provide a joint summary of the results from both the pilot study and the exploratory study. This set of activities covered research instruments I, II and the newly formed III, and provided more motivation towards addressing the research questions and objectives with many being partially addressed during the process including the activities of the literature review. We learnt that digital content was firmly embedded within the law library resource provision and law students had quickly adjusted to this change with little effort required in terms of formal training, this was since many students already had access to mobile technologies and were well-versed in using them, albeit, mostly for social communication and information exchange needs.

Transitive Use of Technologies

Law students further complemented the use of electronic resources by utilising their personal mobile devices to access electronic resources within the contextual aspects of mobile device usage. Law librarians pointed out the flexibility that electronic resources provided, and law students had naturally adopted to this change given these technologies had become part of their daily work-life pattern;

*"As to the use of tablets and mobile phones has just starting to come in really, now it is noticeable that students want to find something they hand their mobile phone over to the*

*information desk asking us to help them find a resource from the screen on their phone, the trend and amount of information available online has exploded.*" (HEI XE 2015).

This tied in with the responses from law students in Research Instrument II, where most cited that they used their smartphone for Internet search (see Section 6.4). Some law librarians did outline their efforts to ensure the provision of both electronic and non-electronic material, which was driven by the unavailability of some resources in electronic format;

*"We do have a considerable amount of hard copy material including books and other paper-back items that we are unable to obtain in digital format. Increasingly there are fewer journals, law reports and legal research tools that we provide in print because online versions are available."* (HEI SF 2015).

<u>Brief Information Seeking</u>

Whilst noting that over-dependence on electronic resources had negatively impacted on the research capabilities and skills that law students would be expected to encompass when practicing law upon completing their training. Law students who responded to the questionnaire from Research Instrument III agreed somewhat but pointed out that they would use both resource formats to obtain the information they required, citing convenience and speed as key driving factors in their behaviour;

"*I used google scholar for my undergrad and found it useful for finding things unavailable in the library. Google for things I required less information about just general overviews. Westlaw for more specific detailed accounts or cases. And the library catalogue for any other resources I can find.*"

Despite this, smartphones, in particular, were reserved as being devices best used for brief information seeking periods and both law librarians and law students appeared to agree on this type of use-case;

"*…it's the short bursts of information and if we need information quickly for, say weather, sports information, smartphones are well suited for this purpose. Apps that are high-*

*level in providing legal information definitions for example are good but in-depth information is*

*not suitable and this platform would not work well with it."* (HEI BC 2015)

And law students from Research Instrument II responded that study related information on

Smartphones was mostly used for shorter periods of time as opposed to non-study related

information (Fig.65). Whilst feedback from Research Instrument III also found;

> *"Sometimes you need little bits of information, googling terms for example that a smart*
>
> *phone is easy for. Also, if you're out and about. My smartphone loads adobe, so I can use it*
>
> *anywhere for larger files and articles as well."*

We conducted a further review of literature on this particular area and found that Gutierrez

(2016) advises that it is best to keep text amounts to a minimum if using smartphones as these

screen sizes are much smaller than devices traditionally used to access electronic material (i.e.

desktop pc's and laptops). Gutierrez (2016) also warns that the challenge that smaller screens

present place a greater burden on the design and layout of the content being presented more

than ever before and the need to utilise the restricted space in the best way possible;

> *"If learners cannot instantly get what is written on the screen, your course has failed to*
>
> *fulfill its purpose."* (Gutierrez 2016).

There were exceptions, however, where social content would fare better on these smaller form

factors due to less concentration required.

<u>Indifference of Content</u>

Ally & Needham (2015) found that students would be more likely to use smartphones for

reading comics and other leisurely content such as novels and social media correspondence as

they did not need to concentrate as much compared to academic content. Also, with the internet

being used relatively widely, especially through smartphones (Hern 2015), law students, in

general, were observed to be unable to decipher the difference between searching on web-

browsers and searching in dedicated electronic resources for legal content using key-word

searching and other more specialist techniques;

*"Often, when students search the library catalogue, they simply enter the assignment question into the search box but get no results most of the time- they then end up using the internet. This demonstrates their lack of skills in using the library catalogue and their habit of using full text search via web search engines being unsuccessfully applied to searching the library catalogue; which operates a different search command structure altogether."* (HEI MQ 2015).

Drivers and Barriers

Both law librarians and law students cited on numerous occasions that smartphones were not capable of delivering a comprehensive information seeking experience. Their small screens, lack of appropriately designed resources that provided advanced research functionality and limited multi-functional capabilities were all barriers for further adoption in this context. Having said that, we observed both law librarians and law students showing a keen interest in exploiting the use of these technologies further, but it was now up to the providers of legal resources to develop their products to an extent where the barriers could be overcome and learning via mobile technologies could become a viable proposition. We found that students' usage of mobile technologies for academic research lacked maturity thus failed to provide law librarians the assurance that this type of information seeking behaviour would be successful. Also, the limited capabilities of legal information resources on these formats added to these apprehensions. Compounding these challenges was the issue that many legal information providers either failed to deliver mobile-based products that made effective use of mobile technologies' attributes whilst working with a smaller display screen, or conversely having a well-designed mobile-based platform could inadvertently dominate the legal information research market – something that would prove to be significantly limiting for law students' opportunities to explore the vast amount of legal content that was available to them.

Themes

From this feedback, we extracted some themes, these were accumulated after we found several attributes and circumstances that would repeatedly appear throughout the exploratory

study phase from all three research instruments. These focussed around screen size, device use vs. the complexity of the content being researched and the use of legal information resources vs. the types of technology used to access them. The law librarians also provided some valued judgements on the actual use of mobile technologies within the legal information retrieval context – in that those devices were not suited for medium or extended periods of information seeking, nor were they suitable for use to complete multi-tasking functions. Law students managed to support these statements with their feedback into Research Instruments II and III.

## 6.7.1 Initial Themes Noted from Research Instruments I, II & III

Many themes in the responses began to emerge from the results and these brought more applicability of the research results to contextual scenarios that would be easily understood, applied and related to in the scope of this research project. Topics like the size of a screen, the challenges students faced when using resources with ill equipped resources or poorly designed interfaces were all topics that kept being mentioned.

Screen Size

We found that law students would be more likely to use a device with a larger screen if they needed to search for and read substantial amounts of information. This theme was extracted from feedback to the pilot and exploratory studies.

Research Instrument I: The cohort of law librarians preferred to use a desktop PC for their work-related information needs and stated that smartphones or devices with small screens were not well-suited to reading substantial amounts of information. They added that legal content by large was text-based and required focus and concentration for it to be examined correctly, smaller screens on smartphones inhibited this as it would be a cumbersome user experience to focus on text for extended periods in this manner.

Research Instrument II: Law students overwhelmingly stated that they preferred to use a laptop or desktop PC for their study-related information needs, daily, with only a small amount citing the use of a smartphone for the same purpose for the same context. Any browsing on smartphones for study related information was only conducted in short durations only, with non-study related (social) information seeking mostly being done on smartphones for longer periods. This often correlated with the feedback provided by the law librarians in research instrument I.

Research Instrument III: Aggregated legal Information resources such as Westlaw were popular largely due to their comprehensiveness, interconnectivity with other resource links and content – coinciding with the feedback provided by the law librarians from research instrument I. The speed and timeliness at which the information could be obtained from electronic resources was also a key driver, with law students outlining the insightful and thorough details in broader legal searches that electronic resources provided. Law students also felt that paper-based resources were better suited for specific, detailed legal topics and found these types of resources easier to use within this context, again aligning with the feedback provided by law librarians.

Device Use vs. Complexity of Search

We found that law students who required more specialist legal detail from high quality and bespoke resources would be more likely to conduct such activities on immobile devices such as desktops or laptops as opposed to mobile devices in general.

Research Instrument I: Law librarians stated that the comprehensiveness of electronic resources was a driver for the electronic resources' popularity. Most of the responses here indicated that smartphones would provide a poor learning experience to law students as well as multi-tasking challenges. The concern over the potentially poor search experience for the law students if using a mobile centric device was also highlighted and thus demonstrated that these technologies were not well-suited for complex legal information research.

Research Instrument II: Law students stated that the ability to print wirelessly (illustrating a preference towards paper-based material), quick at processing results of a search, informative brief of search results and easy to use interface were key aspects to have. Law students also showed a preference for being able to edit text by copying and pasting text into other documents. Providing an illustration that although law students were prepared to use smartphones for their legal study needs, the device would need to provide some form of functionality more akin to desktop and laptop devices as well as be better designed for the smaller smartphone screen. Students were also concerned with the perceived lack of functionality within any App, slowness of processing search results and general instability as barriers that would prevent them from using it properly or to its fullest potential.

Research Instrument III: Some law students commented that they would use their smartphones for academic legal information retrieval as a last resort when desktop PC or laptops were not within their reach at that time for whatever reason. Also, the cohort advised that they would use their smartphone for retrieving small quantities of information and more so when in motion, preferring to use laptop or desktop PC's when required to view results for a lengthy period on a larger screen – again aligning with the responses received from research instruments I and II. Some law students again cited the complexity of legal information retrieval made using a smartphone for legal information searches very difficult, especially given that these devices had small screens, were not well suited for multi-tasking and editing – supporting the case as stated by law librarians and law students in research instruments I and II earlier.

Resource & Device Use Mapping

Finally, we noted the frequency of the technologies being used by law students for academic information seeking. The concept of frequencies has been derived from the qualitative research elements (Research Instruments I and III). We found that law students would refer to mobile technologies more often than those technologies which were less-mobile or fixed to a specific location.

Thus, resources that were used mainly for brief periods of information seeking would most likely be accessed via mobile devices, where law librarians pointed out;

*"I think people will use these devices for short bits of reading only. E.g. if a certain specific law is still in force or what the claim limit is on a certain legal action and so forth, but nothing more in depth."* (HEI WL 2015) And law students commenting;

"*Sometimes you need little bits of information, googling terms for example that a smart phone is easy for. Also, if you're out and about. My smartphone loads adobe, so I can use it anywhere for larger files and articles as well.*"

Whereas times where a deeper information seeking research activity was required with possible needs of information creation (taking notes etc.) would include the use of other technologies such as laptops, desktop PC's and even paper-based resources, with law librarians stating;

*"A lot of legal information is lengthy, its long judgements, its long statutes, its long articles so expecting students to read lengthy legal documents on a Smartphone would not be wise, I am not sure also if students could interact with forms etc., so if it is hard enough to use on a tablet it certainly would be harder on Smartphone's, particularly certain aspects of legal databases."* (HEI TN 2015). With law students remarking;

"*I find the textbooks give a good overview and provide direction with regards to more specific academic opinions*"

## 6.7.2  Findings

The observations made for the research instruments provided a substantive amount of insight into the information seeking behaviours of law students. It delivered additional understanding into the specific search activities law students participated in as well as the various contexts in which these said activities took place. It had become clear the smartphones were not the only mobile technology that law students used and that other devices of similar genre were utilised from time to time and for different sub-contexts within the academic information seeking scope.

In some instances, smartphones were not the suitable tools to be used for mobile device centric information retrieval and feedback from both law librarians and law students had highlighted this assertion repeatedly. Research Instruments I, II and III had all helped to provide a balanced overview of the use of legal information resources and the various technologies used to access them. Specifically, many diverse types of mobile technologies were identified through the engagement with the cohorts. We have found out that the size of the screen on a mobile device played a significant role in the type of legal content that was accessed from it, furthermore, the more complex the legal information became, the greater the need for a technology with a larger display screen arose. It was noted that although law students may have smartphones within their possession and use them for academic information retrieval, the devices form part of a collection of mobile-centric tools such as tablets and even laptops which together form the law students' study toolset and that usage of these technologies was not isolated but formed part of a complementary usage pattern.

## 6.8    Proposing Information Behaviour Models

Given that a fair amount of work during the pilot and exploratory studies had been conducted, it was necessary to revisit the literature review elements included in the earlier sections for a recap – namely the review of the information behaviour models (See Chapter 2) as well as the information resources that were available to law students. With the output from the interviews of the law librarians as well as the results from the questionnaires, synergies and references were sought with the Information Behaviour models that were reviewed in the literature. Elements from Wilson's 1981 model covering "Barriers" which to a certain extent aligned to the feedback that was provided from the research results where the unavailability of technologies; challenging interfaces and lack of resources provision all served as barriers to the use of the set of information retrieval tools. Similarly, from Ellis' model, law student's information search often consisted of using a wide variety of information resources thus there was constantly, within the

law students' mind-set, a process of browsing, monitoring, changing, differentiating, extraction and verifying taking place. The interactive information seeking behaviour models as well as the profession focussed models also provided further validation into the law students' users of interfaces and how they would normally engage in their information management task in a daily basis.

## 6.8.1  The Realm Model

With many models reviewed, it was seen that these illustrations could be used effectively to outline the information seeking behaviours of this cohort based on the feedback received so far. Responses and correlating discussions arising from the outputs together with identification of themes were also illustrated accordingly. Due to the latter pattern build-up, an additional information seeking model was proposed (The Realm Model) that sought to help identify and define the information seeking behaviours of the specific cohort subject this study covers.

<u>The Realm Model</u>

The outputs from the exploratory study (see Chapter 6) and learning from the literature review (see Section 2.7) gave reason to propose an additional information seeking model specifically for law students in the context of using mobile devices for their academic information needs. The first model (Fig.71) proposed was authored from the feedback obtained from the Law Librarian as well as the high-level observations made from the student questionnaire.
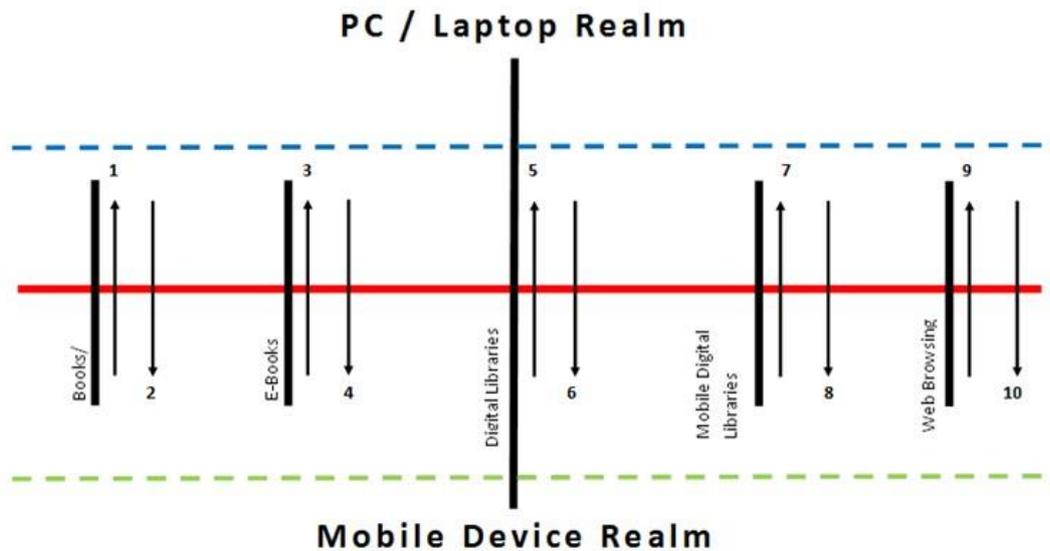
Figure 71: Proposed Realm Model of Law Students' Information Seeking Using Mobile Devices

The Realm Model was conceived primarily from the outputs of research part I and some

additional behaviours mapped from feedback obtained from research parts I, II and III. It

appeared from the feedback that law students were shifting between desktop PCs/laptops or

mobile devices and their reasoning for doing so were identified as "driver arrows" mentioned

above and explained in (Table 25).

| Arrow 1 | Searching through the library catalogue on a desktop PC/terminal/laptop | Driver | Mobile device cannot display library catalogue, Screen too small |
|---------|-----------------------------------------------------------|--------|------------------------------------------------------------------|
| Arrow 2 | Searching through the library catalogue on a mobile device | Driver | No available PC/terminal/laptop |
| Arrow 3 | View E-Books on a PC/Laptop | Driver | Require a larger screen to read resource for an extended period |
| Arrow 4 | View E-Books on a mobile device | Driver | Require viewing the resource in a mobile context in short sessions whilst in transit |
| Arrow 5 | Explore Digital Libraries on a PC/Laptop | Driver | Require a larger screen and need to take notes/copy & paste |
| Arrow 6 | Explore Digital Libraries on a mobile device | Driver | Require accessing information briefly whilst in transit |
| Arrow 7 | Search Mobile Digital Libraries on a PC/Laptop (Legal Databases) | Driver | Cannot obtain the required information on the mobile version of the application |

| Arrow 8 | Search Mobile Digital Libraries on a mobile device (Legal Databases) | Driver | Rendering and format is ideally suited for the screen and device |
|---|---|---|---|
| Arrow 9 | Seek information on a Web Browser on a PC/Laptop | Driver | Cannot find information on dedicated resource due to complex user interface or lack of access |
| Arrow 10 | Seek information on a Web Browser on a mobile device | Driver | Need to quickly look for information and obtain a gist of the topic whilst in transit |

Table 26: Proposed Realm Model's Directional Arrows Explained with Corresponding Drivers

Gaps in the Model

This model lacked substance in that it failed to provide details on the other technologies that were available to law students. Granted, books (paper-based material) was included in the model but nothing was illustrated about the use of these items, drivers towards and barriers against using them. We could articulate what pushed law students between mobile device or PC/Laptop realms for the several types of resource groups available to them for their research, but we could not illustrate the different barriers and interconnecting relationships between the technologies that law students had at their disposal.

The same applied to the other technologies that applied to law students' information seeking behaviours. This model, also did not contain any key influences from the existing information seeking behaviour models reviewed within this report other than the "barrier" attribute illustrated in Wilson's (1981) model (Section 2.4.2) and given the quality of these models it was decided to explore the potential of incorporating some of their aspects into another model which could provide a more comprehensive illustration and focus upon the role of the law student as a central one. Furthermore, the Realm model showed the resources as being "sandwiched" between the technologies (desktop PC/laptop and mobile device realms) and this made any further interpretation of usage of technologies other than these very difficult. Detailed examination of the proposed model made it harder to justify, hence it was decided not to progress with this concept model any further.

<u>Rejection of the Realm Model</u>

Our research had revealed that both the law librarians and law students raised many highlights regarding the various technologies used in the context of legal information retrieval, these highlights included both positive and negative attributes which were translated into drivers and barriers respectively. We also had built a strong understanding of the existing well-established information models from our literature review and so sought to incorporate some elements of these together with the drivers and barriers into a model of our own which would focus solely on law students. Hence the analysis of the research results obtained from the pilot and exploratory studies together with literature review and existing models relevant to the topic area led to another revised model (see Section 6.8.2) - The Law Students Information Seeking Behaviour (LSISB) Model – to be proposed (Fig.72).

## 6.8.2 The Law Students Information Seeking Behaviour Model (LSISB)
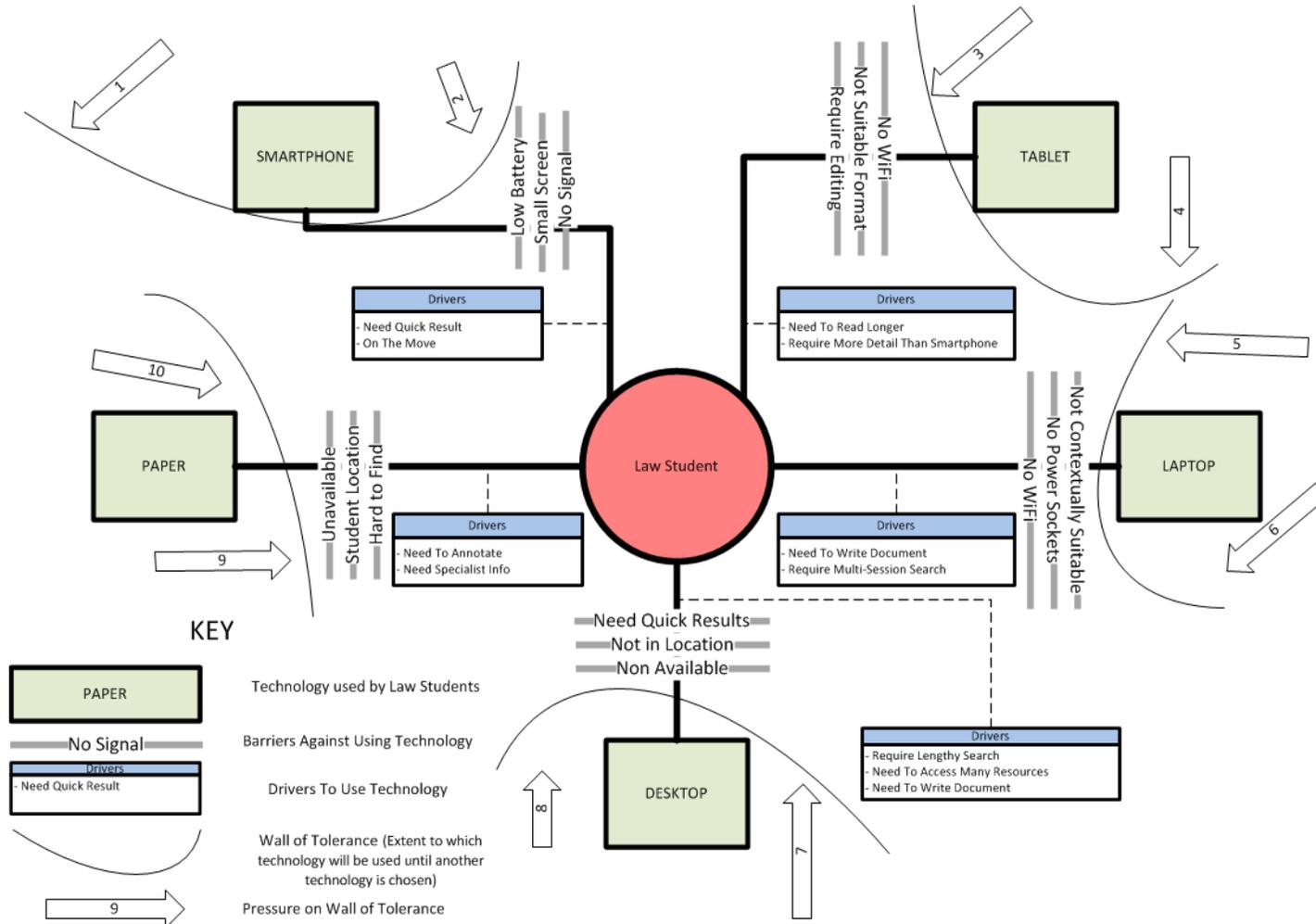


Figure 72: The Proposed LSISBM (Law Students Information Seeking Behaviours) Model)

This model (Fig.72) has been proposed because it includes the law student as the key focal point between the resources, technologies and tools available within the law library domain space (Abbas, McFarlane & Robinson 2017). These technologies include Paper, Desktops, Laptops, Table Devices and Smartphones with each being used to access a specific resource that would provide the legal content that law students sought to meet their information need.

The previous models reviewed in the literature (see Chapter 2) somewhat lacked the specific user-focus that this research required, hence the inclusion of the personal context. The model also attempts to effectively utilise the feedback from all the research instruments from the exploratory study and contains several additions including the drivers for using technologies, the barriers preventing law students from using said technologies as well as a "wall of tolerance" for each. The drivers were collated from the outputs of the Research Instruments used in the pilot and exploratory Studies and was refined as part of the detailed investigation (see Chapters 9 and 10). The tables that outlined the attributes identified as drivers following responses from both law librarians and law students can be found in (Section 6.3.5) and (Section 6.7.7) respectively. Similarly, the drivers for using each of the technologies are also outlined in the earlier sections and these were combined with the barriers to help built the illustration shown (Fig.72).

The "walls of tolerance" were included to help outline the extent to which a law student would use the current technology before seeking to continue their information search on another technology, i.e. an interchange of technology use would take place for some reason or another. The rationale for employing this approach arose through our findings from the exploratory study we found that law students would often change from one technology to another based on specific circumstances, these are thus included as "pressure-arrows" which effectively are pushing against the walls of tolerance.

Each "pressure arrow" is illustrated with a numerical identifier that is taken from contextual

examples highlighted by both law librarians and law students of situations where the latter

cohort would move from using one technology or device to another, these pressure-arrows are

numbered as follows and their meaning is articulated in (Table 26);

| 1 | Need to view information on a larger screen |
|---|---|
| 2 | Need to take notes of information found on Smartphone |
| 3 | Require further information but opening another information source means closing existing one |
| 4 | Need a larger screen to read the information obtained on this device |
| 5 | Low battery power and lack of charging power sockets in vicinity |
| 6 | Lack of space to use device |
| 7 | Too many others wanting to use this resource |
| 8 | Resource is not going to be available after a certain time due to maintenance or system updates |
| 9 | Resource does not contain all the information in the same physical item or book shelf, making it easier to search electronically |
| 10 | Require taking notes and need to copy & paste content electronically for later referral |

Table 27: The Proposed LSISBM's Pressure Arrows Explained

By including paper-based resources within the proposed model, law students' information

seeking behaviours within the context of these technologies, mobile device-based Internet

searching, digital legal resources and mobile device based electronic databases could be

explored in an all-encompassing platform. Further empirical research in the detailed

investigation helped validate and provided opportunities for the model's refinement. All to deliver

a streamlined and yet comprehensive information seeking behaviours map that will better inform

not only HEI's, Libraries and Information Service Providers, but also the corporate legal industry

– all of which it is hoped, will gain from this.

<u>How It Was Conceived</u>

Boruff & Storie (2014) concluded in their paper that technological and intellectual barriers did not appear to prevent students from another academic field from using mobile devices for their information search needs. Yet, barriers such as access and lack of awareness may prevent them from using reliable library-sanctioned resources, we thus noted that more understanding in this area was needed. Our literature review showed a lack of information seeking models that focussed solely on law students, accounting for aspects such as paper-based legal information resources, electronic resources, contextual activities and environmental pressures.

This was key to the research as despite the technological advancements, service providers' marketing and HEI efforts to move towards a digital environment by procuring digital material, we found that paper-based equivalents still played a significant, if not leading role, in the information collective within the law library and the law student mind-set. Our findings, nonetheless helped us propose an information seeking model that we sought to refine in the detailed investigation.

Ultimately, this revised model drew influences from several information behaviour models that were reviewed in the available literature (Chapter 2), we took the opportunity to outline the specific facets of these models that drove our particular proposed design. From a high level, we looked at the information seeking behaviour of law students as a journey, similar to that as described by Bates' Berry Picking Model, which would evolve as their search yielded more results. In our case both law librarians and students outlined many instances where their search was more like a journey how they would often change tact in terms of which resource to use and what technology would be best suited to access it.

The sources of information themselves, especially electronic, gave rise to use looking at the models described by Marchionini (Section 2.8.2) where an individual's interactions with an electronic information retrieval system is described and consists of an interactive series of activities which include the definition of the information need, the selection of the information source, the formulation of the query and execution of the search, examination of the output and the reflection of said output and decision on whether to repeat the exercise or not.

The responses ascertained from both cohorts featured provided ample reasons for using or not using specific resources and/or technologies of academic information seeking and barriers provided innovative means to illustrate these attributes.

Electronic resources also included the use of web-based resources which increasingly formed a greater part of this information source type, here we looked at a macro model of human IR behaviour on the Web (Section 2.9.1) where user tactics, judgments and search strategy are driven by the resulting outputs of the searches themselves. Navigation through such information systems being key influencers in how the overall interaction with web-based systems was driven.

Our obtained feedback also highlighted the reasons why some resources and technologies to access them were preferred over others, thus our review of the barriers that featured in Wilsons (1981) model of Information Seeking Behaviour helped us find a way in which we would imply aspects of a resource or service that would prevent or discourage use for one reason or another. This was also connected to the specific utility of the resources, their characteristics, overall known accuracy and reputation – all which would influence the use of these resources overall. Thus, our reason to refer to Johnson and Mieschke's Comprehensive Model of Information Seeking (Section 2.10.1) which looked at reliability, authority and accuracy of the content within – key attributes that would be core reasons for which law students would use a particular information resource.

Finally, and more specifically, we referred to the Leckie Model (Section 2.10.2) where information seeking of professional lawyers was featured and how legal professionals often facing the responsibility of not only researching for a specific area of the law their role required them to find out more about but also other types of information that may not be specifically of a legal nature but somewhat related to it.

Our proposed model was therefore built using the results obtained from the pilot and exploratory studies with influences of the previously discussed models using the provided rationale and justifications for doing so. Our following detailed investigation stage would go to refine the proposed model further by including more focussed feedback from the cohorts as a means of refining and validating its build.

Model Validation

The proposed model was tested by fielding research instruments I, II, III, IV and V - in the following Detailed Investigation phase - towards a fresh cohort of law librarians and a more diverse set of law students from different HEI in the U.K.  At the review of the results for each research instrument any drivers and barriers that were relevant for a particular technology featured in the proposed model were outlined, similar to the check-box lists already created in the Exploratory Study. The proposed model's relevance was measured mainly during the work undertaken for research instrument VI – the focus group study. During this time the participating law students were presented a draft copy of the proposed model and asked to comment on the drivers and barriers already stated within it through the distribution of a hand-out questionnaire that they completed within the timeframe of the focus group study. Any drivers that were proposed by the participants were included if more than 50% of the cohort agreed and stated the same in their response sheet, the same method was applied for barriers. Whilst our use of the arbitrary "50%" benchmark could be disputed as not enough grounds to count towards a majority, we elected for this figure as the size of the group was relatively small, consisting of 6 students and this presented the challenge of our responses increasing in increments of 16.7% for every participant.

Thus, we took the majority to be "the greater part or number; the number larger than half the total" (Dictionary.com 2017) and so once more than 3 students elected for the same attribute – giving us a percentage of 50% or above - we found ourselves to be in a majority for that selection.

### 6.8.3  Summary

Upon review of the results from the questionnaires involving law students we noted the lack of a wider participation from HEI in the U.K. this presented us with a lack of a fair representation of the nation's cohort. Whilst the output obtained from all three research instruments (I, II & III) did provide highlights on the information seeking behaviours, limitations and movements of students' general academic information seeking activities, it did not completely address the questions posed. More numerical responses from all research instruments were needed to deliver a wider, fairer and holistic review of the information seeking behaviours of law students within a mobile device context and consequential actions/inactions based on the resulting or corresponding changes the students may face. The exploratory study provided a relatively well-outlined insight into the information seeking behaviours of law students from both law librarians and law students' perspectives. In particular we found that the law librarians were more vocal and from their interviews we managed to yield more detailed and granular feedback on not only the groups observations of law students' use of legal resources, but also informed on the advantaged and disadvantages of legal information resources as well.

## 6.9   Addressing Research Questions & Objectives

Addressing Research Questions

Research questions 1, 2 and 3 were partially met through extensive literature review as well as the results of Research Instruments I, II and III, even though the questions within these instruments refer to smartphones, many of the responses included the reference to other mobile technologies such as tablet devices.

Research objective 1 had been partially met as the literature review has covered many legal information resources that law students use as well as electronic resources that are used for the same purpose. The literature also covered specific products and the different technologies through which these products can be accessed, providing a contextual example of what the user-experience would be like and allowing the reader to draw a conclusion on the look and feel aspects therein.

Using the knowledge from the literature review of the legal information resources as well as the information seeking models, this knowledge was then mapped against the results from the research instruments (Instruments I, II and III) which helped provide background on the drivers which pushed law students towards certain technologies for their academic information retrieval needs (See Chapter 2).This allowed us to understand law students information seeking behaviours in an academic context and thus providing a response to research question 4. We also found the implications mobile technologies had on academic law library resource provision and noted the changing demands electronic resources and mobile devices used to access such services had posed to the traditionally paper-based organisations. The research instruments provided both law librarian and law student perspectives and thus delivered a balanced view of the landscape, partially addressing research question 4.

Addressing Research Objectives

Interviews with law librarians through research instrument I helped partially meet research objective 1 as well as research instruments II and III which provided the law students perspective of the topic especially the contextual use of electronic resources via mobile technologies. The output from the research instruments also fed into the information required for research objective 2 and helped build a picture of the drivers behind the use of electronic resources and the different technologies law students would use to access them (resources). Research Instrument I largely provided help in addressing research objective 3 in that it gave background on the challenges law libraries faced considering law students' expectations when it came to be using mobile technologies for their academic information seeking needs.

This research instrument also helped partly meet research objective 4 by providing insight into the different approaches law libraries had made to incorporate mobile technologies into their space with the mindset that the law students learning experience would benefit (see Section 6.3.1). The learning from the literature review, especially the information seeking models and the output from research Instruments I, II and III helped initiate the build and proposal of the Law Students Information Seeking Behaviour model for research objective 5 (See Section 4.10.5 & 6.9.2). Research objective 6 would require the proposed model to be proofed and then more detail extracted from Research Instruments I, II and III to provide a recommendations list which would combine and meet this objective. Research question 4 was also partially met as although the literature review managed to cover some aspects of mobile technologies working within the Library domain, it was Research Instrument I that provided most of the answers to this question as academic law librarians openly voiced their anticipated concerns about mobile technologies in their space (See Section 6.3.1).

Impacts outlined included increased workload on staff, law students' expectations that law libraries support the growing variety of technologies which the law library had little control over but were exposed to through law student ownership. Law librarians noted the challenging legal information product environment where vendors would push both electronic and non-electronic resources and this would lead to higher costs, they continued to face pressure to maintain a collection of physical resources, since, electronic resources were provided on a pay-to-access basis and loss of access meant the loss of information whereas paper-based subscriptions were tangible. However, librarians recognised their need to evolve and constantly remain updated with social media tools and communications with the law student body, but this also required effective management of law students' expectations for information being available electronically and deal with a more technically minded patron cohort.

Seeing the need to take the lead, many law librarians pro-actively provided more training in research skills to law students as developments in intelligent software's and mobile technology had increased law students' reliance on automated research tools as opposed to using independent self-help procedures which were still key to the legal profession. Law librarians overall welcomed mobile technologies and the electronification of legal information resources as they could see the benefits that came with these products and tools to access them. Still the apprehensions over access vs. ownership remained throughout the conversations as well as the design and functionality of these types of resources. Librarians also voiced their concerns regarding costs for purchasing products from vendors who seemed to be unclear in their product pricing and marketing strategies.

## 6.9.1 The Next Research Stage

The third and final phase of the research project and involves the utilisation of the same tools used in the exploratory study and the addition of the use of more research instruments - including focus groups - to provide a more granular perspective on the landscape being researched. Our findings are covered in Chapters 8 and 9 for this stage of the research study.

# 7 A Detailed Investigation into Students' Mobile Information Seeking – Updated Methodology

## 7.1 Overview of Research

The detailed investigation required additional information to be extracted from the cohorts to find out more about the information seeking behaviours of law students using mobile technologies for their academic information needs. 3 more research instruments were used to achieve this. These components complimented the existing ones that were used in the exploratory study (See Chapter 6) and were re-applied for the detailed investigation. These 6 instruments would also help in delivering a more holistic perspective to the research study and are articulated in (Fig. 73).
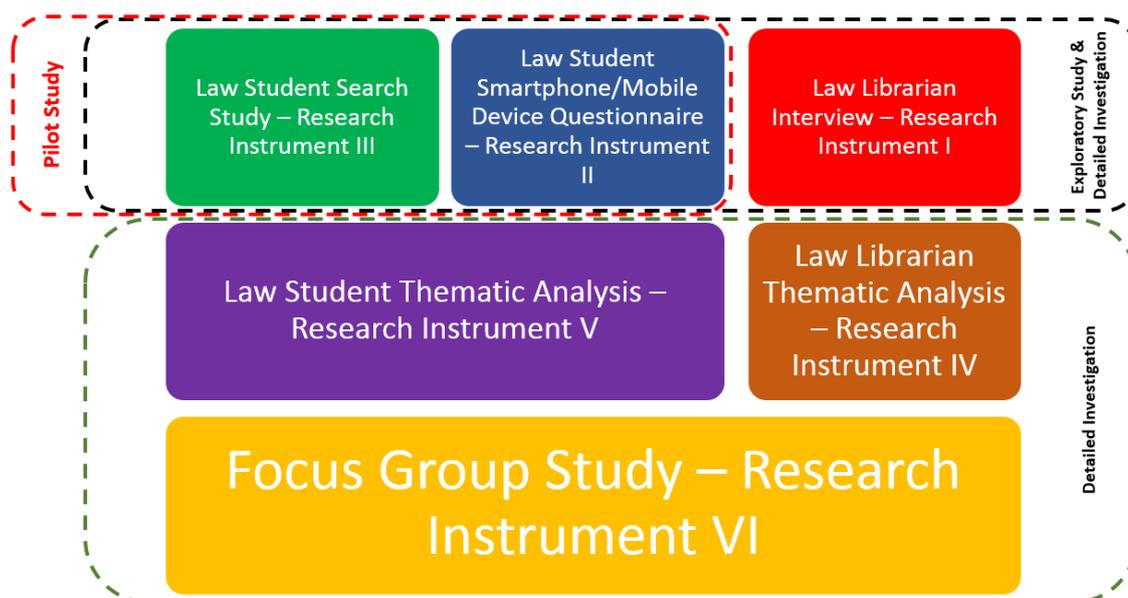


Figure 73: Overview of Research Instruments & Their Application in the Three Research Stages

Research instruments I, II and III were not modified for the detailed investigation and they were re-applied in their condition when used in the exploratory study to a new set of law librarians and a more diverse set of law students from a variety of HEI.

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## 7.2    Additional Research Instruments

Research instruments IV, V and VI were introduced to deliver more granular data on the findings of the research project. The reasoning behind the employment of these components include;

### 7.2.1    Research Instrument IV – The Law Librarian Thematic Questionnaire

Research Instrument IV: The results from the exploratory study and detailed investigation illustrated two emerging themes that were resonant amongst the responses of the law librarian cohort. These themes were identified based on comments law librarians made in their feedback to Research Instrument I and grouped together to provide a quantifiable aspect to their occurrence. Three law librarians who were included in the cohort that participated in research instrument I for the studies were invited to respond to a questionnaire that was built using thematic outputs identified from the interview discussions (see Section 4.4.6). Themes identified were outlined and questions corresponding to them were posed to the participants in the following main categories including Ownership vs. Access and Design of Resources. Questions pertaining to the above themes were created and used to form the questionnaire which was then fielded to the three participants. The questions sought to expand on the themes and provide more granularity to the topic. Also, to help better inform on the design of resources – which was also one of the objectives of this research study – this question set aimed at finding out the most popular electronic resources, the reason(s) behind their popularity, the driver(s) which encouraged use of these resource(s) and feedback on how usability of these said resources could be improved.

The rationale and purpose for this research instrument is justified with the questions built from the two themes selected;

Ownership vs. Access

1.     *Do you feel that there are differences between collections of physical and electronic resources? Please give specific examples to illustrate your answer wherever possible.*

Establish the thought process of law librarians and what their perspective was on the differences between the two types of resources.

2.     *What do you consider to be the overheads for managing physical resources?*

Find out what the law librarians thought of the overheads of managing physical resources and what mattered most to them.

3.     *What do you think are the overheads for managing electronic resources and how do they differ from those needed to manage physical resources?*

Obtain insight into law librarians views on the overheads for managing electronic resources, possibly extract information on their own experiences in this area and find out what their views were in the differences between electronic and non-electronic resource management overheads.

4.     *Do you think that there are any limitations to either physical or electronic resources?*

Attain a better understanding of what limitations were perceived of both types of resources, again it would be drawn up from law librarians' own experience.

5.     *As a Law Librarian, what do you feel is the most important to you when choosing a resource?*

Ascertain the drivers behind choosing a resource, covering both types of resources but looking to see if there was a similar driver or barrier that could be identified.

<u>Design of Resources</u>

1.  *Which electronic legal resources do you feel are the most popular? Please list them below.*

Gain more knowledge of the most popular electronic legal resources and help partially address research question 2 and research objectives 1, 2, 4 and 5.

2.  *Please can you explain what you think each of these resources named above is used for?*

Find out why, from a law librarians' perspective, that the above resources were used. This would partly answer research questions 1, 2, 3 and 4 as well as research objectives 2, 3 and 4.

3.  *For each named resource(s), please can you explain why you think you/law students prefer them?*

Establish the drivers behind the use of these resources, helping partly address research question 3 and research objective 2, 3, 4, 5 and 6.

4.  *Can you identify any factors that may encourage the use of these particular resources?*

Seek out any further drivers and/or opportunities which could be identified and help drive further uptake of the resources. This partly addresses research question 3 and research objective 2, 3, 4 and 5.

5.  *Can you provide examples of how the usability of these electronic resources could be enhanced?*

Law librarians had a lot of information to share on this topic as they were aware of the resources and how law students used them, this question provided a platform upon which the cohort could identify opportunities for improvement. Partially addressing research question 3 and research objectives 3, 4 and 5.

The responses to the above questions provided more structure around the themes identified as well as background on a more detailed level once we obtained the responses.

## 7.2.2 Research Instrument V – The Law Student Thematic Questionnaire

Research Instrument V: The need to extract more detail from law students on the motivating drivers behind their use of specific legal information resources, how they are accessed and why (see Section 4.4.7). This research instrument would provide some background to the eventual build of the interview question set that would go onto form the Focus Group questionnaire. Hence it was also based on the themes extracted from research instruments I, II and III. A sample group of law students who had participated in Research Instruments II and III in the detailed investigation were approached. These law students were asked to complete two online questionnaires and these responses helped refine our approach on the question content for the final research exercise – research instrument VI – the Focus Group study. Whilst responses to Research Instruments II and III in the detailed investigation outlined law students use of mobile technologies as well as their interaction with electronic resources, greater detailed analysis was required in their usage of resources, hence the need for this research instrument.

Two questionnaires were built from the analysis already performed on the findings from Research Instruments II and III in the exploratory study and detailed investigation. The themes identified were grouped as follows;

- Law Students' Use of Mobile Technology
- Design of Electronic Resources for Law Students

A total of 6 questions were included in the first questionnaire and it was designed with a logical flow so only two questions would need to be answered if the participants responded that they did not use mobile technologies to access legal information for their studies, else they would be asked to complete 4 questions if they advised that they did. The questions were aimed to explore the usage pattern of mobile devices in this context as well as any barriers that could be identified and opportunities for exploring drivers therein.

The second questionnaire consisted of a further 6 questions, but these were more open ended and focused on electronic resources and students' experiences in using them. A greater emphasis was placed on the mobile ecosystem of legal information resources by way of including two questions specifically aimed at "Apps".

Questionnaire 1 included the following questions;

<u>Law Students' Use of Technology</u>

*Do you use any mobile technology (e.g. Smartphone, tablet, etc.) to access legal information for your studies?*

*[NOTE: If your answer is "yes" then please proceed to complete only questions 1, 2, 3, and 4.]*

*[NOTE: If your answer is "no" then please complete only questions 5 and 6.] ***

*Yes / No*

1. *What kinds of mobile technologies do you use for your legal studies? (e.g. Smartphone, tablet, etc.)*

Find out what are the key mobile technologies that law students use for their academic studies, moving away from specifically focussing on smartphones and allowing the participants to freely identify their preferred technology. This helps us partly address research question 1 and 2 as well as research objectives 1, 2 and 5.

2. *Why do you use mobile technologies to access legal information for your studies?*

Discover the drivers behind law students' use of mobile technologies for this specific context. Partly addressing research question 2 and research objective 2.

3. *What are the benefits, if any, of using mobile technology for your studies?*

Provide the cohort to state the benefits from their perspective on using mobile technologies for their academic information retrieval needs. Partially meeting research question 1 and research objectives 2 and 5.

4. *Does your use of mobile technology change from time to time (i.e. do you use different types of mobile technologies to access legal information resources in different situations?) Please can you provide examples of your use of mobile technologies to access legal information for your studies if this is the case?*

See if a pattern can be found in terms of usage of mobile technologies as the law students' conduct their information search. Does the context dictate the use of device or do some mobile technologies manage to be used throughout the search process? This partly addresses research question 1, 2, 3 and 4 as well as research objectives 2 and 5.

5. *If you do not currently use mobile technologies to access legal information resources for your studies, please can you explain why this is the case?*

Find out what the barriers were for law students who may not favour the use of mobile technologies for their academic studies. Here we partially answer research questions 1 and 4 and address research objectives 1, 2, 3, 4 and 5.

6. *Please could you explain what would persuade you to use mobile technologies for this purpose?*

Give law students an opportunity to state what would help positively influence their use of mobile technologies where in previous cases they would not normally do so. This question helps partly address research question 1, 2, 3 and 4 as well as research objective 1, 2, 3, 4 and 5.

Questionnaire 2 included the following questions;

<u>Design of Electronic Resources for Law Students</u>

1. *Which electronic legal resources do you feel are the most popular? [You can list up to 5 of your top choices and this can include any of the electronic legal information resources that are available to you that you may use for your studies].*

This question helps partially address research question 1 and 2 as well as meeting research objective 1.

2.  *For the same corresponding resources that you have listed, please can you explain why you prefer to use them? [Reasons why you prefer to use these resources]*

    Here we can partly answer research questions 1 and 2 and meet research objectives 2 and 5.

3.  *Can you identify any factors that may encourage further use of these particular resources? [Factors that may encourage the use of these resources]*

    Here we look at partly addressing research question 3 and 4 as well as research objectives 1, 2 and 5.

4.  *Can you please provide examples of how the usability of these electronic resources could be enhanced?*

    Response to this will partially answer research questions 1, 2, 3 and 4 and address research objectives 2, 5 and 6.

5.  *Do any of these resources have mobile interfaces (Apps) and do you use them?*

This will provide us with information that will partly address research questions 2 and 3 and research objectives 1, 2 and 5.

6.  *How could these (Apps) be improved? (I.e. what would you like to see included for you to use them more?*

This questionnaire was like that posed to law librarians in Research Instrument IV; Design of Resources. Responses to this would provide the opportunity to see if there were any similarities between what the two cohorts' opinions. This would help partially answer research question 3 and 4 and address research objectives 2, 5 and 6.

### 7.2.3  Research Instrument VI – The Focus Group

Research Instrument VI: A focus group would provide an opportunity for a more free-flowing discussion and this method was used to obtain a more flexible set of responses from law students having already received a significant amount of data from them via questionnaires. As we built a stronger understanding of the research landscape, it was clear that the need for a more bilateral discussion on the study topic was required. The aim of this would be to establish a more in-depth feedback using a free-flowing meeting space where perspectives and experiences of information seeking in a mobile context could be shared amongst like-minded individuals. This discussion was based on questions that were assembled from themes identified from research instruments IV and V as well as the responses to questions in instruments II and III. (see Section 4.4.8).

Four HEI who had participated in the research study were approached for the provision of law students who could join in a focus group study only one of these managed to provide 6 participants covering a mixed range of study modes in the law school. The use of focus groups in relation to this research was to deliver a more in-depth discussion platform from which law students' perspectives of legal resources and mobile device technologies could be extracted (Von Seggem & Young, 2003). The results of the discussion were evaluated and manually coded so that themes could be built and if possible aligned to the research questions (Von Seggem & Young, 2003). To obtain participation in the study, law students were offered financial remuneration for their time and approval for this was obtained from the relevant governing authorities beforehand. A further interview sheet like the format of the Law Librarian Interview was used to provide a foundation upon which the discussion with a select number of law students would take place. Although the questions were structured, the discussion permitted a free-flowing theme if the meeting remained within the scope and remit of the research study.

An overview of the results obtained from the research to-date was discussed with the focus group at the outset to help build an atmosphere of understanding and commence a meaningful discussion. Also, in line to meet Objective 5, the proposed LSISB model was also included in this discussion to obtain feedback and opportunities for refinement of the said model where possible.

Tremblay, Hevner & Berndt (2010) reported that focus groups, originally known as focused interviews, were used during World War II by social scientists to explore morale within the U.S. military for the War Department (Krueger and Casey, 2000: Merton and Kendall, 1946; Stewart et al, 2007 – From (Tremblay, Hevner & Berndt 2010)). And although this method was created by academics, it was largely ignored by researcher's due to the challenges faced when seeking rigorous analysis of data and the fear of possibly contaminating the interview process. The situation started to change in the 1950's when this research method was adopted by market researchers and to this day, the use of focus groups to obtain qualitative research output continues to grow. Additionally, academics' interest in focus groups has been re-ignited since the 1980's and so making this method one of the most popular research tools in social sciences (Krueger and Casey, 2000: Stewart et al., 2007; Wellner, 2003 – From (Tremblay, Hevner & Berndt 2010)). Eliot (2005) puts the case for focus groups as being a valid means to obtaining a wealth of detailed information and deep insight creating an environment where the participants are put at ease, thus enabling them to thoughtfully respond to question in their own words and add meaning to their answers. Expert Market (2016) noted that focus groups were a key market research tool which could be used to gain a better qualitative insight into different behaviours and opinions. We found several advantages such as direct interaction, hands-on feedback (where concepts can be trialled in situ for near-instant reactions therein), detained conversations with participants and the opportunity to obtain a broader range of opinions with a diverse cohort. We also noted some disadvantages such as the risk of not obtaining a fair sample group to provide feedback, some participants may be unduly influenced by more dominant participants in their opinions and the risk of scope creep.

Clifford (2013) warns that focus groups risk failing to obtain a true consensus, so when it came to conduct our own focus group, we managed this risk through effective moderation where the group participants were steered towards the topic of discussion and avoided dominant participants from influencing the choices and opinions of others (Smithson 2000).

Although literature on the use of focus groups had been reviewed, this approach required a more effective utilization of this research method for developing an understanding of mobile technologies and their uses in an information seeking behavioural scope. A methodology was needed where the most effective learnings could be realised from the effort.

Goodman, Dickinson & Syme (2004) emphasised the importance of using these types of groups to obtain feedback on technologies in a relatively stationary setting. Even though the technology being discussed is of mobile nature, the very setting itself would provide the participants with a suitable collaborative platform where they could provide feedback on their experiences in interacting with such devices.

The authors state that key to a focus group is selecting the right participants who will ultimately be contributing towards the effort and the usefulness of the results. Hence randomly selecting the cohort is not advised. Kitzinger (1995) (from Goodman, Dickinson & Syme 2004) notes the importance of homogeneity within the participating group as this enables the researchers to capitalise on the shared experiences of individuals collectively. This would provide a good platform where similar themes could be raised and detailed as more participants could add content and depth to the discussion, albeit from their own perspectives and experiences. Dube et al (2012) warns of challenges in recruiting partakers that will agree to the duration of a focus group study, confidentiality and incentives for their contribution. To overcome these potential encounters, motivators such as providing compensation for the participants' time can be introduced if this reflects the level of effort required for participation in the study itself (Dube et al 2012). (Tremblay, Hevner & Berndt 2010) proposed in their paper two types of focus groups; exploratory focus groups (EFG), used for the design and refinement of an artefact.

And confirmatory focus groups (CFG), used for the confirmation or proof of an artefact's utility in the field. This approach worked well with this research project as the key reason for leveraging focus groups as a method of research was to refine the proposed law students' information seeking model. The questions for the focus group consisted of the following elements.

Questionnaire Layout

An initial question that asked the participants to state what they hoped to learn from the focus group exercise. This question was designed to find out the law students' perceptions of the exercise beforehand and then compare this to the closing question to see what the difference was.

1. What electronic resources do you use for your studies?

2.a. What technologies make it easier to use electronic resources?

2.b. What technologies make it harder to use electronic resources?

3. If you could design an ideal information support/service, what would it look like?

Also, the focus group was used to assess and validate the proposed LSISB model with specific emphasis placed on each of the technologies that were included in the model and outlines of the drivers and barriers for each. Opportunities were provided to the participants to agree with these drivers and barriers as well as to outline any additional ones that could also be added to the model. A closing question was posed to the group which asked them to outline what they had learnt from the group exercise. This was used to find out how the open discussion had unfolded and whether the law students had learnt much from the group-wide discussion as opposed to completing questionnaires in isolation.

# 8 A Detailed Investigation into Students' Mobile Information Seeking Behaviours – Phase I

## 8.1 Cohort Overview

As the study was focussed primarily on HEIs in the U.K., those HEIs who were located overseas were not included in the results of the report and the information obtained from their contribution is contained within the Appendices. The benefit of overseas input was out of the scope for this study but the very fact that several overseas HEI did willingly take part illustrates strong interest in this area of research. At this stage now, we had a total of 26 HEIs participate in the study, each providing a law librarian for input into Research Instrument I (Interview) component. 1 participated in the pilot, 12 in the exploratory study and now we had a further 13 in the detailed investigation phase (See Section 4.2.2).

### 8.1.1 Law Librarian Participation

For the detailed investigation, a further 13 academic law librarians were interviewed. A breakdown of this cohort is shown in (Table.27);

| HEI Location | University Type | HEI Count | Percentage (%) |
|---|---|---|---|
| England | Old University A | 3 | 23% |
| England | New University B | 5 | 39% |
| Wales | Old University | 2 | 15% |
| Wales | New University | 0 | NIL |
| Scotland | Old University | 2 | 15% |
| Scotland | New University | 0 | NIL |
| Northern Ireland | Old University | 1 | 8% |
| Northern Ireland | New University | 0 | NIL |
| **TOTAL** | | **13** | **100%** |

Table 28: Detailed Investigation - Law Librarian Participation in Research Instrument I

**NOTE**:

**A**: Old Universities are defined as HEI founded prior to 1992, **B**: New Universities are defined as HEI founded after 1992

During the research effort, it was noted that many law libraries remained associated with the greater academic library whilst some were based in a physically separate building.

The research sought to ascertain whether there was a possibility that law students' information seeking behaviours in the context of using technologies may be influences by those of other faculty students – especially if the collection of legal resources was within the same space as that of other subjects. The question on the arrangement of the said law library's material was asked to every law librarian interviewed, 27% (N=3) informed that their collection was based in a physically separate building from the other academic subjects whilst the remaining 77% (N=10) responded that their material was located within the greater academic library – although maintaining a distinction within this group. It was thus deduced that there was no evidence of any influence on law students' information seeking behaviours if exposed to those of other faculty students. For statistical analysis, the size of the law student population for each of the participating HEIs was noted to be 53% (N=7) of the HEI had a law student population between 501-1000, 23% (N=3) having 1001-2000 students and the remaining 23% (N=3) less than 500 students in the faculty. This information was obtained as part of questions 5 and 6 of the Existing Library Setup section of the interview questionnaire.

## 8.1.2  Law Student Participation – Contributing HEI's

The law students who took part in the detailed investigation originated from a total of 7 different HEI throughout the UK. A breakdown of this representation is shown in (Table.28);

| HEI Location | University Type | HEI Count | Percentage (%) |
|---|---|---|---|
| England | Old University [A] | 3 | 44% |
| England | New University [B] | 1 | 14% |
| Wales | Old University | 0 | NIL |
| Wales | New University | 1 | 14% |
| Scotland | Old University | 1 | 14% |
| Scotland | New University | 0 | NIL |
| Northern Ireland | Old University | 1 | 14% |
| Northern Ireland | New University | 0 | NIL |
| TOTAL | | 7 | 100% |

Table 29: Detailed Investigation - Law Student Participation in Research Instruments II and III

**NOTE**:

**A**: Old Universities are defined as HEI founded prior to 1992, **B**: New Universities are defined as HEI founded after 1992

A detailed breakdown of the law student demographics is provided in the relevant sections where the Research Instruments are discussed further.

## 8.2    Detailed Investigation - Results

In this section, we show the responses from Research Instruments I, II, III, IV, V and VI. Each research instrument's analysis method is outlined, then the actual responses from the cohorts followed by a discussion of the results of the research instruments respectively. The section finishes with a critical review of the findings with a discussion and recommendations for further improvements in the research methods used.

## 8.3  Responses to Research Instrument I – The Law Librarian Interviews

Like the exploratory study, the Law Librarian interviews for the detailed investigation phase were conducted either in person or by telephone conference. The methodology for conducting the interview, collating and reviewing the output and then analysing the data remained the same as that applied before (see Section 4.14.1).

### 8.3.1  Existing Library Setup

Existing Library Setup – Question 1

Like our findings from the exploratory study (see Chapter 5), text books maintained a sizable portion of the non-electronic collection with this cohort interviewed. This was justified by the strategy law libraries sought to employ by maintaining both electronic and non-electronic resources on an equal footing. Of the electronic resources, legal databases were the leading preferred choice as well as electronic journals and more specialist electronic resources – more geared towards the postgraduate cohort. Where usage of such materials tended to increase.

All the respondents informed that their non-electronic holdings included text-books 100% (N=13), followed by law reports and journals (both at 62%, N=8). Digests and Monographs were also equally represented at 23% (N=3) and Other resources stood at 38% (N=5) Newspapers formed the smallest collection category, 15% (N=2).

Some law librarians made it clear that their approach was to increase their holding of electronic resources in favour of paper-based materials, largely due to cost cutting incentives, but this tended to be focussed on specific resources within the law library collection;

"*I think law librarians are wary about cutting back on their paper-based subscriptions especially when it comes to times when some resources becoming unavailable via electronic databases such as Westlaw. However, when it comes to electronic journals, I don't see this as being much of an issue as access to them tends to be less restrictive. At our University, when we ask staff if they use the hard copy, most do not, occasionally we will see some academics looking at them and feel that we should retain hard copies of these materials as that is what the law library has, however for journals I am pushing this year to go electronic only, not only because they are not used in paper format but also because of the costs for stocking both paper and electronic versions.*" (HEI GS 2015)

Conversely some law librarians were more hesitant to making such a move to relinquish their paper-based holdings;

"*This use of printed law reports and printed journals to such an extent that where electronic versions are not available, we purchase printed versions, so we have a reliance on print on these aspects.*" (HEI GS 2015).

Also, despite the onset of electronic material available, law librarians managed to retain a diverse collection of non-electronic resources within their departments and remained sensitive to the varying needs of law students given their specialisms within the legal subjects (Fig. 74).
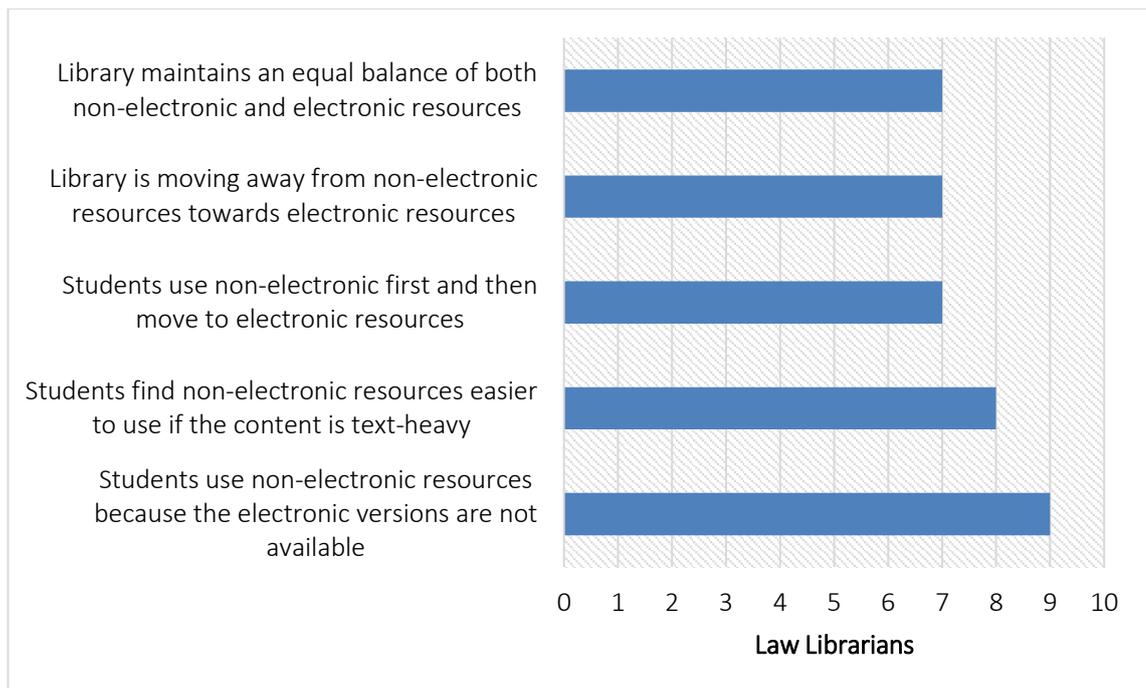
Figure 74: Coded Analysis - What type of non-electronic resources do law students use in the Library for retrieving information for their studies/legal research (i.e. paper/book/journal-based activities)?

With over half of the cohort, seeking to keep an equal balance of both non-electronic and electronic resources 54% (N=7), this rationale was also partly driven by the fact that not all legal resources were available in the latter format;

"*We have tried very hard to make electronic books available but for these resources there is never 100% coverage available, so we end up purchasing a lot of textbooks as well.*" (HEI ST 2015)

Like the responses in the exploratory study, we found that the Library catalogue remained a popular portal through which many electronic legal resources - as well as location details of paper-based ones - were accessed; all often done so through mobile device platforms, and on this note, law librarians had sought to provide electronic resources through these channels where possible given the popularity in this method of access. Hence, we found that there was a mixed use of legal resources with both electronic and non-electronic being accessed interchangeably.

However, when referring specifically to electronic resources per-se and in a non-mobile format, it was found that electronic journals fared the best 54% (N=7) largely due to their well-adjusted formatting in PDF format which blended and displayed well on laptop and desktop PC screens (Fig.75). These aspects tended to influence law students' preference of whether to refer to the electronic or paper-based format;

"…if available then the format is not as user friendly as one would hope. Even when electronic versions are available, we find that students use these to source the information they need then refer to the paper-based versions for further study. I think that some law reports are quite complex and reading them online is quite tough. It is easier to look at print copies and what we find that students would have the paper-based version on their desk and the summary of the resource on their computer screens." (HEI ST 2015)
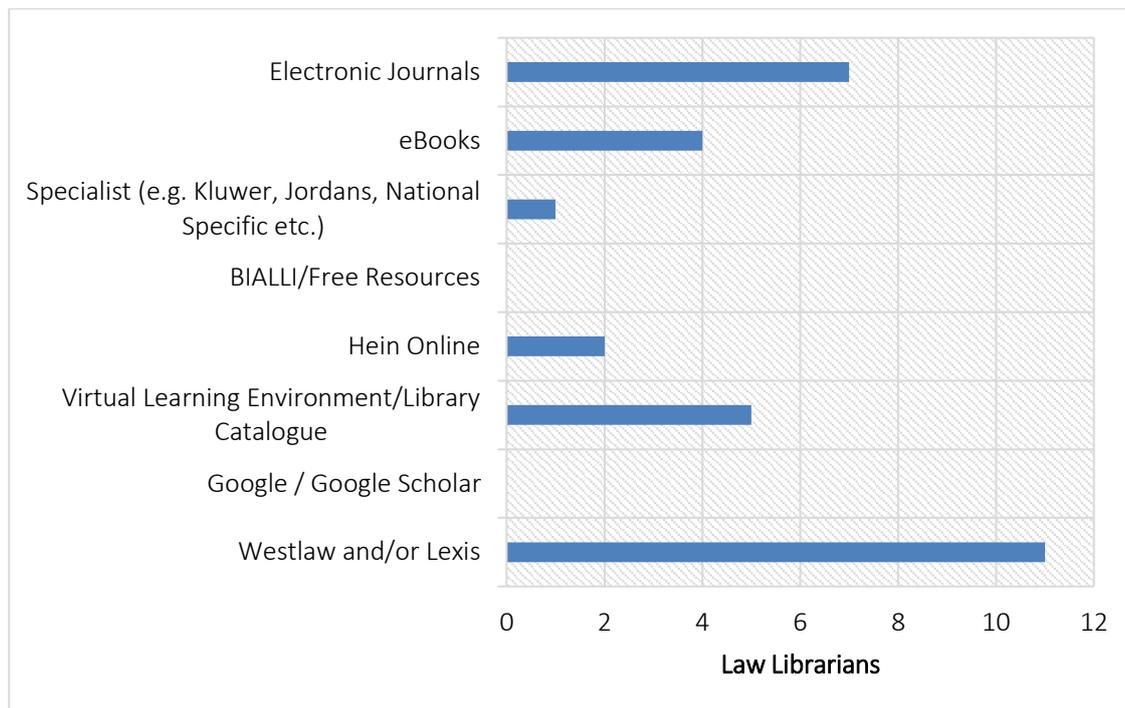


Figure 75: Which of these electronic resources in particular are most popular amongst students?

More specific named resources such as Westlaw and/or Lexis were also very popular 84% (N=11), their widespread use was down to their user-friendly interfaces and the depth of information that they could potentially hold within.

*"…law databases such as Westlaw and the Lexis Library, various journal subscriptions that we have amongst our collection. For primary law, students tend to go to Westlaw UK and then to Lexis Library."* (HEI BQ 2014)

However, the popularity of the above noted resources was not entirely driven by the products themselves but sometimes due to the other resources that could be accessed through them;

*"e.g. to access Halsbury's Laws of England, one would need to go through Lexis Library, there is no other way in which we can access this resource. So, whilst students may prefer the interface of Westlaw UK to Lexis Library, the very fact that they would only be able to access that specific piece of legal material from a specific resource only makes it irrelevant as to which actual resource they prefer to us."* (HEI DS 2015)

Other resources such as electronic journals were mentioned by 53% (N=7) of the cohort, whilst VLE's and Library Catalogues by 38% (N=5). The cohort group also made positive comments towards the ongoing development of legal resources in digital formats and welcomed these changes;

*"I look at the material that the staff return to the shelves and I hardly see printed law reports or even journals are hardly borrowed or used. The electronic legal resources are now so good that students can access the electronic law reports, electronic law statutes and law journals all at once. Students much prefer to use these digital options."* (HEI FB 2015)

Existing Library Setup – Question 3

Some resources fared very well in electronic format, with Legal Journals being a prime example due to several factors including, flexible printing rights, universal document format – PDF, well organised and accessible within other digital databases;

"*For journals, students seem to be more happy to use online, however our journals have always been reference only anyway so if students needed to take copies away they would need to use the photocopies, however since we have started to provide these items online, we have noticed a drop in the use of photocopying – it looks like students are making full use of electronic copies of journals and not printing them, only referring to the key items from within these materials as and when they need them online.*" (HEI RT 2015)

The provision of electronic resources was driven by a multitude of factors which included students' resource preference, student search behaviours, functionality, teaching styles and availability of resources in the format. Though, given the increased inter-connectedness of digital content, law students ran the risk of not being aware of the individuality of specific legal information products and this also caused law librarians some concern, a prime example being the library catalogue which would often interconnect with other electronic databases and resource holdings, acting as a conduit for information access;

"*Having said that if a law student was using our library catalogue and searched for an eJournal then the student may not necessarily know that the journal is contained within a specific legal database so that does make it less clear as to which resources are being used to extract or retrieve which content as the journal itself may be contained within the likes of Westlaw but as far as the student knows, they have directly accessed it from our catalogue so they'd be unaware of this.*" (HEI RD 2015)

Some postgraduate and/or practicing law students showed a different preference of using resources as opposed to undergraduates;

"*We have several online tax resources and items such as Justis as well as other international law materials from OUP. Some resources are more subject specific, and these tend to be used more by the postgraduate students.*" (HEI CE 2015)

Also, some librarians added that non-electronic formats would only be accessed when their electronic equivalents were not available, thus placing a call for more digitalisation of content;

"*E-journals have been gradually replacing printed journals, if they have not already done so, primarily with the ones students refer to and so we see a growing number of students using them regularly. However, where we don't have journals in electronic form, then students search for the paper-based equivalent.*" (HEI OG 2015) Additionally, some informed that law students were also required to use paper-based resources due to specific coursework assignments and tasks and hence kept historical copies for this purpose;

"*When it comes to journals, however, it is perfectly normal to keep hold of the entire series of journals for reference i.e. previous issues are still of research relevance, which is less likely to be true of out-of-date textbooks and thus the licenses for law journals are designed to include access to back issues.*" (HEI DS 2015)

A coded analysis of the output found that electronic resource usage was driven by several factors in addition to those mentioned above.
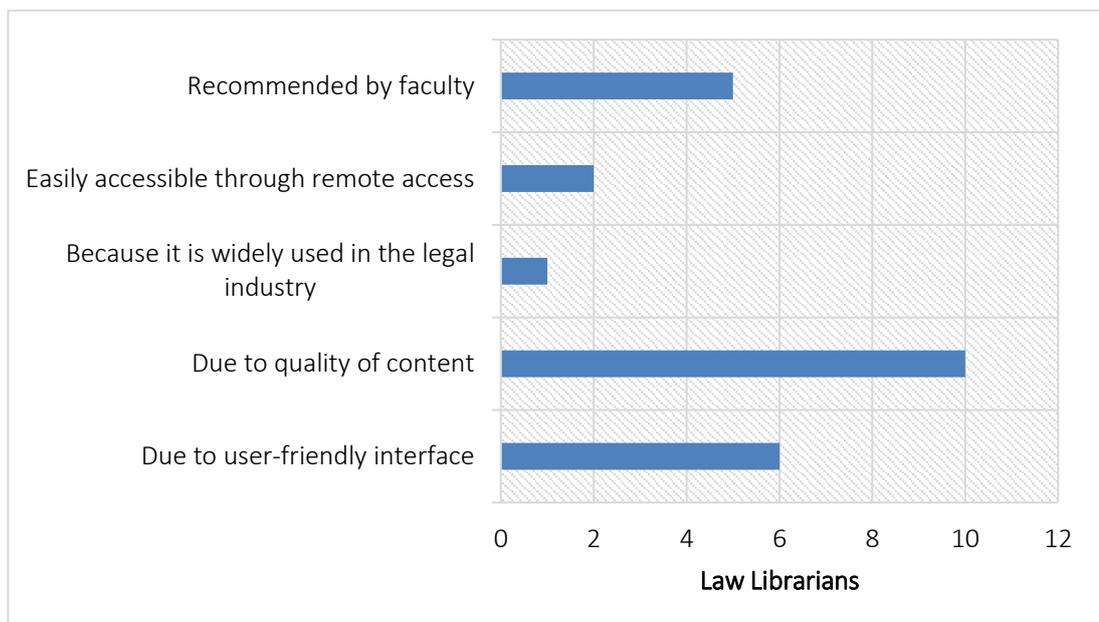


Figure 76: Coded Analysis - Which of these electronic resources in particular are most popular amongst students?

Law librarians advised that the quality of the content 77% (N=10) and user-friendly interfaces 46% (N=6) (Fig.76) were attributes that proved to be quite popular amongst the student body for the design of electronic legal information resources, additionally there were instances where members of the law faculty recommended specific resources 38% (N=5). Still, despite the faculty taking this approach, some law librarians commented that their own preference was to push law students towards utilising all the different resources available, but this was not without its own challenges;

*"We do however try to push students to use our library catalogue as that contains links to all of our resources, we also recommend students use other systems such as Lexis. However, it is difficult sometimes for us to recommend alternative resources when the information contained in the resources therein may be very similar, unless it is a specific legal topic such as tax or international law. My concern is that our resources are expensive, so we need to make sure these are all utilised, undergraduates tend to be mostly looking at utilising simpler user interfaced resources encompassing a lot of material that students are likely to use."* (HEI CE 2015) Another Law Librarian voiced concern that popular legal resources often referred to their own content exclusively and this could have a negative impact on the discoverability of additional information if law students' dependence on certain products continued;

*"But there are issues in this such as we have been able to make some resources available through Westlaw and Lexis and students can access the items directly via PRIMO and only see the reference in Westlaw or Lexis but PRIMO does not work as well with these databases as it normally does with other legal information databases and this causes problems for us."* (HEI OG 2015)

As well as the risk of too much information bringing a greater portion of unwanted content that may not be relevant to a search, some HEI's had taken steps to address this where possible, but this too was caused because of academic staff referring law students to these said resources;

"*We have asked academic staff to promote different resources to students also but are mindful of the potential information overload this can have on the student body. Westlaw however tends to have most of the information students need and this is one of the reasons why it is so popular. We also find that academic staff tend to use electronic resources more than paper, this in turn impacts the student's perspective on these items.*" (HEI MQ 2014)

Choice of Formats

Librarians also outlined that where possible, they would ensure that their resources were available in electronic format and also mobile friendly, there were several reasons for this approach including the need to maintain coverage for the specific type of information in a variety of formats to suit individual preferences, to ensure redundancy in the event of one type of format no being available. Also, to cater for all law students' needs in case they are unable to access legal information in a format and to address the specific format needs of coursework and assignments that may require one type of resource over another;

"*Also, students have come to expect to be able to access all of their resources in this way and this is a challenge for us at times as not all resources are digital. And again, for the most part, especially the type of search method that is now taking place, is going to be done online, whether it is from a library catalogue, search engine or even specialist resources such as Westlaw. There is a clear assumption now that information should be provided in this manner really.*" (HEI CE 2015) And

<u>Drivers for Electronic</u>

Electronic resources were addressing the well-known hindrance that accompanied physical material, that of having a limited number of them for use by a, far often, larger cohort of students. Books unfortunately would often be over-subscribed and electronic versions addressed this problem by enabling access to the entire student population simultaneously. This also proved to be cost effective as it reduced the need for law librarians to invest in several copies of physical books;

"*This works quite well, even in the event if I purchase one copy of the print book and a copy of the eBook, many students can access the electronic version whereas before we had to purchase many copies of the paper-based books and this was costlier as well as only giving students that particular mode of access.*" (HEI DS 2015) Whist others expressed their caution at the increased costs of holding both format types;

"*Basically, we don't want to take on the additional cost of duplicating the resources in both paper-based and electronic format.*" (HEI ML 2015) Some Librarians used the concept of Patron Driven Acquisition – a strategy where purchases of electronic resources were triggered by law students "clicking" on the link of the resource itself.

There were challenges of managing purchases via this method as often it was too easy for students to select a resource without appreciating the cost behind its procurement and the long-term impact this had on the resource budget. Also, not all resources could be acquired using Patron Driven Acquisition – which was frustrating;

"*We also follow a strategy of Patron Driven Acquisition whereby our search system checks how many law students clicked on a particular resource, if the number is high enough and we do not have access to the said item then we purchase it. Our departments management are eager to promote this still however we find that Patron Driven Acquisition contents do tend to be dated somewhat, for example, the eBooks collection under this sphere sit outside our more general sphere of eBook collections that are not under PDA.*" (HEI NU 2015)

<u>Risks of Electronic</u>

Law librarians also voiced their concern repeatedly at the lack of total control they had on electronic resources in that vendors could adjust access without any real control, the relationship with electronic resources was not of physical ownership but one of access only. A trait that forced law librarians to continue their procurement of paper-based materials and a specific theme that will be outlined later in this report;

"*I know that sometimes there is the concern that electronic resources can be removed from within aggregators' databases, this has come up in the past, but this type of issue is less relevant to law eBooks since the lifecycle of text books tends to be quite short with updates being required on an annual basis if not sooner.*

*Thus, if we found that a book was no longer available in e-format, we would have to buy multiple print copies instead. With electronic journals, the situation is different in that we purchase the license to access the resource, not the actual resource itself.*" (HEI DS 2015) Overall, the variety of legal material available was on a rapid rise and thus required an intelligent procurement strategy which could ensure appropriate navigation through the choices as well as ensuring that optimal coverage of the legal topics was achieved, some HEI's managed to do this by purchasing both electronic and paper-based resources where absolutely required.

<u>Change in Law Library Landscape</u>

With resources in electronic format evolving and becoming more user-friendly and more paper-based materials being transported into digital versions, it was clear that the bookshelves in law libraries were undergoing dramatic change and one that was far from its end. And again, like that mentioned in the exploratory study, we found that ownership vs. access was a topic that continued to be mentioned throughout with the cohort voicing their concerns that digital content; whilst providing many benefits, was also a totally different proposition compared to the traditional paper-based materials that libraries were so well versed with handling.

In summary, we found that legal resources were trying to take some of the market share achieved by the above two products (namely Westlaw and Lexis) by investing in their user interfaces and functionality development. We also noted that the Library database was also a highly-regarded tool used by students for both electronic and non-electronic legal resource searches, this often resulted in it being given the same importance as that of fully-fledged legal information resources as opposed to being seen simply as a digital library catalogue – which is what it was.

*"The Library catalogue allows you to search across books, eBooks and other items, our Federated Search engine does search these items as well as the legal databases. We subscribe to Westlaw UK, Lexis Library, JustCite, Lawtel UK and Lawtel EU, Hein Online, Practical Law. "*(HEI PL 2015) And

*"if a Law Student was using our library catalogue and searched for an eJournal then the student may not necessarily know that the journal is contained within a specific legal database so that does make it less clear as to which resources are being used to extract or retrieve which content as the journal itself may be contained within the likes of Westlaw but as far as the student knows, they have directly accessed it from our catalogue so they'd be unaware of this."* (HEI RD 2015)

It was also learnt that some law libraries had engaged with other HEI's to pool their paper-based resources together and now sought to replicate this with their electronic holdings to some extent.

*"The risk is that if we let go of the print and lose access to the electronic channel or find out that it is too costly due to price increases makes it a tough choice at times. We are part of a library consortium which helps our purchasing power and we are looking to co-ordinate things so that we can share our print resources and so together we will have a greater combined collection of material as well as save money.*

*For electronic, collaboration of this type is difficult as we cannot share our resources outside our university. So, in terms of primary resources, we would share our holdings of statutory legal resources with others and some would cancel their subscriptions to these resources knowing that they would be able to share the same resource held by another and so forth."* (HEI ST 2015)

And whilst electronic resources provided a far greater pool of information to law students at a far quicker pace, there were many instances where the content was not entirely relevant. Additionally, some legal information providers took note of the dependence law students placed on their products and so utilised this opportunity to promote their own resources further, risking the occurrence of any serendipitous discovery.

*"This is why Westlaw is so popular as it covers a wide spectrum of legal topics. Or students may end up using our own search engine to access content, but this limits them to the amount of information they can access. Students know that they simply cannot use Google or other Web search engines since it may not give them the detailed information they require so they would have to use the specific legal information resources to get the details they need. The key risk is that students may end up using the most popular legal resources and avoid using the more specific legal resources, restricting themselves and not obtaining the more detailed content."* (HEI ST 2015)

Law librarians were realising that their position as information keepers was evolving towards a more technologically focussed one where a strong understanding of how different technologies used by law students would interface with the electronic products their department was investing in.

*"Students have their own device and it can only be a good thing to us really, they can access things anywhere so less pressure on opening hours for us. We notice that certainly when our e-resources go down at say 3am, we see the emails next day from students who may have been using these resources at that specific time."* (HEI XE 2015)

What also remained to be challenged was the way in which electronic content was sold and managed, digital content was not owned but based on a subscription access model and this was something that librarians were not happy to accept.

<u>User Behaviours</u>

On the aspects of usage behaviours, 76% (N=10) of the cohort had observed that law students' first port of call would be to refer to electronic resources first and foremost due to convenience and speed at which they could harvest significant amounts of data;

*"I think students use electronic resources to find resources now, I don't think you could even conduct any comprehensive research using paper and avoiding electronic. Before electronic resources appeared, it would take up to an entire day looking for materials, now with electronic resources, this task takes a few minutes"*. (HEI ST 2015).

Others noted the speed at which information from various sources was extractable within a few minutes from the convenience of the Law Student's chosen location (so long as they had the required technology at hand);

*"Students are just not interested in using print. And I'd say this applies to the entire law student cohort. I think this is down to the sign of the times. If you can look up a law report and do it online as opposed to having to coming into the library and using a photocopier – well, there is no comparison really on the amount of effort required to do the latter as opposed to do the former."* (HEI BN 2015)

Existing Library Setup – Question 4

Students would also mostly tend to consult non-electronic material if the information they specifically sought was not available in electronic format or its content was not comprehensive enough 61% (N=8) (Fig.77).
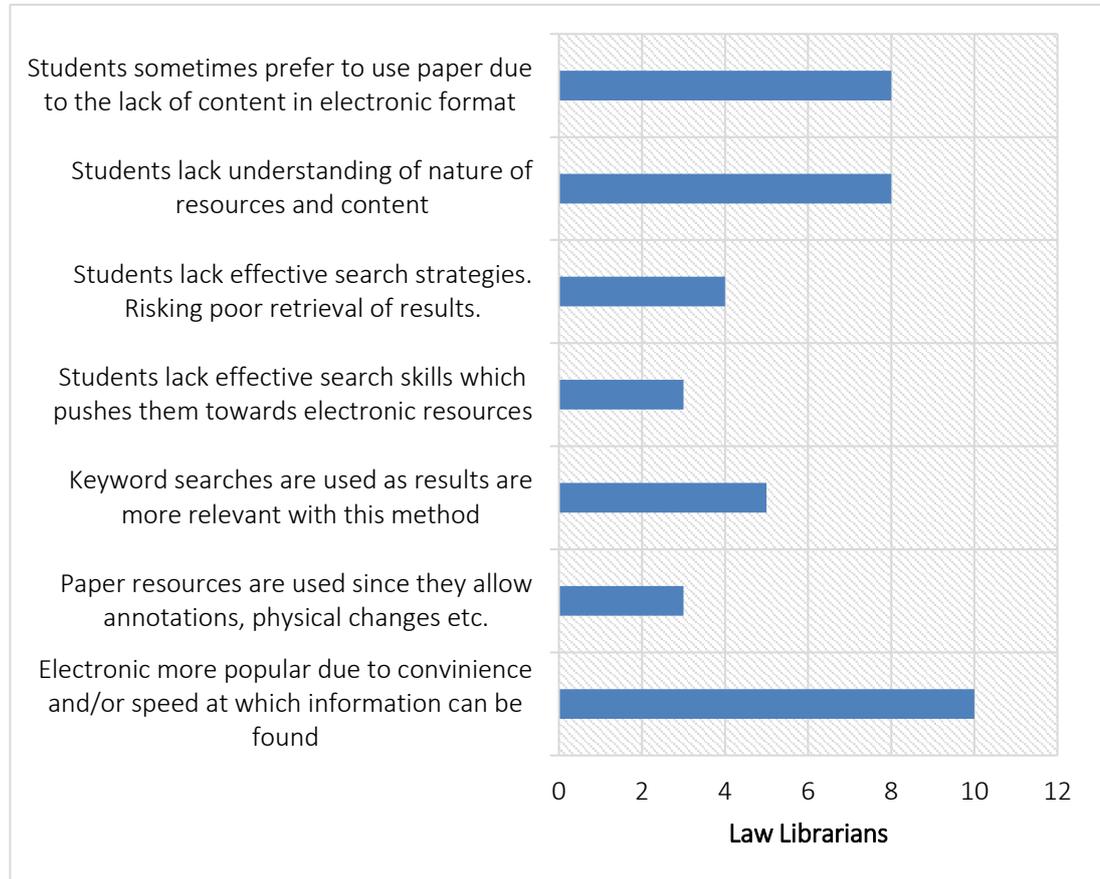


Figure 77: Do you find that one type of search method (non-electronic vs. electronic) is more popular with the students than the other? If so, please state which one in particular and why?

Electronic search was a default action which students would engage in when searching for academic information, in addition to the speed that digital search brought into the landscape, student's previous experience and knowledge of using modern technologies to search for information was also named as a driving factor behind this behaviour;

"*I find that electronic resources are what students default to most of the times, it is because students are so accustomed to using search engines and electronic resources from their previous walks of life such as schools and in their personal lives.*" (HEI NU 2015)

The selection of non-electronic over electronic inclined to apply more often to legal resources that were more specialist in nature;

"*This applies more so to more specialised legal topics and historical law reports – particularly Scottish ones that may not be available in electronic format or if available then the format is not as user friendly as one would hope.*" (HEI ST 2015)

The sample group did inform that some legal resources were more appealing in electronic format than others, especially when it came to content;

"*If students can, they would use text books for their basic learning needs and this is the case when there is no online or digital alternative, or the resource has been specifically recommended. Usage of these materials tends to be quite high. There are situations where a fair amount of information is still not available online and I think this is one of the reasons why paper-based resources tend to be heavily used.*" (HEI CE 2015)

Whilst non-electronic format was preferred for material that would often require detailed examination;

"*The main ones are the book collection, particularly the undergraduate text books which we still buy in a considerable number. Probably two thirds of our budget tends to be spent on these types of resources. We also buy more detailed specific legal materials such as - monographs and specialist law books as well. In terms of feedback that we are getting from our student surveys, we have had complaints from students about the lack of resources, – it is always about access to paper-based books. So, where we have introduced eBooks where possible to address this, we are finding law students still showing a preference towards paper copies of the same resources.*" (HEI GS 2015)

It was also noted that students would generally refer to non-electronic resources first if the topic was text-heavy (N=8) and (N=7) and then move onto electronic if the content was light enough (see Fig.85);

"*Print journals are used in the exceptional cases when we don't have online access but have the print copy. There are odd exceptions in specific areas of legal area where a print version is needed, and a digital copy does not exist, but when it comes to primary legal information or journals, digital versions are accessed. Even when it comes to books, especially eBooks, we see that books are still popular.*" (HEI BQ 2015)

Reasoning for Usage

This meant that students found reading substantial amounts of texts easier in paper-form as opposed to from a screen. Summarily, to cater for this information behaviour, law librarians were increasing their holding of electronic resources and whilst doing their best to maintain a balance of both types of materials;

"*… there is definitely a preference for electronic resources, if anything the students would use textbooks, but they would not use paper-based resources such as legal encyclopaedia's and loose leafs. I've never seen students use law reports in print for example.*" (HEI BN 2015)

Existing Library Setup – Question 7

It was becoming clear also that electronic resources were showing signs of improved interfaces and becoming more user-friendly 100% (N=13) (Fig.78), resulting in an increased product line, greater functionality and greater integration between electronic and non-electronic formats 92% (N=12). The downside of this trend remained the concerns over the loss of tangible ownership that electronic resources brought with them 61% (N=8), the anxieties regarding costs 69% (N=9) and the inconsistent approach vendors had taken to distributing their digital products 69% (N=9).
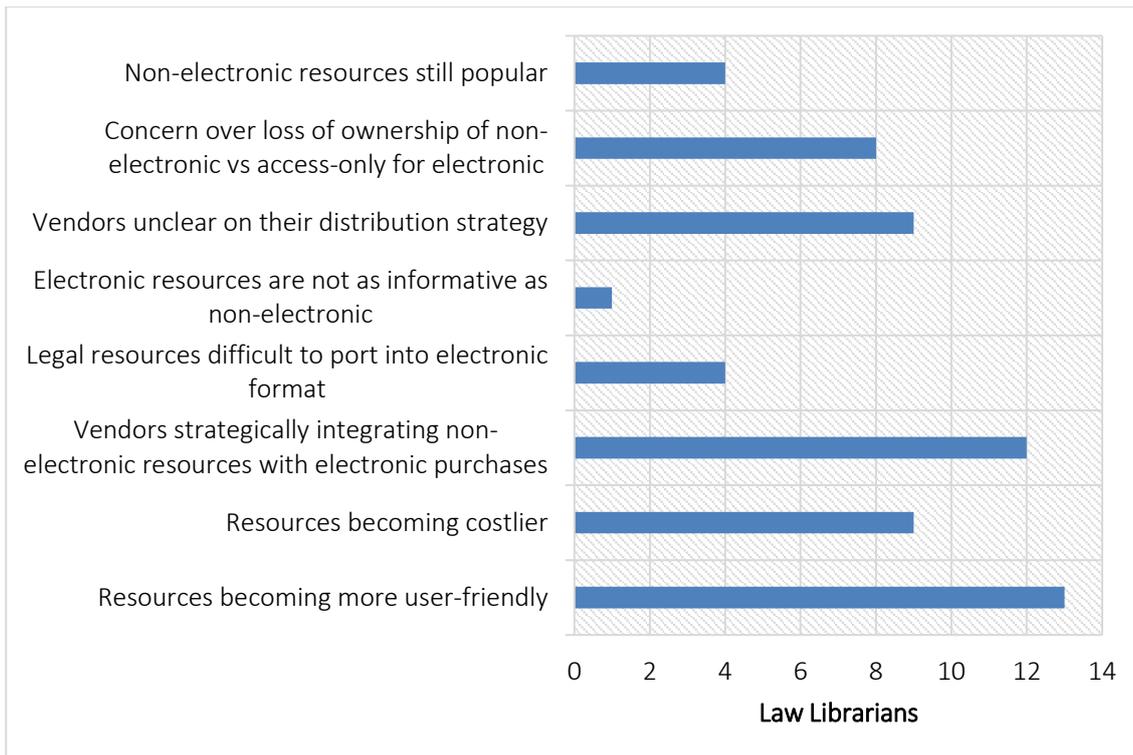
Figure 78: What changes have you seen on the non-technical resources (i.e. Paper-based), technical resources and third-party service providers' resources over the years?

Librarians Reactions

Several law librarians had taken the step of cancelling their subscriptions to paper-based resources due to this behaviour and general commercial development as well as availability of electronic resources. This only accelerated the use of electronic resources further as law students found that legal information this format continued to increase;

"In our library, it would be electronic, as our library is increasingly becoming electronic first, certainly in terms of journal articles, students would have to be using an electronic interface to find current content as our print journals are no longer current as we cancelled our print journals subscriptions a few years ago. Thus, for a student to be able to find the most current information, they would have to use electronic." (HEI DS 2015)

Changes in Student Search Skills

However, one of the consequences of the increased adoption of electronic format was the dependency on it and the change in information search skills that law students possessed. Effective use of paper-based search methods had also suffered and naturally, some law librarians had taken steps to counter these issues;

"…it is worth mentioning that students use Google a lot and they tend to focus on the results they find from the very first page of the search output. Despite this behaviour, I make it a point of training the students on using the right resources using the best search strategies, if students want to use Google then that is fine up to a point, but they need to intelligently verify and question the results they get otherwise they will end up with poor grades." (HEI NU 2015)

With some calling for greater emphasis on training law students in research methods, enabling them to intelligently navigate through the plethora of content that was now available to them and understand that not all resources would be readily available in electronic format;

"There is an expectation from the students that the resources should be electronic throughout and the disappointment from them is clearly visible when they realise that their search is not only made up of electronic resources but also paper-based items as well". (HEI OG 2015). This also included the use of more keyword searches, which was something law libraries encouraged;

"…if they were doing a broader search then they would move straight to Westlaw and use keyword searches on either this or Lexis." (HEI GS 2015)

Whilst some HEI's had created demanding assessment methods which compelled law students to use both formats of information content;

"*We do teach students how to find legal information on both electronic and paper-based formats, in an equal weighted format, however, we now see that paper-based resources are being used far less and they simply are not as effective as electronic resources. Even sometimes students will use Westlaw to locate something and then decided to look at the paper-based version to study the material in depth, yet, the initial search was conducted using electronic resources in the first place.*" (HEI ST 2015)

Law librarians firmly believed that law students should be able to confidently use all types of search methods as the key component of the legal profession was to be able to navigate through the sea of information that encompassed the legal world. By simply focussing on one format over another, ran the risk of law students being unable to locate legal information that may be key if not critical to their work, as well as potentially denying them the opportunity to retrieve the most relevant content possible.

Positive Changes of Digital Resources

Electronic resources gained most favour when it came to access them out of hours or from a distance, since most law libraries provided 24/7 access to resources via their online portals, this suited law students' personal schedules and enabled them to seek information as and when they wished. The dependency on the opening hours of the law library, the availability of books on shelves and being able to speak to someone in the law library for search assistance was being addressed by online materials, digital copies of documents available to all and complex search engines which were fast becoming user-friendly.

As discussed, some types of electronic resources fared very well amongst the student population due to their interfaces however the very nature of paper-based material giving students the ability to manipulate tangible material proved to be a strong driver in its favour;

"*Overall my feeling is that student's first look at electronic resources but print certain parts where possible. We do know that when it comes to eBooks that students still prefer print equivalents, even though they appreciate the availability of eBooks. In one of our student surveys we ask specifically if eBooks were an acceptable alternative to the print version. 67% agree or strongly agreed that it was a suitable alternative. But at the same time, if students have a need to print text from eBooks then their opinion somewhat changes, and they see print material as being the preferred option.*" (HEI BQ 2015)

Also, material requiring extended study and analysis, would often be referred to in print format, either it being available in this way or if electronic, then printed, this was also stated earlier;

"*Students in general prefer to use electronic resources but if they have to read extensively then they would refer to print material. Law Journals are mainly used in their electronic form due to the material mostly being in lesser amounts and students not needing to refer to them for extended periods.*" (HEI BY 2015)

We asked the cohort to give their views on how they had seen the legal resource landscape evolve over the years in terms of provision, product design, costs and inter-connectivity. 92% (N=12) of the respondents informed that electronic resources were becoming more user-friendly, with (Fig.78) advising that vendors were increasingly integration non-electronic resources with electronic ones.

"*I can see a trend towards simplification of menus, the pages and trying to make trails of searches clearer. This is partly in response to clients expressed preferences with regards to competitors who also have added functionality that makes legal resources accessible for mobile devices. More functions, more steps and more mobile engagement.*" (HEI ML 2015)

The "inter-connectedness" of electronic resources was also noted and praised;

"*The main thing is that the interconnectedness that is possible with electronic resources, so you can have hyperlinks within an electronic database that will take you to another resource that you may be interested in – linking between law reports which may themselves contain case laws and so on. Before when students would use paper-based materials they would need to note down the references and then go and search for the material. Now it is more seamless and much faster – just a "click through" and streamlined.*" (HEI FB 2015) The "searchability" aspect within electronic resources also had developed and received positive feedback;

"*When resources first started to be digitised the challenge was of eDiscovery and making sure we could find these resources in the first place. This became a real challenge so systems that can help us have appeared and these helped address this problem.*" (HEI NU 2015)

Concerns over Vendor Marketing

However, the cohort informed that the costs for electronic resources were increasing and vendors' distribution and marketing of these products was unclear (both at 69% (N=9)), approaches such as inflexible charging models which often required purchase of unwanted items and law librarians facing pressure into accepting this due to the market dominance that vendors had were cited as reasons behind these observations;

"*I think that the bundling of content is a general theme that arises here and across all subjects. The downside here is that we tend to get quoted on single large cost for an electronic journal bundle. Hence often we find ourselves having to purchase many other items within the packages that we would not normally need or use. Essentially if you want to continue with the subscription then you need to pay the higher price and must take the additional content – which may in fairness be interesting – it is rarely essential.*" (HEI DS 2015)

Also, there were references to instances where vendors lacked the insight into the actual needs of the academic market whilst focussing more on the commercial legal information market;

"*A lot of the vendors we speak to send their sales teams to see us and they have little understanding of the academic environment, their thought process is that if they talk about how great a resource is then we'd feel better about paying extra for it but to be frank, that is not the environment we work in. Vendors tend to be more focussed towards the commercial market.*" (HEI DS 2015)

These actions caused confusion and frustrated law librarians as they attempted to adopt a more consistent resource purchasing strategy;

"*There are instances if we only take electronic resources the price increases and we are forced to purchase print, print resources however are more cumbersome to update, especially loose-leaf materials; paper-based resources are not as integrated as electronic and students also know this. I don't think publishers have realised this yet and they need to understand that paper-based resources, especially those which are labour intensive to update, are not used anymore.*" (HEI ST 2015)

Librarians React to Challenges

With so many law librarians facing pressure to reduce their costs, naturally they sought to capitalise on their purchases of resources where possible, often by reducing their holding of material in one format over another, yet this brought other concerns;

"*The cost of electronic resources has also increased, and we are working hard to reduce our costs, this means to a considerable extent, reducing our paper-based holdings. Print resources are becoming more expensive and their use is reducing, so especially where we see duplication with electronic versions also being available, we consult with the faculty and then decided whether to estop our subscription to the paper-based resource or not. I don't see much evidence of synergy between paper based and electronic resources, it seems to be a more "either" approach.*" (HEI CD 2015).

<u>Ownership vs. Access</u>

Over half of the cohort expressed their concerns at the lack of ownership that electronic resources brought with them 61% (N=8). with some expressing this view having suffered an unpleasant experience where access to electronic resources were lost due to some unilateral action taken by the vendor;

"*We also have had problems in the past where we lose access to resources via third party providers and this happens more with legal resources than any other subject. We end up having to quickly find alternative means to provide the resources, which is often costly.*" (HEI BN 2015). But there was evidence of vendors showing sensitivity towards these situations by actively placing alternative material within their interfaces which could substitute for any loss of specialist information;

"*Additional content appears, old content disappears, and licenses tend to be the main reason behind this. E.g. Family Law was removed from Lexis Library by Jordans Family Law, Lexis tried to compensate for this by making Family Law available through another provider instead. These aggregators try to make sure that the information they keep on their databases are similar in the broader sense.*" (HEI OG 2015)

The nature of electronic resources, despite providing a well-suited means of delivering academic legal information to students via convenient mobile channels, did so through a service delivery process where the law library paid to "access" this material and did not technically provide tangible ownership of it.

Thus, and unlike paper-based resources, law librarians felt vulnerable and at the mercy of vendors who could, in theory, remove access to said resources almost immediately;

"*This has happened with some of our family law materials where some of the publishers decided that they did not want Lexis to have access to their resources anymore and we lost access to the information and we had to get a different subscription, which cost us more money.*

*This is very frustrating especially as students and academic departments rely on this material and we have no control over it.*" (HEI PL 2015)

Because of these experiences, some law librarians remained adamant that they needed to continue to maintain their holdings of paper-based resources, despite the cost, gave them more control over their information sources;

"*Some aggregators ask us to sign up for up to 3 years but what if the resources available within this aggregator's product are removed within this timeframe? Where do we go then? The other thing, on the removal of content and license is that we don't own the material itself, we only have access it. The risk for just using e-resources makes universities very vulnerable. We should not remove all of our printed material.*" (HEI BY 2015)

<u>Maintaining Control</u>

Some law libraries had engaged in efforts with other institutions to combine their legal information holdings to circumvent this risk;

"*We are part of a library consortium which helps our purchasing power and we are looking to co-ordinate things so that we can share our print resources and so together we will have a greater combined collection of material as well as save money.*" (HEI CD 2015)

<u>Summary</u>

During the exploratory study, we found similar matters raised by the other set of law librarians we interviewed (see Section 6.4.1), again we found the same concerns here. As digital resources increased their foothold within the law library domain, law librarians voiced their concerns at the lack of ownership they had over these products. Legal information resources were no longer "owned" but accessed on a "subscription" basis which would leave many law libraries vulnerable to losing access to vital content due to a variety of reasons. Furthermore, as more products became available in digital formats the costs of these rose and often placed a lot of pressure on financially limited budgets.

Whist law students clearly benefitted from using digital resources by retrieving them through electronic devices, often remotely, providing an unprecedented level of access, this drove law librarians to procure more products in this format. Initially electronic resources had limited functionality and immature user-interfaces but these were also developing and fast becoming more sophisticated and integrated with other products, a significant variety of information was thus accessible from a single interface but this introduced new concerns that law students would become too dependent on specific product conduits and fail to explore for more content as they would have normally been required to do when using paper-based material.

## 8.3.2   Mobile Information Retrieval

<u>Mobile Information Retrieval – Question 1</u>

Law librarians were asked what their understanding was of mobile information retrieval to ascertain their knowledge of the topic as well as to find out how their interpretations of this concept varied, especially given the diversity of the cohort. The cohort tended to own mobile devices of their own, hence did have some understanding of Law Student's appreciation of these technologies and the speed, convenience and flexibility they brought into the collection of information seeking technologies. All the librarians interviewed interpreted mobile information retrieval as something that enabled them to retrieve information whilst in motion and did so utilising a variety of mobile technologies;

"*I use my mobile devices a lot. Personally, I use a range of different devices, I have a smartphone, a tablet and a lightweight laptop and I interchange them. I expect to be able to access information across all of them but don't expect to be able to do the same functions on all three. As different devices have different limitations and capabilities. I would use my smartphone to look for something quickly and if I need to do more detailed work I would use my lightweight laptop or tablet.*" (HEI ST 2015)
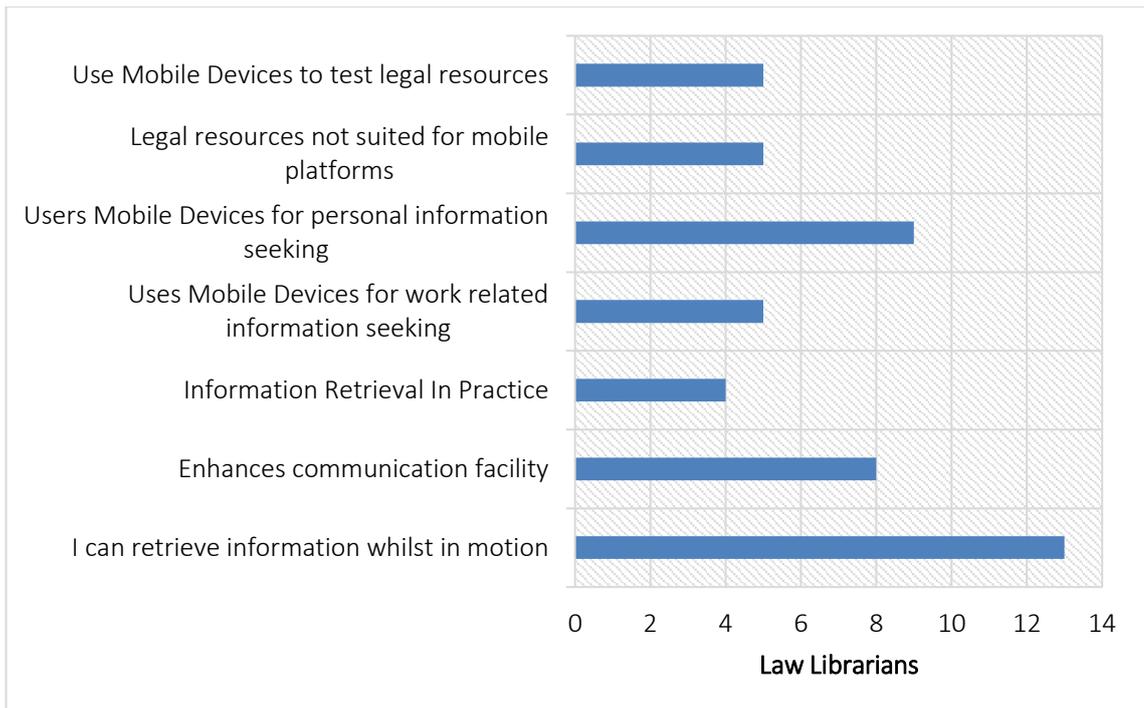
Figure 79: What is your understanding of mobile information retrieval and in what context have you used it?

69% (N=9) (Fig.79) of the cohort responded that they had actively used their mobile device for personal information seeking whist 61% (N=8) saw mobile devices as enhancements of communication tools. Only 38% (N=5) noted that they used their mobile devices for work-related information seeking and the same percentage opined that these technologies were not well-suited for legal information seeking due to the resources not being designed to work on these form-factors.

A similar number 38% (N=5) opined that they had used mobile devices to test legal resources before promoting them to law students – with some mentioning their approach of working with law students to be more resource-neutral as far as locating legal information went, but maintaining a good understanding of how to conduct an effective search;

"*I do know that Westlaw and Lexis have their own apps but not all their materials are on these apps anyway. Not all the legislation case law and legal text is available on them, the last time I checked so I would be hard pushed to -recommend these to students. What we should be doing, I feel, is providing law students with the best knowledge to locate legal resources. So, this way they can work around the various resources and tools to ensure they can obtain the information they need.*" (HEI RD 2015)

<u>Mobile Information Retrieval – Question 2</u>

Some librarians reporting to have a formal strategy around the use of mobile technologies;

"*All the time, we have a mobile strategy that we have been working on since 2010 and we have got to the point where we will probably disband the group, as since now our everyday practices are more aligned with the mobile strategy. Also, now when we negotiate with any legal information provider, we ask that the content be compatible with mobile devices because this is what our user groups are telling us.*" (HEI ST 2015)

<u>Mobile Resource Constraints</u>

However, within the cohort, 54% (N=7) felt that legal resources were restricted on mobile devices. They added that mobile devices were not suited for being used to access legal information resources 46% (N=6), due to the smaller screen sizes and the fact that many legal resources often required a large amount of real-estate to display content;

"*I have used my smartphone for testing some legal resources and for checking emails, but I find the screen to be too small. I think that using a small device for such type of activity is tough.*" (HEI NU 2015). Some elaborated more on this challenge by pointing out the inferior quality of the format legal resources often ended up with when accessed via smaller screens;

"*I think this is partly because law databases are not designed for smartphone use. Their sites are not responsive in rendering per the screen size. Also, due to the complexity of - information students are often trying to find, the smartphone is not an ideal way to read the material when you are looking at a relatively small screen.*" (HEI DS 2015)

Having said that, 38% (N=5) of respondents added that they would prefer to use a tablet device for this type of information seeking due to the larger screen;

"*I have used the iPad to demonstrate legal resources to students. If we are doing outreach sessions where we walk around the faculty then iPads come in handy as we have quickly show students resources and other bits of information whilst with them.*" (HEI PL 2015)

And whilst other law librarians agreed with this, some did note the challenge mobile devices had in their poor user-experience for editing content;

"*Yes, I access my calendar and meeting minutes in this context. The experience was fine; you should understand that these devices can only do so much. These technologies are great for reading information but not good for editing material.*" (HEI BN 2015)

And 23% (N=3) noted that they had not used a mobile device for legal information seeking at all, with some advising that this was due to infrastructural challenges;

"*No, I have not, my room does not actually have a good Wi-Fi signal, so I have not had a chance to use it as much as I would like to.*" (HEI BQ 2015).

Mobile Limitations

The feedback on this question raised the profile about the use of mobile technologies in a legal information seeking context – the screen sizes and the lack of functionality that many legal resources possessed when being used on these platforms. There was strong interest in using mobile applications for legal information, but the user-experience was limited and operability poor – resulting in a frustrated audience. 77% (N=10) of the law librarians informed that they had seen law students using mobile devices in the library, with the usage being at a relatively sophisticated level – albeit depending on the actual type of mobile device being used. This was helped by the fact that some institutions provided law students with appropriately formatted resources that worked well on mobile platforms;

"…Students tend to be quite sophisticated in this context and some use specific resource apps for say Westlaw or Hein Online. But it depends on the device being used, if a student is using a tablet device then they can access most of our electronic content, our websites are responsive and work well on these formats. We also have smartphone specific sites which gives access to our library catalogue that offers a limited article search." (HEI ST 2015)

Also, 54% (N=7) advised that law students were often seen accessing the library catalogue using mobile technologies. However, 61% (N=8) stated that even though mobile devices were used in the library space, these devices were not well suited for lengthy information searches. This was partly due to the restricted functionalities of these devices 38% (N=5) and one librarian adding that due to their inherent social communication nature, these technologies would often prove to be more of a distraction than anything else as well as the inability to provide an effective means to view and edit content;

"…think that these devices are more of a distraction or additional tool than something that will help law students in their information retrieval needs. I have never approached a student to ask them, but I can't image that they'd find the experience of accessing a legal database on their smartphone as a good thing. I can't see law students using mobile devices to access legal materials. I do see students accessing high level journals but when it comes to case reports or general legislation, smartphones and other mobile devices are not the ideal choice, granted that students may be able to interact with resources through these technologies but using smartphones in this context may not be their first choice all the time. One of the main challenges being how to combine the content on the smartphone or mobile device into the Word document that they may be using to write their assignment." (HEI DS 2015)

Rapid Information Seeking

77% (N=10) saw smartphones and other mobile technologies as tools best served for information seeking for brief periods only, with the smaller screens again, being outlined as a one of the key barriers for prolonged use;

"*It tends to be for quick searches as opposed to lengthy research, this I think is due to the small screens. If students are looking for quick bit of information, then they would use a smartphone or even a tablet device but if they are looking for case law or legislation – things that require a longer period to examine – they would rather be on at least a tablet sized screen or larger. So, quick enquiries, smartphone is fine but for more in-depth it is preferable to use desktop PC/s.*" (HEI PL 2015) as well as poorly developed applications that would lead to student frustration;

"*I do think that they have some challenges ahead of them such as small screens and filling input fields on the search pages. I have seen students use Westlaw and Lexis on tablet devices though, but the key is to make sure the resource renders well on the device to account for the screen size and the ability for the user to enter data.*" (HEI NU 2015).

Mobile Information Retrieval – Question 3

Again, 53% (N=7) librarians also noted that although tablet devices provided a better user experience compared to smartphones, with law students using them to read lecture notes;

"*Yes, I have seen law students use tablets mostly, such as Kindle's. Students tend to download lecture slides and refer to them. They do this in advance from the VLE and then look - at the slides during the lectures. It is also helpful for students to look up statutes.*" (HEI ML 2015)

Laptops were noted by 30% (N=4) as the most preferred device for legal information seeking given the extensive effort that this type of information search often required. Restrictive functionality and screen sizes of mobile devices were also noted as potential barriers;

"*Most law students will have a laptop and likely to use this for their studies within the Library. I don't think students will use mobile devices for writing essays and conducting legal searches to be honest.*" (HEI RD 2015).

It was widely agreed that smartphones and other mobile technologies were well suited for short, brief periods of information searches, often relegated to locating resources or looking at high-level abstracts of legal items.

When it came to more detailed study, the preference for larger screens and better functionality started to supersede that of portability and mobility as legal information, to be best examined, required a significant amount of concentration and facilitation for a better visual experience – something that devices with smaller screens struggled to deliver.

Mobile Information Retrieval – Question 4

69% (N=9) of the cohort informed that their department did not encourage mobile technology use in this specific context, however 61% (N=8) advised that they would still guide students towards resources that could work on a mobile platform. Librarians also had taken steps to leverage mobile technologies more within their landscape as well as ensuring that legal information resources were mobile-friendly (both at 38% (N=5));

"*Yes, we do, and we try very hard to persuade students to use mobile devices in this context by giving hints and tips, online help and one-to-one assistance. We also review resources and tell students which device is best suited to access a particular resource.*" (HEI ST 2015) With some institutions working to develop in-house resources that would work on these formats;

"*I don't know if encourage is the right word, but we have certainly responded to this move and the university has developed an app for mobile devices and as part of this there is an information services element to this.*" (HEI OG 2015)

Mobile Concerns

But, most of the law librarians' departments still did not encourage mobile technology use outright for academic study 69% (N=9), citing concerns that mobile devices were not well suited for legal research and once this type of service commenced, law students may begin to assume that ownership of a mobile device was a pre-requisite for studying law;

"*Our students come from diverse backgrounds and consequently their ability to possess devices themselves is equally varied. We would rather have the approach that students be encouraged to use resources and technology that we provide to them – such as desktop PC's -*

*rather than rely on a technology that may or may not be in their possession for them to access our material.*" (HEI DS 2015)

This was clearly something that could risk alienating those students who did not possess such technologies or had trouble using them for whatever reason. Having said that, most of the cohort did admit to showing students resources which could be accessed via mobile technologies and had intelligently implemented infrastructures within their space to leverage these devices accordingly. Law students were often left to decide on the use the technology themselves based on their personal preferences;

"*We don't specify mobile device use for law students. If the students think it is applicable to use a device to access a resource, then it is up to them.*" (HEI RD 2015) But some left the usage of mobile technologies and corresponding instruction to utilise resources via these platforms open for student interpretation, again based in individual preference;

"*…not in a strategic way no, having said that we have a lot of FAQ's on our web pages on using mobile devices to setup VPN and all kinds of different things through devices. We do make students aware of this section, so they do have the background of what can be provided on these platforms but not specific to legal information seeking.*" (HEI BY 2015)

Some law librarians actively checked legal information resources for compatibility and general end-user experience before making any commitment to procuring them, citing that they felt that the number of times mobile technologies were referred to in student queries and training was increasing. Hence it was only a matter of time that those law libraries which did not have any active engagement plan with mobile devices, would need to consider looking at this.

<u>Mobile Information Retrieval – Question 5</u>

More than half of the cohort acknowledged that mobile technologies had changed the way in which law libraries designed their in-house resources as well 54% (N=7) with most 69% (N=9) noting that their department was more technically versed in these technologies due to their prevalent use by law students in the academic environment.

Mobile technologies were also credited with strengthening the communication channel between the student population and the law library using social media tools and portable websites;

"*Students would also not send last minute demands to staff, now with smartphones and mobile technologies, students and academic staff can communicate with each other with last-minute requests for help. The expectation by students is that staff are available and accessible quickly due to these technologies, even outside office hours.*

*Within the Library certainly we use mobile technologies and give students the option to choose which technology to access their information, but our focus is to tell students that they can access resources in many ways and they don't need to be in possession of a particular type of technology.*" (HEI DS 2015) Some also highlighted the "live" feed aspects of social media tools and the portable connectivity that law libraries now found themselves to be part of – with law students;

"*Social media provides good outreach ability. We also have a social media team within the library that rotate in turns to communicate information out to and from students.*" (HEI PL 2015)

Law librarians also noted that in many cases their departments approach to providing legal information to students had been structured around the mobile technology context 62% (N=8) and that this was due to the technologies' ability to give law students access to resources in a more ubiquitous manner, with the use of Social Media tools being prime examples.

Some 31% (N=4) had raised concerns that law students had begun to show signs of indifference between the variety of electronic resources available to them, given the products' relatively uniform interfaces – more so apparent when accessing material through third-party aggregators such as Lexis or Westlaw UK;

"*Students still need to learn to appreciate the actual origins of the information and the complexities behind this, this would help in setting their expectations.*" (HEI ST 2015)

Summary

For the second set of questions of the law librarian interview we found that law librarians were actively using mobile technologies themselves, mostly for personal information retrieval but there were significant occurrences where work-related information was accessed. Mobile devices were praised as effective communications tools with many noting that their department was actively working with vendors to provide more services through these platforms. Clearly there was a strong willingness to promote further adoption, but this was often hampered by poorly designed interfaces which would lead to ineffective user-experiences when using smaller screens to access legal information products. Thus, law librarians were somewhat hesitant to drive further adoption until the products available were more well-built and sited to be used on portable platforms. Law students had been widely observed to be using their personal mobile devices within the law library space to do both non-academic and academic information retrieval exercises, with the library catalogue being the most popular service accessed. There seemed to be an inter-mix of both non-academic and academic types of search taking place on these platforms and law students took to this behaviour relatively naturally. Having said that, it was clear that usage of mobile devices, with their smaller screens would restrict academic legal information retrieval to brief periods given the text-based content that legal material was comprised of.

Law librarians had observed that law students would use their smartphones or tablet devices for locating resources or reading brief legal topics and then continue this activity on technologies with larger screens such as laptops; where more detailed analysis of the content could be done.

### 8.3.3 Proposed Future Situation

<u>Proposed Future Situation – Question 1</u>

Most law libraries had aligned their information resources to mobile technology formats and associated infrastructures, be they internally developed or externally procured 62% (N=8), many were also actively engaged in working with vendors to ensure that their product catalogue maintained its compatibility with mobile platforms continually 54% (N=7) and that law students were encouraged to use their mobile devices where applicable within the library domain for their information needs 46% (N=6).

"*We have a mobile strategy and it has several strands, the key one is having a goal of making as much of our content as possible to be accessible on mobile devices – however – we still have a fair amount of ground to cover on that. Any resources we invest in, we check that the resources are accessible in multiple formats and this approach helps us.*" (HEI ST 2015) Whilst some institutions took a broader view in terms of the overall student experience;

"*Our app is part of our digital campus initiative which encompasses not only Smartphone's and mobile devices but looks at all aspects of technologies to enhance research and learning.*" (HEI GS 2015) Some law libraries had also gone as far as training students on how to access resources via mobile technologies 38% (N=5), given funding availability;

"*I know we will be issuing i-Pad's for the next academic year also. This initiative is part of a project that was funded centrally from the university – who worked with the Law School to facilitate this. So, this has not come out of the library budget at all.*" (HEI BN 2015) Whilst others were driven to take steps to encourage electronic resource use in general due to physical space pressures within the department and the benefits of providing access to resources remotely;

"*This is largely due to space constraints and the number of distance learning and part-time students. Also, a high proportion of our students have part-time jobs, so we want to make sure our students can access our resources remotely. Furthermore, there is a drive to decrease the footfall in the Library itself, so we are reducing our paper-based holdings by not renewing -*

*our standing orders for physical resources and moving towards electronic holdings only.*" (HEI ML 2015).

Though there remained a sizable group of respondents who did not have a specific strategy to drive adoption but remained cautious about the trend that was emerging 38% (N=5). Therefore, it can be deduced that law libraries are, overall, positive about mobile technologies and are doing what they can within their remit to encourage use of these devices in such a context, however concerns were raised on the suitability of these devices particularly where some legal information resources do not work well in these formats 23% (N=3).

Proposed Future Situation – Question 2

For those law libraries, which had taken the appropriate steps to account for mobile technologies within their space, many did actively engage with third parties – mainly vendors whose products and services were purchased 38% (N=5);

"*Yes, we have worked quite closely with OUP on the initiative I have mentioned.*" (HEI BN 2015)

Some even used their internal strategy for increasing their digital holdings in lieu of paper-based to encourage more mobile-centric resources to be made available;

"*We are cutting down subscriptions on hard copy resources but increasing our electronic resources, so in this way we are working with third parties to move towards this trend.*" (HEI ML 2015)

Just under half of the cohort 46% (N=6) did not engage with third-parties and opted to work internally instead. However, there were moments where law librarians voiced their concerns that legal information vendors would appear to be focussed too much on the commercial markets 15% (N=2) and not give the academic sector the attention it needed – thus the calls for vendors to be more pro-active in this context 31% (N=4);

"*I have been involved in meetings with Sweet and Maxwell and OUP where discussions on providing packaged contents to law students were discussed but it was determined to be too*

*- expensive or inflexible. Our Law School did not wish to push students to using a specific resource by a specific vendor.*" (HEI GS 2015).

It was noted that there was some collaboration between law libraries and vendors, but this was relatively isolated and there was a lack of any formal engagement structure. This was something, given the feedback, would provide value-add to the relationship between the two parties as well as enable law librarians to promote resources to the student population.

Proposed Future Situation – Question 3

When asked for examples of drivers that would encourage law students to use mobile technologies in an academic information retrieval context, it was clear that more support for departmental staff was needed 62% (N=8). It was also widely felt that law students would be more likely to use mobile technologies for academic information searches if the applications used to get to the information were better aligned/designed for the interface's students had to work with, at 62% (N=8), especially given the rapid pace of development that this area of technology was experiencing;

"*To make the content simpler, so on a Smartphone, one would want to do simple things and I think that legal information providers need to make their content easier to use in these form factors. If you are on the go then some functions need to be built well for fast-paced information retrieval in small segments, for example.*" (HEI ST 2015)

Law librarians added that their departments would benefit from more training in using these technologies as well as the applications vendors produced to be used on them, also at 62% (N=8). Some vendors had made efforts to create self-help points within their products and some law librarians had created resources internally that would strengthen student-knowledge in this area;

"*We have a troubleshooting e-resources web site within the Library Services Site, this also has links which helps students with the most popular resources. We do encourage law students to use the resource help as well. Increasingly vendors are including information on -*

*how to use their products via mobile technologies. We are short of IT Helpdesk Staff, so we encourage students to address the issues themselves as much as possible.*" (HEI ML 2015)

They furthered that despite the flexibility of mobile technologies, smartphones and tablet devices were not well suited for legal studies 54% (N=7), primarily due to the smaller screens. Laptops and desktop PC's fared better in this area – largely due to their functionality;

"*I don't think the use of smartphones especially for academic information is ideal, for one the screens are too small, and this does not operate particularly well with text editing software or even making notes. You could take screenshots, but I cannot imagine a legal research workflow which would involve a smartphone for this purpose.*

*I can see a desktop PC or laptop being used for this purpose. Even using footnotes or citations, would simply not work – it is not technically possible as features that are normally found in desktop PC or laptop word-processing environments do not exist in smartphone apps. I think Laptops would be a better future direction as technically they have the same functionality as a desktop PC and are portable.*" (HEI DS 2015) And

The smaller screens of mobile devices were again identified as a barrier for long-term study;

"*If you have a student reading a law text, it could be over a hundred pages long, the key wording and summaries could amount to a lot of material and students would need to scan and skip around this material, not simply read through the whole lot so the navigation around the document is key. I don't think that small smartphone screens could facilitate this type of usage.*" (HEI BQ 2015)

Also, over half of the cohort reported that they were not actively working on supporting mobile device use in this context 54% (N=7) but adding that the entire research methodology that law students applied would need to be looked at given that now they had to not only negotiate with different resources but also with different means of accessing them;

"*There are different methodologies for searching and students need to be aware of this. It's no longer about what to search for and how to do it, but more importantly, what tools to use -*

*and apply to the resources*". (HEI PL 2015) With some law librarians taking a pro-active step to address this by providing more training to law students;

*"So, we do quite a lot of training sessions for students in the library to help them learn how to access different resources. We do show them how to use the print resources but find that they are not usually interested in these. We teach students how to construct a proper methodological search using electronic resources and these sessions are quite popular."* (HEI BN 2015)

Proposed Future Situation – Question 4

Librarians widely agreed that these technologies provided more opportunities to deliver academic resources to law students' requirements, with 77% (N=10) confident that their resources would be very widely used given the different contexts these technologies could operate in 69% (N=9), examples of this included where students often worked remotely and needed access to information without having to physically be on campus;

*"I think it's more about students being able to access information on the move. Nowadays people are quite time poor so any opportunity to access resource such as being on a train or bus helps. Otherwise student find it difficult to have the time to access information."* (HEI BN 2015)

Some did give credit to mobile devices for their portability and ability to provide information to law students whilst travelling or on-demand, yet the limited screen sizes and the devices' inability to provide a stable user-experience for editing material remained severely restricted;

*"One thing I do see smartphones and mobile devices being helping is reading eBooks but again when it comes to taking notes and adding content to an essay – there is a missing component and there needs to be an intermediary there. desktop PC's and laptops remain the ideal tool for the latter purpose and I don't think mobile devices are quite there yet in this context."* (HEI DS 2015) Whilst one pointed out the risk that some law students who did not have access to a mobile device may lose out on these opportunities;

"*However, at the same point, there are a proportion of our students who cannot afford tablets or decent quality smartphones, so we need to be mindful of this.*" (HEI ML 2015)

Giving students the ability to locate resources more easily 46% (N=6) was also a positive factor as was the enhancement of the law libraries' own understanding of this fast-paced technology landscape which was continually changing, 23% (N=3). Electronic resources combined with mobile devices brought in a significant space saving opportunity for law libraries already pressed for more footage within their buildings. These technologies enabled them to provide resources to law students without having to hold this information on space-occupying bookshelves;

"*Now we see that students are moving away from this and lighter laptops, tablets and smartphones are entering the space. Because these devices are so light, students don't mind bringing them in. So, we are seeing a decrease in the demand for desktop PC's and we could reallocate this space and budget to be used for these purposes. I think students would also use our library would use our space more out of core hours if we were more mobile friendly and had more open spaces.*" (HEI PL 2015)

Overall, law librarians noted the "on-demand" factor that mobile devices provided as well as the opportunity for law students to fulfil their information need relatively quickly, albeit limited by smaller screens and functionality.

The space-saving opportunities that were now emerging with the growth of electronic resources in lieu of space-occupying paper-based material was already impacting the law library domain by providing more areas for collaborative working, flexible study and so forth;

"*I think the introduction of more flexible learning spaces would be a key change. Mobile devices will allow us to do away with fixed desktop PC's of which we currently have approximately 500 of in the Library. With mobile technologies, Students can be anywhere on campus – or outside campus for that matter – and still have access to many if not all the materials and resources they need for their studies.*

*The key benefit mobile devices bring is giving access to information anywhere, anytime. It's about being able to access the material when you need it, through the device you have from any location. That's the beauty of information, it is no longer a fixed item.*" (HEI CE 2015) The convenience factor that smartphones and tablets brought was too big to simply ignore, however the actual usage of these devices to search for academic information needed some thought and law students needed to appreciate that the strategy to search using these devices needed to be a well thought out one. As we sought to widen our understanding of the impacts these technologies had in the environment, we found that despite the many various products available on the market which enabled law students to access legal information via mobile technologies, law librarians felt that there was still room for improvement in terms of the functionality of the applications themselves when used in this manner.

Proposed Future Situation – Question 5

The smaller screens of smartphones were one issue brought up most in the discussions as well as the lack of suitable applications (both at 85% (N=11)) that would leverage both the strengths and weaknesses of these said devices to an advantage. These two aspects combined to cause law librarians to voice their significant concerns that law students, if using mobile technologies in this context, would potentially be denied the ability to obtain the most suitable information for their academic needs 69% (N=9) as law students may inadvertently begin to rely on sources which simply rendered information well on the smaller screens;

"*The key risk is that students may end up using the most popular legal resources and avoid using the more specific legal resources, restricting themselves and not obtaining the more detailed content.*" (HEI ST 2015). The cost of ownership together with limited connectivity was also noted as being a potential barrier to using smartphones and tablet devices for academic study;

"*First, the cost of ownership of the device. The fact that it needs an internet connection. Also, patches of network signal where it is weak or non-existent, also the screen size makes it -*

*difficult for do complicated reading, its ok to skim material but not looking at large documents*." (HEI DS 2015)

Again, mobile technologies' inability to allow for editing information was also a dis-advantage;

"*Lack of associated academic software with those such as word processing is also an issue as well as notification of updates and information – smartphone screens are small enough as it is.*" (HEI DS 2015). The smaller screens and restricted functionality were also mentioned as disadvantages that inhibited these devices, this, also could result in law students being denied the complete collection of available information. With some law librarians noting the inferior quality of some mobile applications available on the market;

"*I think the disadvantages are that, depending on the product you are trying to use for the search, it can be difficult to access it on a mobile device. This can be frustrating for the students. I think it is one of the things where publishers and providers have not really caught up with the technology.*" (HEI BN 2015)

One Law Librarian informed that their own observations of using mobile devices in this context raised plenty of concerns relevant to this topic with some information not being present due to the interface limitations or lack of interconnectivity with other resources;

"*Students could miss out something vital from their search. The app or mobile site may not show all the content or may not be in sync with the main desktop-based site. I have seen this happen on one occasion and it would concern me if this was something not isolated. Also, students would face the same challenges such as using a suitable resource discovery tool and - finding that it does not show all the results as it cannot interconnect with the likes of Lexis or Westlaw, then the student having to use Westlaw and or Lexis independently themselves.*" (HEI NU 2015)

Generally, mobile technologies were viewed as a distractor, given the multifunctional capability and its core nature of being a communications device.

Law librarians knew the number of social media and other interactive capabilities that these technologies possessed, thus the usage of these to engage in legal information seeking – which required a significant amount of concentration – was somewhat defeated;

"*There are too many distractions like using social media. The mission creep that allows the user to start doing something else very quickly.*" (HEI FB 2015) The variety of different mobile technologies on the market also needed to be considered as each brought its own strengths, weaknesses and user-experience;

"*One of the disadvantages is that students may have a varying experience accessing the same resource from different devices, bringing different experiences in usage and associated challenges. Publishers also may not be able to provide a seamless user experience.*" (HEI CE 2015)

Proposed Future Situation – Question 6(a)

Active use of smartphones and other mobile technologies for academic information seeking by law students was viewed by the law librarians as a challenging task. With 54% (N=7) voicing that smaller screens on these devices and the lack of multi-tasking capabilities would make using legal information resources quite cumbersome to say in the least, the distractive nature of these technologies was also noted;

"*Small screen, not being able to see the data and the lack of brain power being allowed to concentrate on legal material without distraction. Mobile devices have lots of distracting aspects and this will not help.*" (HEI DS 2015) And some felt quite strongly about the fact that the uptake of these innovative technologies needed to take into consideration the requirements of students with special needs;

"*Smaller screens on mobile devices are a challenge. Also, students with disabilities, such those who may have specific needs, may find using mobile devices difficult. We have students with dyslexia, students with visual impairment and even physical disabilities, and I fear that mobile technologies would be difficult for them to use.*" (HEI PL 2015)

Not to mention the fact that some law students simply may not prefer to use mobile devices at all;

"*I don't think all students have Smartphone's. I have thought of running polls using Smartphone's in classes. I am conscious that not all may have possession of one. So, I don't think we should disadvantage those who don't have them by shifting our focus towards these technologies too much. I think we should stick to having resources online and this allows most if not all students to access them whether they have a mobile device or not.*" (HEI RD 2015)

There was a need for more well-designed applications that would take advantage of the functionalities of mobile technologies and leverage their limited screen sizes in a creative manner as well as facilitate transitive use;

"*...information provides need to look at how they can provide that seamless search experience across the device spectrum, the providers need to ask themselves how does their service fit into these technologies and do they have "apps" that are fit for purpose?*" (HEI CE 2015)

Some law librarians also informed that there were already many different legal information products on the market and coupled with the expanse of diverse mobile technologies, there was too much disruption on the landscape 46% (N=6);

"*The challenge is to know what apps to use in a mobile content and we can provide them with some guidance on which apps to use and the possibilities and limitations on which they can be used.*" (HEI ST 2015) Others were concerned about the market dominance of some vendors in this landscape;

"*I think that unless we start seeing particular vendors of Legal Information being tied down to particular technologies, e.g. it would be terrible if Westlaw UK had an exclusivity agreement with Apple IOS. So, it is important that the suppliers maintain access across the variety of mobile technology formats.*" (HEI ML 2015)

Most other concerns raised included poor interconnectivity with other technologies to provide a seamless search experience, distractive nature of mobile technologies, i.e. integration with social media apps, no capability or restricted functionality to edit content and the need for substantial network coverage for connectivity. There were also fears that some students may not be able to use mobile technologies or possess them due to costs, security concerns of information on the devices themselves and lack of power charging facilities in the location where they may be used most.

Proposed Future Situation – Question 6(b)

When the cohort was asked what challenges usage of mobile technologies would bring to their respective departments, 69% (N=9) of the law librarians responded that this would add pressure to the department to invest in mobile products;

"*We need to keep up with the developments and check the limitations and advantages of the technologies and products, so we can keep students updated. Where we see limitations on products that are not mobile friendly, we pressure the vendors to adjust their products so that they can be used in a mobile context.*" (HEI ST 2015)

As well as add to the support burden of these technologies, a sentiment felt by 69% (N=9) and complexities of the service provision within the law library domain voice by 77% (N=10) of the interviewees. This behaviour would eventually alter the physical make-up of the library itself and lead to staff becoming increasingly technical;

"*Our helpdesk support needs to be able to support students with whichever device they possess, and they use for their legal information searches. I was not very technical myself but over time have learnt to work with and support a variety of technologies after helping students with their devices. Often students would come up to our helpdesk and ask how they can get cases to appear on their tablet devices and so forth and we have learnt to be more effective in helping then in these topics. It's more about now becoming an expert in technologies. We now also offer a service where students can access, say legal databases from many different -*

*platforms and we support them in making sure they can access the resources in this way.*" (HEI PL 2015)

Another emerging trend noted by 46% (N=6) of the participants was that the law library domain was evolving and this led to calls for libraries to become more general study areas with work-group spaces and flexibly study areas, with investment in technology infrastructures;

"*Students do use mobile devices quite a bit and what we found is during the exam period is that so many students wanted to use our Wi-Fi that our network became overloaded. So, this was an impact. Also, law students now expect to be able to charge up their mobile devices as well as laptops and one of the complaints students make is the Library not having enough power sockets to allow students to charge their technologies up.*

"*Supporting different technologies, generally in the market you see technologies becoming more user friendly and dominant formats emerging, but it does require investment from the University.*" (HEI FB 2015)

Law librarians could see their departments becoming more technical and this change would be far-reaching and unprecedented, coupled with the pressures on completely re-designing a space which was traditionally used for silent, individual study and concentration, was now moving towards a more social-information seeking and collaborative workspace where technology was taking the lead and the law student – consumer – driving this. All the interviewees, 100% (N=13), foresaw that law libraries of the future would have a reduced collection of physical material within their space;

"*I think that Libraries are moving towards electronic resources increasingly, you don't have rows of print resources in some cases as most have moved into the digital sphere. Students are now using electronic resources more often. It is difficult nowadays to tell a student to use the manual method for searching for legal resources as opposed to the electronic process which generally involves simply clicking on a link from within the search results screen.*" (HEI DS 2015)

With 77% (N=10) foreseeing that whilst this trend would continue, it would also be complemented by an increasingly collaborative and multi-faceted resourced environment, however there were concerns that this will lead to costly infrastructure changes to the physical building as well as the staffing – which may impact on the provision of subject specialist library staff in favour of a broader support function;

"*I think that there will be more integrated resources. On the physical building side - I can see the Library shrinking in size, less books, more electronic resources and already there is a major trend emerging for less actual subject liaison staff, so there will be less staff available with legal expertise to help law students. We find that law librarians are increasingly having to either take on more subjects to manage or be completely transformed into managing more general topics within the entire academic library, so we lose our specialist knowledge.*" (HEI ML 2015) These shifts would be supported by the inevitable advancement in mobile technologies which would enable greater functionality, usability and an enhanced student-user experience – adding to the current enablers such as laptops 69% (N=9) and furthering the law libraries' position as a conduit for legal resources in a variety of formats viewed by 69% (N=9) of those interviewed. A smaller number of participants foresaw social media and wearable technologies emerging as key players in this space and natural technological embedders in this domain. Having said that, some law librarians emphasised on the fact that electronic resources were still not mature enough to completely replace paper-based resources and that the latter format still had a valid place;

"*Where we have provided eBooks, they have been popular, but when it comes to Law, students tend to want to read an entire chapter or two in a single go and the interfaces are not well designed to be looked at for extended periods, never mind a screen for that long. Students cannot annotate pages in eBooks or add notes, so functionality is not as good as with paper-based books, unless the technology improves which allows these functions then there would be more usage, and this would drive students towards using them more.*" (HEI GS 2015)

Law libraries had, by large, taken pro-active steps to incorporating mobile technologies within their space, most were actively working with legal information providers to ensure that purchased products were compatible with mobile formats so to support further adoption of using these technologies in this context. Some also went as far as providing students with training classes and literature so to aid mobile device use further. Others actively listened to law students' feedback on the provision of services and the facilities they would like to see more of to enhance their learning experience;

"…*we moved out library a few years ago, and we discussed what students would want in a new library. We found out that students wanted somewhere to work and study, quiet or quiet with a PC at the desk. So, areas where students could get help were also introduced but even this was not as important was student's wanting a good study space. The actual idea of a law library is diminishing; a fair bit of our legal material is becoming archival in one sense as the resources are mostly used through online channels. Students showed preference towards locations where network or Wi-Fi signal was strongest, or the view was better. So, in that sense our concept of a library has certainly shifted over the years.*" (HEI BQ 2015)

Law students were also seen as key initiators of this emerging work-style and making effective use of technology, resources and facilities;

"*We see students already making effective use of our flexible spaces and find that students will gather in a corner, get their technologies out of their bags and quickly start working tougher – this is good to see. Mobile devices are enablers and allow us to flexibly deliver workshops for students when we are not able to provide fixed desktops, so at times we have asked students to bring their own technology*" (HEI CE 2015)

However, there were calls for vendors to be more pro-active in the development, support and provision of their products on mobile devices – which often not only were inhibited by smaller screens but also limited functionality due to the restrictive processing and power capabilities.

There were also calls for vendors to focus more on the academic market as many legal information providers appeared to be too engaged with the commercial industry, often leaving the academic customers feeling left out. Key points found from the discussions in this specific area included excessive focus on commercial industry as it was more financially lucrative, mobile applications were not matured enough to be effectively used on mobile devices, mobile application provision was not clear with some vendors making greater progress whilst others did not and finally, poorly designed mobile applications would result in unsatisfactory information retrieval results.

On a positive assessment, law librarians did foresee that mobile technologies would continue their steady adoption rate amongst law students who would seek to use these devices for their studies. Because of this trend, law libraries had taken pro-active steps to engage with legal information providers to align their product catalogues so that mobile technologies were catered for. Moreover, law librarians foresaw that their departments would see a reduction in physical resources, libraries would become more collaborative spaces and centres of excellence for digital literacy. Mobile technologies and the legal information applications available on them would start to challenge the existing leading position of laptops and desktops in this context and legal information provision would become embedded in the spectrum of available technology platforms.

Summary

The final set of the interview questions asked the law librarians to foresee how their working environment would be impacted as mobile technologies and electronic resources evolved. Most of the cohort had already started to make attempts to prepare for this by working with vendors and student groups to get feedback and insight into how best to align electronic resources with mobile platforms, some also underpinned this change by providing training to law students. Others engaged with internal parties to develop mobile friendly resources.

Yet there remained a sizable group of librarians who did not have a clear strategy on how to accommodate for mobile technologies and their use to access electronic resources.

Opportunities for Collaboration

There was a clear need for greater collaboration between law librarians and legal information product vendors to build a consensus and roadmap which would help provide structure to this sea of change. Law librarians outlined that they required significant investment in resourcing and staffing to support the evolving landscape and this should be more of a shared responsibility with vendors also assisting in the development of their products, support and adoption to ensure that the law students' experience was of a high standard.

The experience needed to include the ability to utilise most if not all the functionality of an electronic resources without being scaled down to the extent that some of the most useful capabilities are removed and possibly deny law students the opportunity to retrieve the most relevant information for their academic needs.

Strengths of Mobile Technologies

Once again, smartphones were praised for their functionality, capability and flexibility. These technologies were still seen as a distraction given their key purpose as communication devices, but law librarians could see past this, given the tremendous potential that smartphones had demonstrated. Law students' thirst for information at rapid speeds was clearly being quenched by these technologies, but they fell short on enabling law students to read and analyse detailed text – which legal material almost always comprised of. For this, desktop computers and laptops remained the best option with the latter being the most preferred choice of law students and the most recommended one by law librarians.

The Future

Law libraries of the future were viewed as places for information research, exchange and creation, albeit in a more collaborative and digitally integrated environment with seamless interconnectivity between electronic and non-electronic resources.

This was an unprecedented shift for law libraries and despite facing the possibility of this change, most of the participants were very positive towards the transformation, which was a significant one.

## 8.3.4   Discussion of Results

<u>Overview of Resources</u>

Whilst outputs from all the participants helped give an overview from a larger cohort, there were opportunities to adjust the interview questionnaire further to gauge more mobile device specific questions and scope out what law librarians through of these devices being used so widely as well as the increasing impingement of these technologies into the law library domain and ultimately their workplace. A lot of emphasis was placed on the several types of legal information resources used within the law library space, whilst this helped provide more background to the various legal holdings, the questions could have been adjusted more towards extracting the effect of accessing legal content through mobile technologies in a deeper discussion. However, the discussions from research instrument I paved the way for a thematic exercise to be conducted in research instrument IV where more concentrated questions relevant to the research topic were asked.

<u>Resource Provision</u>

Despite the increasing prevalence of electronic resources, non-electronic material maintained its position within the law library domain. Paper-based resources came in a significant variety of forms and each had held its position on the shelf, staving off competition from electronic equivalents which at times were not available in digital formats.

Some paper-based resources managed to fare better than others whilst some had quickly become superseded by their digital equivalents. A prime example being legal journals which fitted well within the portable document format (PDF) and had found to help increase shelf capacity as well as reduce manual process of managing non-electronic equivalents.

Kaur (2011) also found comparable results during the examination of impacts caused by digitalisation of academic journals in the USA and India. Law librarians did want to increase their access to electronic resources but wanted to do so to provide a greater flexibility of access to law students. They recognised the benefits that electronic resources brought into the foray, flexible access, faster retrieval and increased update frequencies to name a few. However, it was the way in which these products were procured which remained a contentious issue.

Risks of Control

Law librarians wanted to maintain their hold on paper-based resources especially at times when electronic resources had proven to be difficult to access due to technical problems or when vendors had unilaterally altered the access method and removed the availability of a specific resource through a portal. Additionally, given libraries' fundamental role being that of preserving knowledge, ensuring that resources were accessible and that too guaranteed under the auspices of the librarian and not at the mercy of third-party vendors presented a serious challenge to the very ethos of how libraries worked and their role in society.

Libraries in general have worked with a model where the volume, scope and breadth of their collections were a measure of their success, size mattered, quality and quantity were interwoven concepts. Digital resources challenge that very notion and have brought about a new concept which can be used to measure a libraries strength, that of access to leased resources (Horava 2010) & (Chandel & Mukesh 2012). Digital content is a totally different proposition altogether and has challenged this traditional role that law librarians had been accustomed to having when it came to ownership of resources (Jacobs 2007).

Milunovich (2000) argues that electronic resources bring a new set of opportunities for law libraries, the opportunity to reduce shelf space being a primary advantage but also the potential to re-invent itself as a different type of organisation where both electronic and non-electronic resources work together but are managed differently as per their individual characteristics. Digital content is very different from the traditional text book and so needs to be treated as such.

<u>Digital Transformation</u>

Horava (2010) sympathises with the anxieties law librarians face given the sea of change and cites that it could take another generation or two before the changing landscape and role of the library - from a traditional place where bookshelves would be stocked with volumes of paper to virtually accessible digital content in a collaborative environment – become the acceptable norm. The struggle was further exacerbated by law student's expectations that most if not all information should be available electronically. Resulting in a push for more legal content to be provided in this format vs. law librarians facing the prospect of losing the control they have traditionally enjoyed over non-electronic resources as well as having to face new challenges that digital content brought into the landscape, such as

- Vendors increasing their charges to both electronic and non-electronic resources.
- Vendors consolidating their electronic resource provision, and this often resulted in information being removed from access or migrated to a different platform where a separate subscription would be required.
- Loss of access meant loss of information – a major issue for an entity whose key function is to provide it.
- Electronic resources were accessed via subscription only, there was no ultimate ownership, thus there was no guarantee of perpetual access of the products.
- A paper-less law library could be in danger of being destroyed if access to electronic resources was removed, paper-based resources did not come with this risk and assurance of control was a natural attribute
- Electronic resources had hampered the research skills of law students and increased a dependency on specific products as opposed to fostering a culture where law students would be required to strategically search for and locate legal information.
- Advanced research tools and interfaces in electronic resources had reduced the opportunity for serendipitous research.

<u>Challenging Decisions</u>

Law librarians at times felt helpless due to their budgetary constraints which in many cases pushed them into making tough decisions on electing to stock either paper-based or electronic material. They also felt that vendors had lost their strong product knowledge and individual relationship approach with academic law libraries, now these same vendors appeared to be more focussed on generating revenue as opposed to catering for the specific needs of the institution. This was not surprising as Milonuvich (2000) notes the rising consolidation between legal publishers has led to the growing corporate culture where smaller vendors are now part of global entities who view publications as products and naturally see revenue generating as a priority over holding a strong inter-personal relationship with the law librarian.

<u>Vendor Marketing Methods</u>

Those law librarians who did have the budgetary capability, continued to purchase both types of resource formats although complained about the lack of customised packaging of products and found themselves often having to purchase complete sets of pre-determined legal content – some of which they may never use. Vendors of legal resources were perceived to be too focussed on the commercial market and this in turn had negative impacts on the deliverables for the academic market.

Commercial organisations were not disadvantaged as much when it came to price increases of products as they could freely pass on these costs to their clients through higher billing rates, academic law libraries did not have this revenue generating stream thus had to work with limited budgets and tougher funding capacities (Milunovich 2000). Nevertheless, law librarians sought to continue to cater for their patrons given the popularity of electronic resources amongst law students. Rubin (2012) encourages the use of both electronic and non-electronic resources within libraries in that the natural advancement of the former format will lead to a shift in the relationship students have with the library. And whilst libraries may be less inclined to lending physical books that they own, this role will evolve into one where students would access digital content, accessed through paid subscription that would be managed by the library.

Design of Resources

We also found that, not all legal information products worked well in electronic formats, text books were one example where law students showed preference for them as opposed to using e-books, contrastingly, legal journals had managed to become well embedded in the law library domain as an electronically provided resource which was also printable if required yet easily available in digital format.

Horava (2010), adds that library patrons are increasingly coming to expect information to be available in digital formats and this ever-increasing prevalence puts pressure on vendors to ensure the availability of their products in this format else risk being relegated and ignored in favour of a competing equivalent. Law libraries wanting to leverage modern technologies had invested heavily in developing online library catalogues which integrated with other electronic resources and coupled with accessibility through mobile devices, these novel search engines accelerated the use of electronic legal resources. By rapidly becoming the de-facto approach for legal information search, using "electronic methods first" had quickly overshadowed the traditional method of manually located resources (Horava 2010). Law librarians overwhelmingly reported that due to this facility, Law Student's would use electronic resources initially (this included the law library catalogue) and then decide from there on which resource format and specific product they would use. Most legal information products did not work well on mobile technologies, their functionality and user-interfaces being the prime casualties of the quality of the product and perceived poor user-experience. Given the smaller screens of mobile technologies vendors had a challenge on their hands due to the naturally voluminous text-based legal content that they had to work with.

Overcoming Restrictions and Challenges

Despite this, a small number of legal information providers had fared very well in the digital landscape and developed comprehensive resources that encompassed a significant variety of legal information that would cater for most if not all law students' information needs.

Law librarians perceived this as a risk as it encouraged dependency on a specific legal information product and reduced any opportunity for prospective legal professionals to utilise their legal search skills and explore other information avenues to fulfil their knowledge gaps. Also, dependency on a specific product would ultimately leave the information seeker to be exposed only to legal content that the vendor of that product elected to hold within their information collection and not any other legal information that may be available.

This increased the chance of law students not being able to access the most relevant information for their specific need and this was an unwelcome notion amongst the law librarians. Law librarians did express their growing concern at law students' dependence on electronic resources and the more user-friendly and functional resources became the more the dependency on them increased. This in turn had a negative impact on the research skills that the legal profession traditionally demanded, and this raised a lot of questions on whether electronic resources were a benefit to legal education and whether their use needed to be more strictly managed in favour of a more balanced environment where the entire spectrum of legal resources would be used. Feedback from law librarians outlined that electronic formats were nearly always the first port-of-call in any legal information search, but this search journey was then subject to change and swap between either of the formats. This itself was determined by the availability of the type of legal content that was required, the format of the legal content and the usability of the resource containing it.

A Balancing Act

Law librarians did their best to make sure that their resource provision managed to cater for as many different format interfaces as possible, some actively engaging with legal information providers to maintain a collection of products that worked well regardless of which type of technology they were accessed from. That said, the quality of electronic resources had shown significant signs of improvement over the years with products becoming more integrated with other electronic tools and services which only went onto compliment the user experience.

Additionally, law libraries had well established their use of social media as communication tools with their patrons and integrating these into their digital space made way for a more comprehensive digital environment where law students could seek help in locating material regardless of the format it was in.

Illusion of Content Volume

Electronic resources also took away the perceived marvel of the voluminous content that comprised legal information, law students were increasingly becoming alienated from paper-based resources and lacked an appreciation of the content that bound together such a significantly text-based profession. Nonetheless, academic law libraries would certainly maintain a key role in the provision, facilitation and promotion of legal knowledge (Sconul 2017). From the general output of this research instrument, themes that arose the most included;

Ownership vs. Access

Law librarians repeatedly expressed their frustration at the lack of control they had over the provision and distribution of electronic resources and cited numerous examples where their concerns were well identified such as loss of access to resources, inconsistent pricing methods, limited control over content procured and the risk of a monopolised market of legal products given the consolidation of publishers (Yoder 2008), which although could be a cause for concern, presented opportunities for innovation in the area of resource development (Hodge 2015). However, the key issue here was that whilst non-electronic resources formed part of the library's permanent stock, assuring perpetual access, electronic formats were simply built on a subscription access basis, thus libraries would run the risk of losing access to material should they end their subscription payments (Walton 2016). This was nothing new to us as it was raised first during the exploratory study where a separate cohort of law librarians shared similar concerns and review of literature covering this area found that this topic has been extensively covered by several cases where the public has confused the handling of digital content with non-digital, often with potentially dire consequences (Schwarz 2019), (Boyle 2016), (Mene 2010) and (Verkaik 2009).

Dews (2014) outlines that these problems have been caused by confusion over the lack of clear information on how digital media should be handled and copyright laws surrounding them as such. With paper-based resources it is far simpler as these products have been available for much longer, giving society time to develop appropriate methods in which to handle ownership of them, the "first sale doctrine" of the United States being a prime example of such legislation that provides such a framework for physical material. For digital content (which includes electronic resources), the same copyright law does not apply in the same manner and thus has led vendors to take the required steps to protect their products from near irreversible and uncontrollable re-production by imposing restrictions on their access capabilities. Reproducing electronic media is far simpler, faster and less laborious than physical products – which has traditionally required more effort and upfront cost. Developments in modern technology have only accelerated the pace at which individuals can play the role of creator, re-creator and distributor with a fraction of effort compared to that required for physical content. As a consequence, Dews (2014) recommends that vendors of digital content play a more active role in making the rights and responsibilities of those who consume their products to be made aware and in an openly clear manner without any ambiguity.

The Design of Resources

Law librarians expressed apprehensions over the risk of functionality competing against quality of content – both of which were essential to provide a good user-experience. Conversely, they also noted that improved electronic resources may dominate the market; potentially leading to a denial of law students accessing all the available information from the vast legal data collection purely due to specific resources providing a single entry-point into the information itself and thus not requiring the student to search for alternatives. Even though these concerns were appreciated, our literature review found calls for librarians to take a more proactive role and focus on utilising creative ways in which they could harness the capabilities of electronic resources whilst holding their position of being the gatekeepers of knowledge (Horava 2010).

Modern technology was producing innovative tools through which the students learning experience could be enhanced and effectively used to leverage both formats of resources, librarians just needed to harness this and blend these individual styles of information seeking behaviours.

Updated Attributes

Overall law librarians were coming to terms with the changes to their work environment and roles that would be the result of the growing digitalisation of legal information content. Whilst electronic resources may decrease the need for physical storage space and manual tasks associated with non-electronic material, there was a new demand for enhanced network infrastructures, technical facilities, product support and an effective way to manage the growing variety of digital content that was appearing. These changes were not isolated to law libraries but also to general librarianship (Kaur 2011). As in the Exploratory Study, we found several attributes being mentioned against each of the technologies law students often used for their academic studies. These are outlined in the following table (Table.29).

| Technology | Attribute | Description | Law Librarian - Detailed Investigation |
|---|---|---|---|
| Smartphone | Driver | Need quick results/small segments of information | ✓ |
| Smartphone | Driver | Need information retrieval whilst being physical mobile | ✓ |
| Smartphone | Barrier | Small screen/poorly designed resource interface | ✓ |
| Smartphone | Barrier | Lack of network or Wi-Fi signal in surrounding area | ✓ |
| Tablet Device | Driver | Larger screen making it easier to read legal content | ✓ |
| Tablet Device | Driver | Detailed information need and being physically mobile | ✓ |
| Tablet Device | Barrier | Lack of battery power on the Tablet Device | ✓ |
| Tablet Device | Barrier | Lack of Wi-Fi signal in the surrounding area | ✓ |
| Tablet Device | Barrier | Need to edit existing and create additional information | ✓ |

| | | | |
|---|---|---|---|
| Laptop | Driver | Need to write document | ✔ |
| Laptop | Driver | Require multi-session search | ✔ |
| Laptop | Barrier | Not contextually suitable | ✔ |
| Laptop | Barrier | Lack of Wi-Fi signal in the surrounding area | ✔ |
| Desktop | Driver | Require lengthy information search | ✔ |
| Desktop | Driver | Require multi-session search and other resources | ✔ |
| Desktop | Driver | Need to write document | ✔ |
| Desktop | Barrier | Need quick results | ✔ |
| Desktop | Barrier | Not in location of use | ✔ |
| Desktop | Barrier | Not available for use | ✔ |
| Paper | Driver | Need to annotate printout | ✔ |
| Paper | Driver | Need specialist legal information not available digitally | ✔ |
| Paper | Barrier | Paper resource unavailable | ✔ |
| Paper | Barrier | Resource difficult/laborious to locate | ✔ |

Table 30: Identified Attributes of Information Behaviours Using Technologies – Law Librarians Observations from Research Instrument I (Detailed Investigation)

We could now see a stronger picture emerging where a greater number of law librarians shared the same views on the reasons why and why not specific technologies were used for accessing legal information. This information was recorded and used to further justify our proposed Law Students Information Seeking Behaviour Model (See Section 9.3.2).

## 8.4  Responses to Research Instrument II – The Law Student Mobile Device Questionnaire

The responses were collated into a spreadsheet and then counted against each answer category, depending on the question itself, a variety of charts were used to illustrate the responses (See Section 4.14.1-5). The total number of law students who completed the questionnaires for Research Instruments II and III was 53 with 3 participants failing to complete both questionnaire – thus not eligible for the Gift Voucher payment and their response was also discarded. This represented a completion rate of 94%. 86% (N=43) of the participants were full-time students, 12% (N=6) were part-time and only 2% (N=1) was a distance learner.

Also, male participants stood at 42% (N=20) and female at 58% (N=28). A breakdown of the

course types together with the year groups was also created, this was to give a detailed

background of the cohort's make-up and the largest participants (Table. 30).

| Course Type | N | % |
|---|---|---|
| LLB - 1st Year | 7 | 14% |
| LLB - 2nd Year | 6 | 12% |
| LLB - 3rd Year | 8 | 16% |
| LLM - 1st Year | 15 | 30% |
| LLM - 2nd Year | 6 | 12% |
| PhD/Research - 1st Year | 1 | 2% |
| PhD/Research - 2nd Year | 2 | 4% |
| PhD/Research - 3rd Year | 1 | 2% |
| GDL | 4 | 8% |

Table 31: Course Type & Academic Year

Here we found that the largest segment of the cohort consisted of 1st year postgraduate LLM

students (N=15) 30% and the second largest was 3rd year undergraduate LLB students (N=8)

16%. However, counting the course types as a group and combining the different years together

showed that undergraduate students and postgraduate students were represented equally at

(N=21) or 42% each (Table.31);

| Course Type | N | % |
|---|---|---|
| LLB | 21 | 42% |
| LLM | 21 | 42% |
| PhD/Research | 4 | 8% |
| GDL | 4 | 8% |

Table 32: Course Type with Academic Year Combined

## 8.4.1 Law Students' Mobile Device Choice

Again, like the responses in the exploratory study, we took the total responses per attribute against the question and divided this up by the total number of those who completed the survey (N=50). Quality and size of display screen were rated as "Very Important" attribute 58% (N=29), followed by general usability 56% (N=28) then convenient size of handset 46% (N=23), quality of camera 41% (N=20) and sound 32% (N=16) (Fig.81).
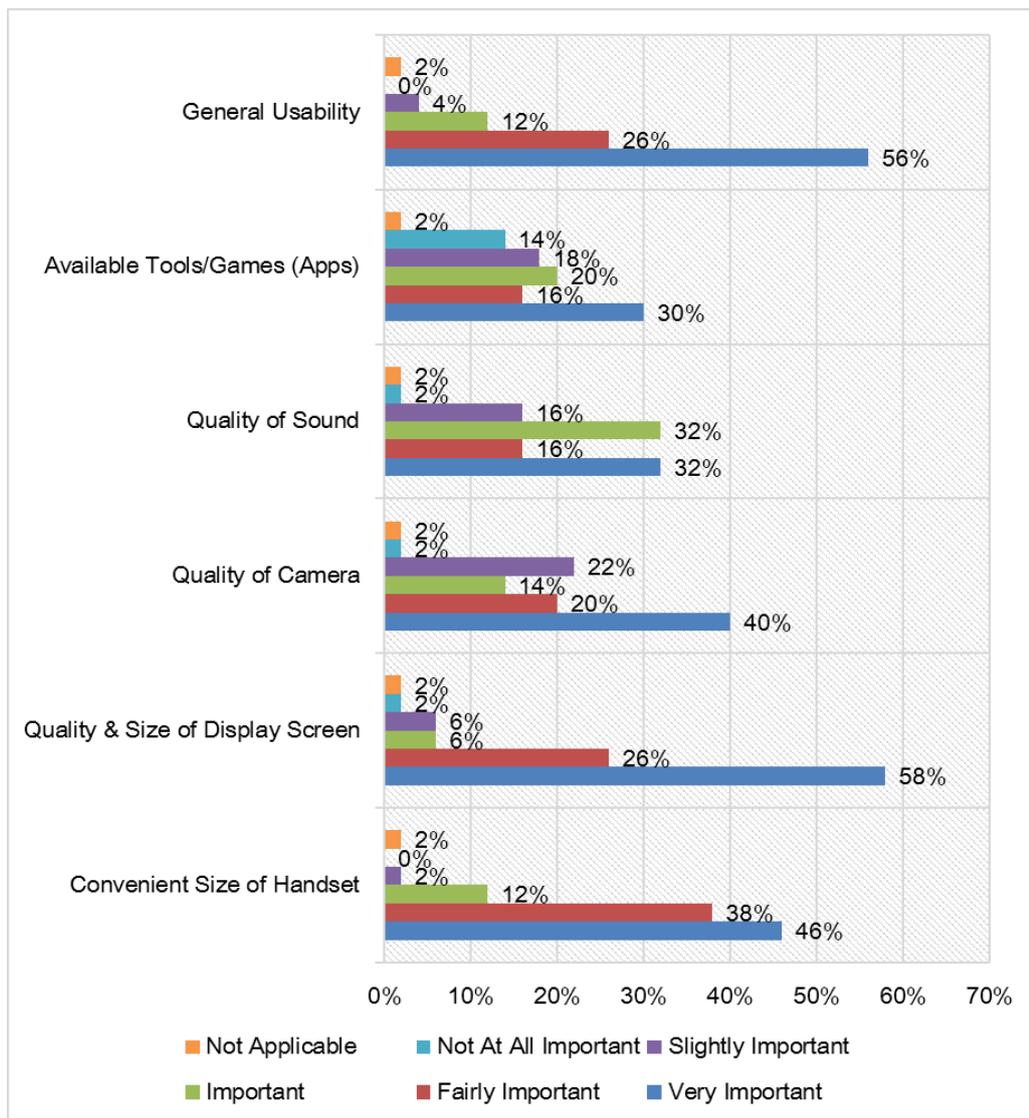


Figure 80: How important are the following reasons for choosing your smartphone?

When combining both "Very Important" and "Fairly Important" counts together the three attributes of General Usability, Quality & Size of Display Screen and Convenient Size of Handset each received over 80% of the scores. This shows that like the findings from the exploratory study (Fig. 72 – Section 6.5.2) law students valued the same attributes.

We then took the mode values for each of the categories (see Section 4.14.7) and found the following;

| How important are the following reasons for choosing your Smartphone? | Convenient Size of Handset | Quality & Size of Display Screen | Quality of Camera | Quality of Sound | Available Tools/Games (Apps) | General Usability |
|---|---|---|---|---|---|---|
| Mode | 6 | 6 | 6 | 1 | 1 | 6 |
| Median | 5 | 6 | 5 | 1.5 | 2 | 6 |

Table 33: Mode & Median of - How important are the following reasons for choosing your smartphone?

The highest mode values (Table. 32) were for the convenient size of handset, quality and size of display screen, quality of camera and general usability. These were all with the value of 6 = Very Important and it outlined that the sample group valued these attributes the most with the quality of sound and the availability of tools/games (Apps), each with a score of 1 = Not Applicable. For the median values, the highest was for the quality and size of display screen and general usability, both with median values of 6 = Very Important.

This was followed by the quality of camera and convenient size of handset which had median values of 5 = Important. Availability of tools/games (Apps) was at a median value of 2 = Not At All Important and the lowest value was for the quality of sound at 1.5, which was between Not At All Important and Not Applicable.

Literature reviewed around the topic of smartphone attributes found that these figures were in general agreement with surveys of this type conducted amongst other cohort groups where the other associated attributes ranked higher than that of the quality of sound or the availability of tools/games (Apps) (Doud 2016) & (Staff 2016). We delved further regarding mobile devices by asking the same question but in relation to law students choosing a tablet device (Fig.82).
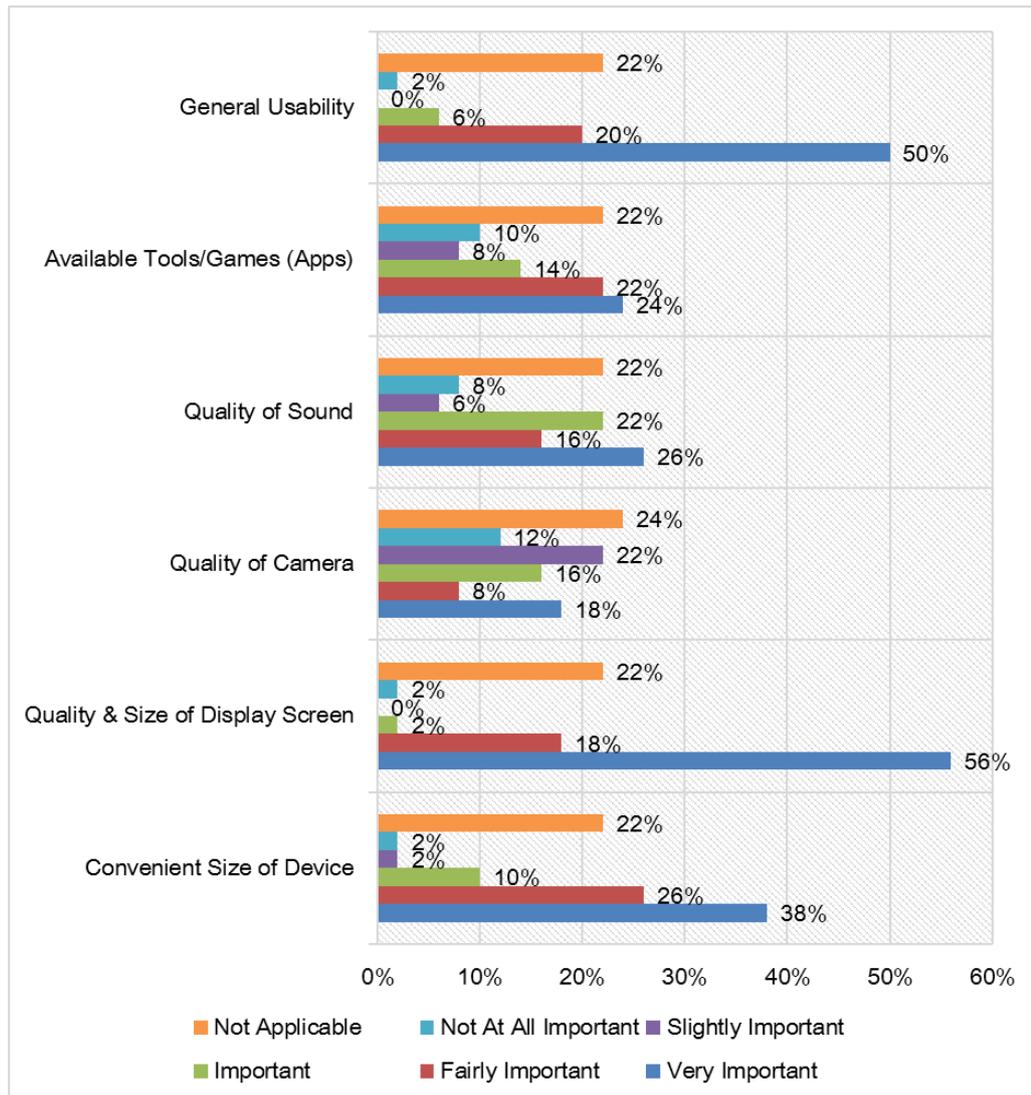


Figure 81: How important are the following reasons for choosing your tablet device?

For these types of technologies, the preferred attributes were like that for smartphones where quality and size of display screen were most popular 56% (N=28) with general usability following at 50% (N=25) and convenient size of device at 38% (N=19).

Sound was more important at 26% (N=13) compared to the quality of camera 18% (N=9) unlike

that of smartphones where the opposite was the case.  The modal and median values were also

calculated;

| How important are the following reasons for choosing your tablet device? | Convenient Size of Handset | Quality & Size of Display Screen | Quality of Camera | Quality of Sound | Available Tools/Games (Apps) | General Usability |
|---|---|---|---|---|---|---|
| Mode | 6 | 6 | 1 | 6 | 6 | 6 |
| Median | 5 | 6 | 3 | 4 | 4 | 5.5 |

Table 34: Mode & Median of - How important are the following reasons for choosing your tablet device?

Here the highest modal values (Table.33) were for all the attributes listed at 6 = Very Important

apart from the quality of the camera which had a mode value of 1 = Not Applicable. The median

values ranged from the highest for the quality and size of the display screen at 6 = Very

Important, through to the lowest for the quality of the camera at 3 = Slightly Important. Thus, we

learnt that compared to smartphones, table devices were not used for their camera functionality

as much but the quality of sound as well as the availability of suitable tools/games (Apps) was

ranked higher.

### 8.4.2  Law Students' Information Search Behaviour

Law students' information search behaviour – When searching for study-related information,

which method(s) do you use and how often?

We found that most students searched for academic information on a laptop or desktop PC on a

daily basis 74% (N=37) daily with 22% (N=11) searching for information on their smartphones or

visiting the law library.

This figure set changed on a weekly basis frequency where 38% (N=19) visited the law library and 30% (N=15) sought help from other students as well as 26% (N=13) seeking help from academic staff or using their smartphone for information seeking, 26% (N=13) – which was an increase compared to daily usage (Fig.83).

The number of students searching for information on their laptop or desktop PC on a weekly basis dropped significantly to 24% (N=12).
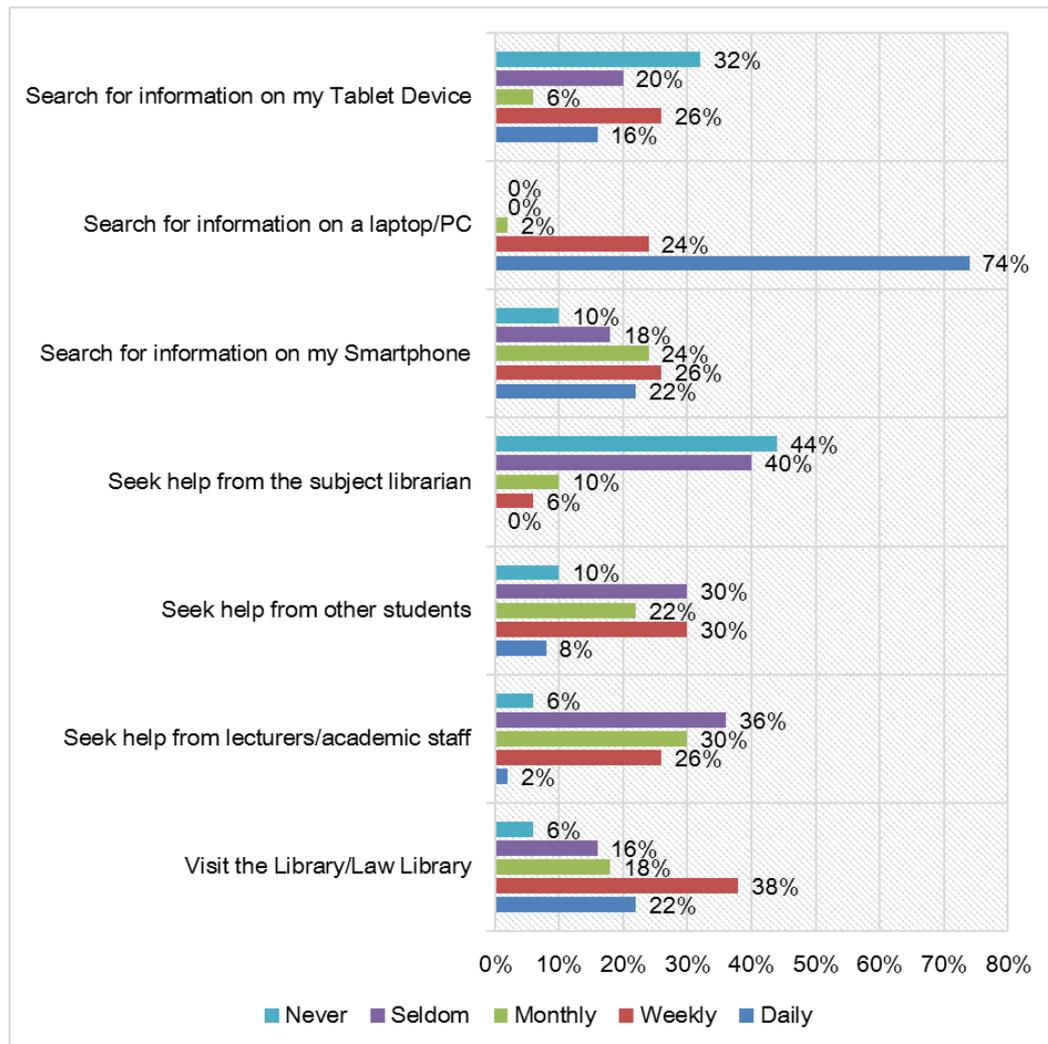


Figure 82: When searching for study-related information, which method(s) do you use and how often?

Calculating the media and mode values (Table 34) based on the weighting against the Likert Scale for frequency found that law students searched for study-related information on their laptops or desktop PC's with the highest median value at 5 = Daily.

This was followed by visiting the law library at 4 = Weekly and then searching for information on their smartphones, seeking help from academic staff or seeking help from their peers; al at 3 = Monthly. Surprisingly it appeared that the cohort were less likely to approach subject law librarians for help as the median value for this was at 2 = Seldom.

For the mode values, the highest was also at 5 = Daily for searching for information on a laptop or desktop PC followed by using a smartphone for the same purpose with a mode value of 4 = Weekly. Visiting the law library was also a relatively high value of 4. Seeking help from academic staff or from other students had a mode value of 2 = Seldom, whilst the lowest value was for searching for information on tablet devices or seeking help from the subject law librarian at 1 = Never.

| When searching for study-related information, which method(s) do you use and how often? | Visit the Library/ Law Library | Seek help from lecturers/ academic staff | Seek help from other students | Seek help from the subject librarian | Search for information on my Smartphone | Search for information on a laptop/PC | Search for information on my Tablet Device |
|---|---|---|---|---|---|---|---|
| Mode | 4 | 2 | 2 | 1 | 4 | 5 | 1 |
| Median | 4 | 3 | 3 | 2 | 3 | 5 | 2 |

Table 35: Mode & Median of - When searching for study-related information, which method(s) do you use and how often?

These values provided the overall picture of how often law students engaged with certain interfaces, sources and resources for their academic information needs and thus showed us the importance of the different options the sample group had at their disposal when searching for legal information. It was interesting to note that law students were less likely to seek help from the subject librarians, in-fact, the cohort was more likely to use a laptop or desktop PC first, followed by seeking help from academic staff or their peers.

This showed us that a trend was emerging where law students were more comfortable with using technology first to search for content and only consult the librarian if all other options had been exhausted.

We did find literature covering this trend where some academic librarians have taken the approach of developing a more personalised working partnership with the student body and help overcome the perceived intimidation that some students may feel when approaching librarians for assistance (Kolowich 2010) as well as general awareness programmes where the significant value add of engaging with the subject librarian is promoted (Selby 2011).

Law students' information search behaviour – On an average day how long do you spend browsing for information on your smartphone/tablet device/laptop/desktop when searching for (a) non-study related information and (b) study related information? (Fig.84) and (Fig.85)

We wanted to find out how long law students spent on various technologies available to them. We knew that librarians had opined that law students would use their smartphones for social information seeking and academic information seeking would be conducted for shorter time periods. This view was based on the smaller screens of the said devices and the fact that these technologies were unable to provide the same user experience, functionality and capabilities that other devices such as laptops could better facilitate. But we wanted to ask students themselves on their device usage pattern and use statistical analysis to confirm our findings and see whether they matched what the law librarian cohort had informed. First, we built a simple line-graph style representation combining all four technologies against the type of information searches showed how the usage behaviour changed over time, depending on the context of information that was being searched for. Most students used their smartphones for study-related information seeking for very short periods of time 54% (N=27), this figure decreased significantly as time increased. Social or non-study related information maintained a value

between 18% (N=9) at its peak (10-20 minutes) and a low of 8% (N=4) (51-60 minutes and (more than 1 hour but less than 2).

For tablets, similar pattern to that of smartphones but the key difference here was in the initial time of less than 10 minutes where (66%) of students used their tablet devices for study-related information seeking and this dropped more significantly over the time as it increased. For non-study, related information seeking (52%) students used their tablet devices for less than 10 minutes and this also decreased as the time increased. This could be explained by students finding bigger screens easier to use for both study and non-study related information, evidenced by feedback from both law librarians and law students themselves (see Sections 6.3.2 & 6.7.5) and Fig. 58 & Fig.65. For laptops, the opposite usage behaviours compared to that of smartphones and tablets became evident. Students' use of laptops increased for both study and non-study related information seeking with non-study initially increasing to (16%) for 21-30-minute intervals and then gradually decreased, before increasing again once it passed greater than 1-hour period. Study related information seeking showed a gradual increase over time, ranging from (2%) for 10-20 minutes to (38%) for greater than 2 hours. The line graphs representing the two types of information seeking on laptops showed a steady increase over time for study-related information, for non-study related information, however, there appeared to be a decrease in the mid-quartile time before the usage increases as time does. There could be several factors dictating this behaviour including;

- Non-study related information seeking activities include usage of social media and general web-browsing activities, both actions can be fulfilled by smartphones and tablet devices – which showed a steady increase over time.

- Laptops being multi-tasking technologies easily facilitate the use of social information seeking and study-related information seeking simultaneously, hence students could find themselves looking for the two several types of information using their laptop at the same time.

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Furthermore, if students want to search for non-study related information (casual information seeking) then they would be more likely to favour technologies that enable them to be more mobile and search for information in small sessions only. smartphones can easily facilitate this type of behaviour given their ultra-portability and near-immediacy function.

Surprisingly information searching for both study and non-study related information seeking on desktop PC's somewhat mirrored that of smartphones and tablet devices with usages initially peaking at (60%) and (70%) respectively for less than 10-minute durations and then decreasing over time. This behaviour could be explained by the fact that for extensive periods students may seek to be in an environment different to that of where the desktop PC may be located. The line graphs representing desktop PC usage further explains the information seeking behaviour law students demonstrated when using this type of technology. As duration of use increased, the actual usage of this technology decreased, indicating a reluctance to use a desktop PC over an extended period and a clear favouritism towards other alternative technologies that may be available.

| | Less than 10 minutes | 10 - 20 Minutes | 21 - 30 Minutes | 31 - 40 Minutes | 41 - 50 Minutes | 51 - 60 Minutes | More than 1 hour but less than 2 | More than 2 hours but less than 3 |
|---|---|---|---|---|---|---|---|---|
| Smartphone | 10% | 18% | 14% | 12% | 14% | 8% | 8% | 14% |
| Tablet Device | 52% | 8% | 10% | 12% | 4% | 6% | 2% | 4% |
| Laptop | 8% | 2% | 16% | 10% | 6% | 2% | 24% | 32% |
| Desktop PC | 70% | 8% | 6% | 2% | 2% | 4% | 4% | 4% |
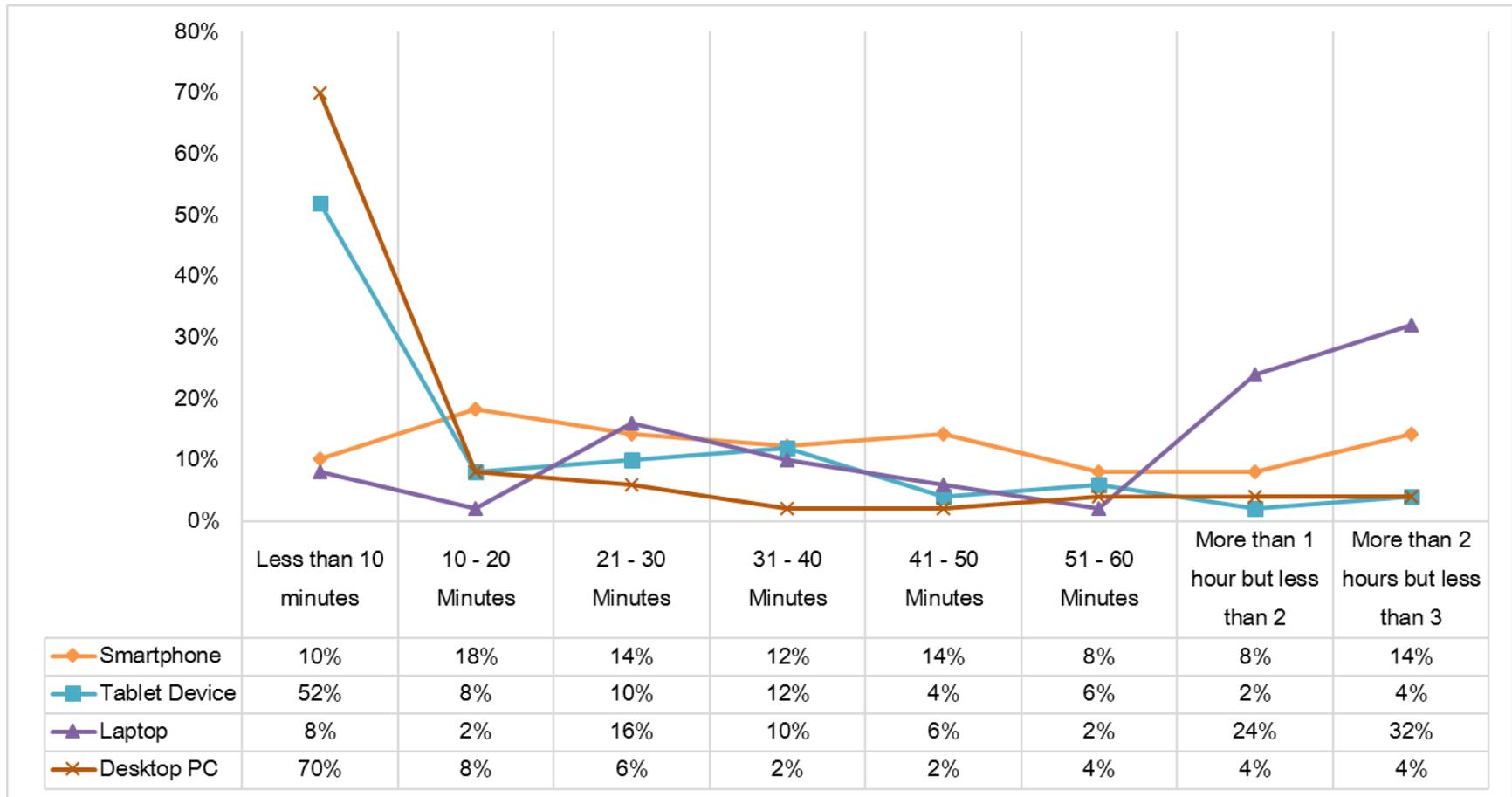
Figure 83: On an average day, how long do you spend browsing for information on a/your technology when searching for non-study related information

Initially desktop PC's and tablet devices led the high-usage for non-study related information seeking for brief time periods, however this quickly decreased. laptops were the only devices that showed an increase in usage for social information seeking as duration increased with all other devices showing a decline.



| | Less than 10 minutes | 10 - 20 Minutes | 21 - 30 Minutes | 31 - 40 Minutes | 41 - 50 Minutes | 51 - 60 Minutes | More than 1 hour but less than 2 | More than 2 hours but less than 3 |
|---|---|---|---|---|---|---|---|---|
| Smartphone | 53% | 10% | 14% | 8% | 0% | 12% | 0% | 2% |
| Tablet Device | 66% | 4% | 6% | 4% | 4% | 12% | 4% | 0% |
| Laptop | 8% | 2% | 6% | 6% | 10% | 12% | 18% | 38% |
| Desktop PC | 60% | 10% | 6% | 2% | 4% | 2% | 14% | 2% |
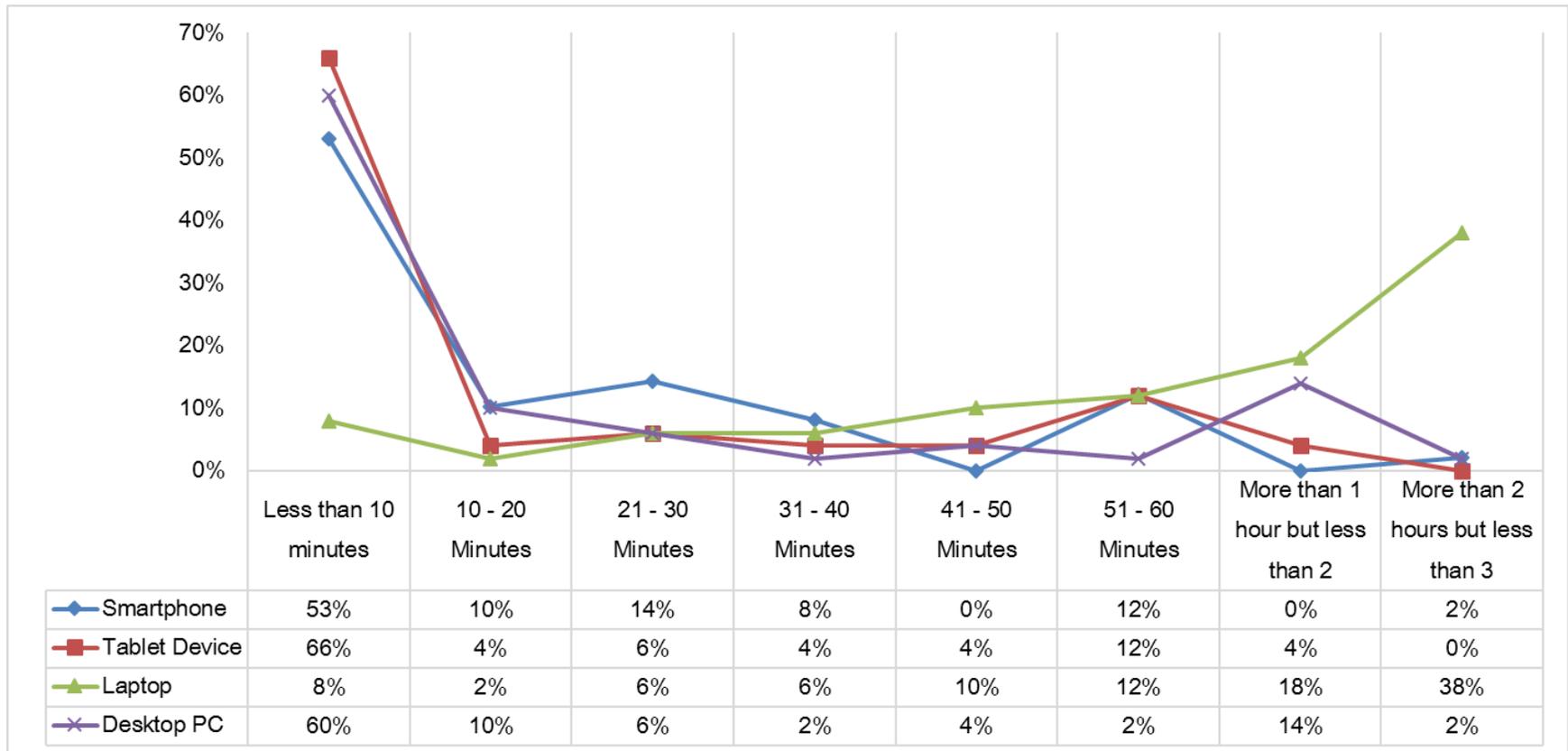
Figure 84: On an average day, how long do you spend browsing for information on a/your technology when searching for study related information

Smartphones, tablet devices and desktop PC's were all used by students to search for academic information at their greatest time when for less than 10-minute intervals. Laptops showed a gradual increase in usage as duration increased – indicating a linear growth whereas the other three technologies showed a gradual decrease over time. The modal and median values (Table.35) for how long law students spent browsing for non-study related information on the given technologies were calculated and we found that the highest modal value was for Laptops at 8 = More than 2 hours but less than 3, this showed that these technologies were by far the most popular for usage during lengthy time periods. The medial value for the same category was also relatively high at 7 = More than 1 hour but less than 2. For smartphones the mode was 2 = 10 – 20 Min and the median was 4 = 31 – 40 Min, showing that these technologies were used for brief time periods. Tablet devices and Desktop PC's had both mode and median values of 1 = Less than 10 Min. This showed us that these two technologies were not used as much for non-study related information.

| On an average day, how long do you spend browsing for information on a/your technology when searching for non-study related information? | Smartphone | Tablet Device | Laptop | Desktop PC |
|---|---|---|---|---|
| Mode | 2 | 1 | 8 | 1 |
| Median | 4 | 1 | 7 | 1 |

Table 36: Mode & Median of - On an average day, how long do you spend browsing for information on a/your technology when searching for non-study related information?

Table.33 showed clearly the disparity between the modal and median values for the technologies in consideration and supported the comments made by law librarians that laptops were used lot more than the other 3 technologies listed, followed by smartphones. As for study related information browsing on the technologies of choice (Table.36), we found that 3 of the 4 devices were used for brief time periods with both modal and median values for smartphones, tablet devices and desktop PC's at 1 = Less than 10 Min.

The most significant difference came when students were asked to provide information on their usage of laptops, here the mode value was 8 = More than 2 hours but less than 3 and the median value was 7 = More than 1 our but less than 2.

| On an average day, how long do you spend browsing for information on a/your technology when searching for study related information? | Smartphone | Tablet Device | Laptop | Desktop PC |
|---|---|---|---|---|
| Mode | 1 | 1 | 8 | 1 |
| Median | 1 | 1 | 7 | 1 |

Table 37: Mode & Median of - On an average day, how long do you spend browsing for information on a/your technology when searching for study related information?

This finding showed that laptops were most popular for using to search for study-related information and all other technologies were used at a minimum. What did surprise us was the low usage of desktop PC's in that despite having larger screens than smartphones and tablet devices, desktops were still used for very short time periods. This is where the drivers and barriers of usage of technologies could be outlined and we used this data to identify these potential attributes and include them in our proposed LSISB model.

<u>Students t-Test</u>

To explore whether that there was a difference between the times law students spend on each of the technologies for study related and non-study related information seeking we conducted a series of 2-tailed T-tests, each with a significance of 0.05, sample size at 50, our degree of freedom (df) to be 49 and hypothesised mean difference at 0. We set the following values:

$\mu_{0SMRTNS}$ = Time law students spent on Smartphones for non-study related information seeking

$\mu_{1SMRTS}$ = Time law students spent on Smartphones for study related information seeking

Our hypotheses were set as: $H_0 : \mu_{0SMRTNS} = \mu_{1SMRTS}$ and $H_1 : \mu_{0SMRTNS} \neq \mu_{1SMRTS}$

We used Microsoft Excel to find the t value so that we can ascertain whether there if the mean difference between the two sets of data are significant (Table.37).

| Smartphones | Non-study related information? | Study related information? |
|---|---|---|
| Mean | 4.24 | 2.36 |
| Variance | 5.41 | 3.58 |
| t Stat | 6.26 | |
| P(T<=t) one-tail | 0.0000000472 | |
| t Critical one-tail | 1.68 | |
| P(T<=t) two-tail | 0.0000001 | |
| t Critical two-tail | 2.01 | |

Table 38: Smartphone Usage - t-Test: Paired Two Sample for Means

Our results showed that $t_{stat} > t_{crit}$ i.e. 6.26 > 2.01 leading us to conclude that there is a

significant difference at the 5% level and so we can reject the hypothesis on the basis that there

is a significant difference between the mean time law students spend on their smartphones for

academic information seeking and the mean time they spend on their smartphones for non-

academic information seeking.

For Tablet Devices:

$\mu_{0TBLTNS}$ = Time law students spent on Tablet Devices for non-study related information seeking

$\mu_{1TBLTS}$ = Time law students spent on Tablet Devices for study related information seeking

Our hypotheses were set as: $H_0 : \mu_{0TBLTNS} = \mu_{1TBLTS}$ and $H_1 : \mu_{0TBLTNS} \neq \mu_{1TBLTS}$

Using Microsoft Excel, we found the following values as shown in (Table 38);

| Tablet Device | Non-study related information? | Study related information? |
|---|---|---|
| Mean | 2.54 | 2.28 |
| Variance | 4.17 | 4.16 |
| t Stat | 0.98 | |
| P(T<=t) one-tail | 0.17 | |
| t Critical one-tail | 1.68 | |
| P(T<=t) two-tail | 0.33 | |
| t Critical two-tail | 2.01 | |

Table 39: Tablet Device Usage - t-Test: Paired Two Sample for Means

Here our values for the test were $t_{stat} < t_{crit}$, i.e. 0.98 < 2.01, therefore we accepted the null

hypothesis in that there was no significant difference between the mean time law students spent

on their tablet devices searching for academic information compared to the mean time they

spent using the same device for non-academic information seeking.

For Laptops:

$\mu_{0LPTPNS}$ = Time law students spent on Laptops for non-study related information seeking

$\mu_{1LPTPS}$ = Time law students spent on Laptops for study related information seeking

Our hypotheses were set as: $H_0$ : $\mu_{0LPTPNS} = \mu_{1LPTPS}$ and $H_1$ : $\mu_{0LPTPNS} \neq \mu_{1LPTPS}$

We found the following values for our t-test (Table.39).

| Laptop | Non-study related information? | Study related information? |
|---|---|---|
| Mean | 5.66 | 6.06 |
| Variance | 5.74 | 5.00 |
| t Stat | -1.11 | |
| P(T<=t) one-tail | 0.14 | |
| t Critical one-tail | 1.68 | |
| P(T<=t) two-tail | 0.27 | |
| t Critical two-tail | 2.01 | |

Table 40: Laptop Usage - t-Test: Paired Two Sample for Means

The $t_{stat} < t_{crit}$, values following the test were – 1.11 < 2.01 respectively, so we accepted the null

hypothesis in that there was no significant difference between the mean time law students spent

on their laptops searching for academic information compared to the mean time they spent

using the same device for non-academic information seeking.

For Desktop PCs:

$\mu_{0DSKPNS}$ = Time law students spent on Desktop PC's for non-study related information seeking

$\mu_{1DSKPS}$ = Time law students spent on Desktop PC's for study related information seeking

Our hypotheses were set as: $H_0$ : $\mu_{0DSKPNS} = \mu_{1DSKPS}$ and $H_1$ : $\mu_{0DSKPNS} \neq \mu_{1DSKPS}$

Our t-test calculation found (Table.40).

| Desktop PC | Non-study related information? | Study related information? |
|---|---|---|
| Mean | 2.06 | 2.52 |
| Variance | 4.18 | 5.48 |
| **t Stat** | **-1.55** | |
| P(T<=t) one-tail | 0.06 | |
| t Critical one-tail | 1.68 | |
| P(T<=t) two-tail | 0.13 | |
| **t Critical two-tail** | **2.01** | |

Table 41: Desktop PC Usage - t-Test: Paired Two Sample for Means

Again, like the t-test for Laptops, our values were at $t_{stat} < t_{crit}$, i.e. -1.55 < 2.01 (Table.40),

therefore we accepted the null hypothesis in that there was no significant difference between

the mean time law students spent on their desktop PC's searching for academic information

compared to the mean time they spent using the same device for non-academic information

seeking.

### 8.4.3  Law Students' Mobile Device Use

Law students' mobile technology use – How do you feel about the following statements on using

your smartphone/tablet device/laptop on campus?

Over half 58% (N=29) students strongly agreed that they used their smartphone on the

university campus to communicate with their friends for social reasons. Students also used

these devices more when they moved around campus 30% (N=15). Many saw these devices as

a method to communicate with their peers for study-related information (24%). However most of

the responses indicated that these devices were widely seen as tools for social information

exchanges with limited use in the library, in tutorials or study related information (Fig.86).
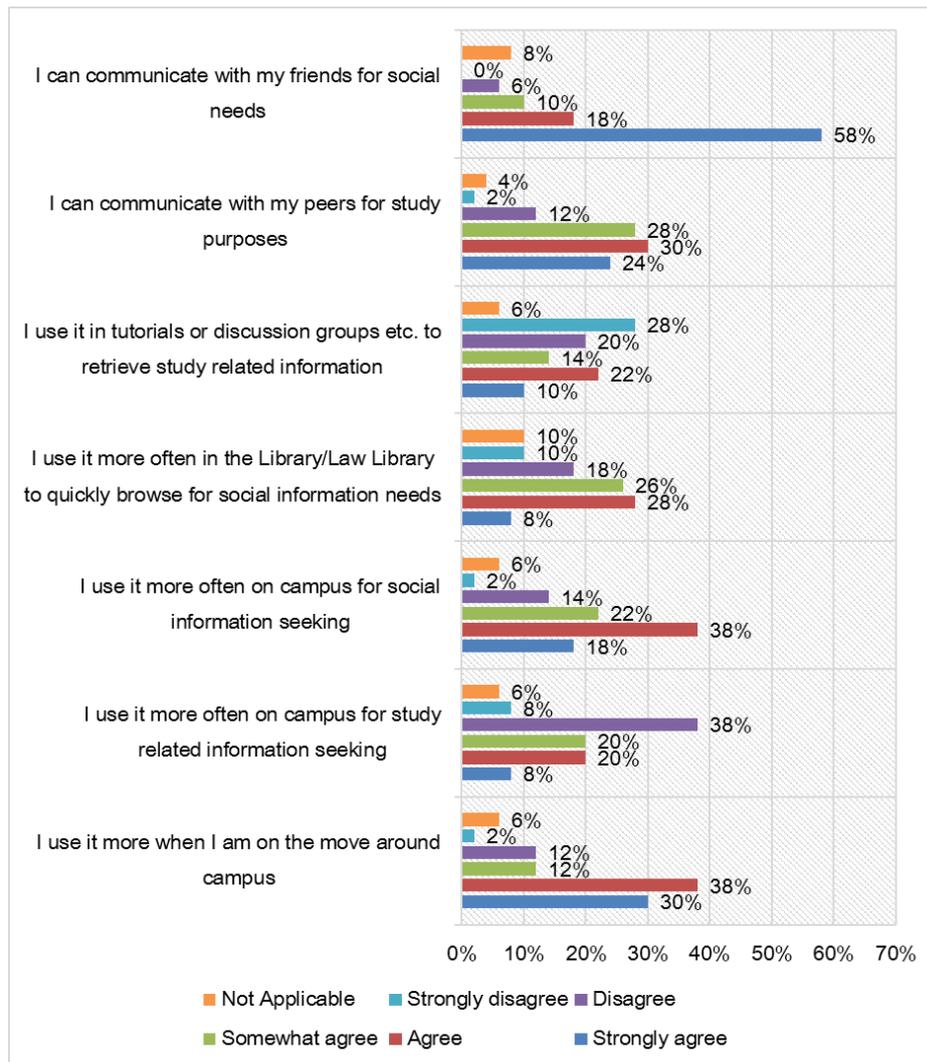
Figure 85: How do you feel about the following statements on using your smartphone on campus?

The same question was also asked for tablet devices and laptops, we did this, so we could ascertain details on the contextual use of these technologies and where the drivers for their use were. Tablet device use (Fig.87) was mainly geared at use for discussion group related activities 16% (N=8) this could possibly be due to the larger screen size and the physical suitability of such a device for more collaborative information seeking. Use of these devices was limited in the law library at 10% (N=5) with only 14% (N=7) of students agreeing that they would use a tablet device on the university campus for their studies and 12% (N=6) using the device for social information seeking.

20% (N=10) of respondents agreed that they would use these devices for communicating with their friends. What we saw from these results was that tablet devices are less "private" and more "social" than smartphones given the responses herein.
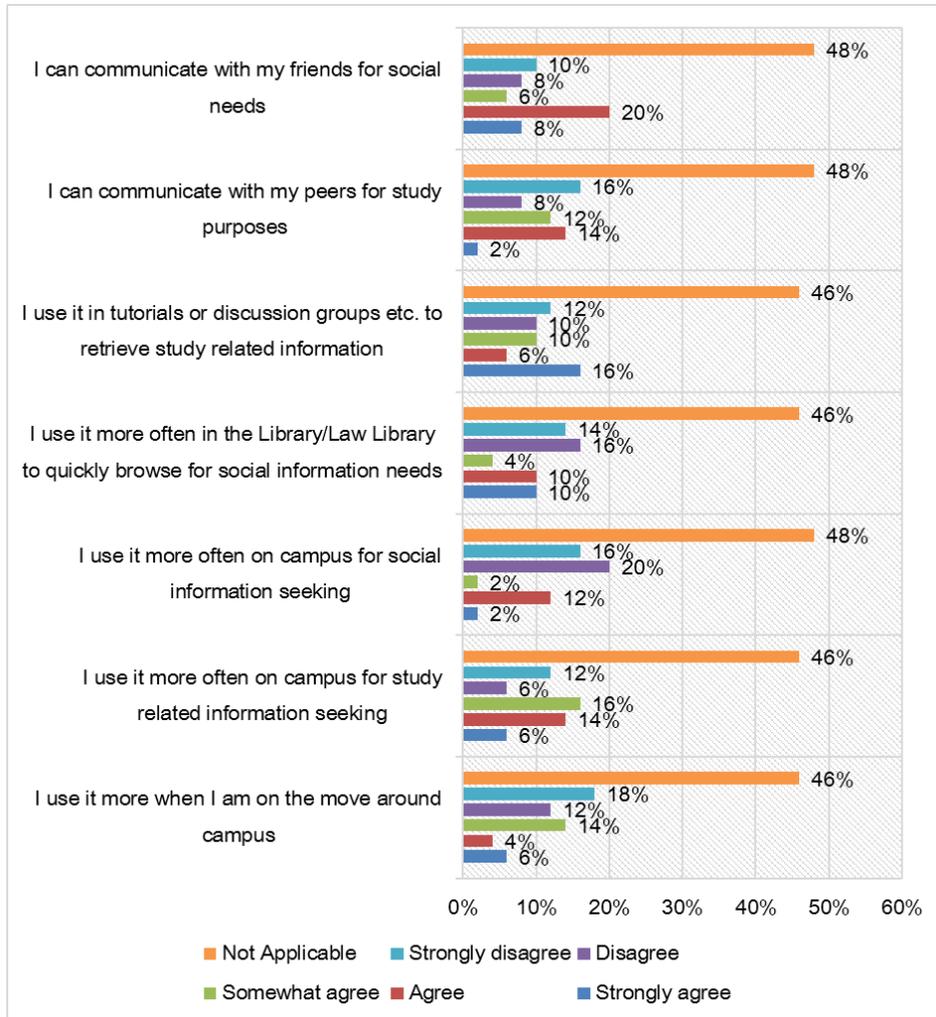


Figure 86: How do you feel about the following statements on using your tablet device on campus?

We also noted that for all the sub-questions, at least 46% (N=23), if not 48% (N=24) stated their responses as "Not Applicable". This showed us that these devices were not as widely used compared to the other technologies we were covering in our research (Fig.87). For laptop usage (Fig.88) in the same contexts we found that they were widely seen as technologies for study related information seeking with 44% (N=22) strongly agreeing, followed by a high response of 36% (N=18) also strongly agreeing that they use their laptops in tutorials or discussion groups.

32% (N=16) strongly agreed that they would use such devices in the law library albeit to quickly browse for social information needs. However, these technologies were largely seen as study tools with most of the respondents focussing their use on academic needs as opposed to social or casual. This can be evidenced by the fact that over 70% (N=38) of respondents either agreed or strongly-agreed that they would often use their laptops on campus for study-related information seeking whilst over 50% (N=25) agreeing or strongly-agreeing that they would communicate with their peers for study purposes using laptops or use laptops in tutorials or discussion groups.
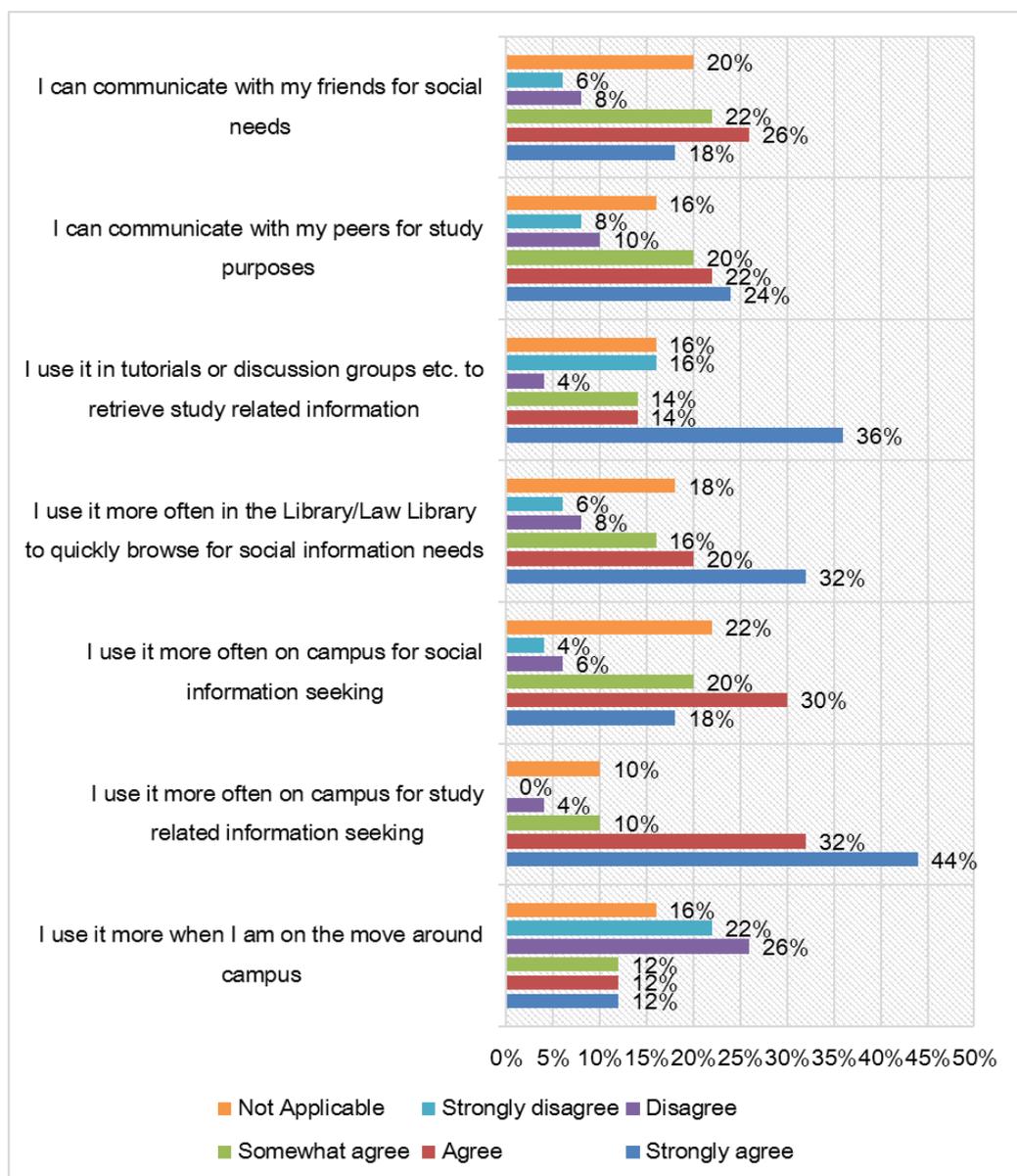


Figure 87: How do you feel about the following statements on using your laptop on campus?

Although a fair proportion of law students informed that they would strongly agree or agree to using laptops for social information seeking either around campus 48% (30+18) (N=24) or in the law library for the same purpose 52% (20+32) (N=26) (Fig.88), it cannot be discounted that these technologies by their very nature provide a multitasking experience, so those students may also be likely to be engaged in academic information seeking at the same time as the technology enabled them to do so.

We calculated the mode and median values for the responses to the question (Table.41);

| How do you feel about the following statements on using your technology on campus? | I use it more when I am on the move around campus | I use it more often on campus for study related information seeking | I use it more often on campus for social information seeking | I use it more often in the Library/Law Library to quickly browse for social information needs | I use it in tutorials or discussion groups etc. to retrieve study related information | I can communicate with my peers for study purposes | I can communicate with my friends for social needs |
|---|---|---|---|---|---|---|---|
| Mode - Smartphone | 5 | 3 | 5 | 5 | 2 | 5 | 6 |
| Median - Smartphone | 5 | 3 | 5 | 4 | 3 | 5 | 6 |
| Mode - Tablet Device | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Median – Tablet Device | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Mode - Laptop | 3 | 6 | 5 | 6 | 6 | 6 | 5 |
| Median - Laptop | 3 | 5 | 4 | 5 | 4.5 | 4 | 4 |

Table 42: Mode & Median of - How do you feel about the following statements on using your smartphone on campus?

<u>Smartphones</u>

For smartphones the highest modal values (Table.39) were for when law students used these technologies to communicate with their friends for social needs at 6 = Strongly Agree. Followed by using it to communicate with peers for study purposes, using it when mobile around campus, using it for social information seeking around campus and using it in the law library for brief social information seeking needs, the mode value for all 4 questions was 5 = Agree. When it came to using smartphones on campus for study-related information seeking, the mode value was 3 = Disagree. The median values for this type of technology were the same for each question apart from using smartphones in the law library to briefly search for social-information with a median of 4 = Somewhat Agree and using smartphones in tutorials or discussion groups for academic information retrieval at 3 = Disagree. There was no doubt that smartphones were primarily a communications device and whilst academic information could be obtained through these technologies, by large the cohort indicated that their prime purpose for using these devices was for social communication purposes.

<u>Tablet Devices</u>

Tablet devices had a flat mode value of 1 = Not Applicable for all the questions indicating that the cohort did not want to comment or did not use these types of technologies for any of these contexts. The median values were also the same for all of these questions at 2 = Strongly Disagree and this indicated that the cohort did not use tablet devices in any of the contexts mentioned.

<u>Laptops</u>

For laptops the highest modal value of 6 = Strongly Agree was for using these technologies on campus for study-related information seeking, using them in the law library for brief social information seeking periods, using them during tutorials or discussion groups and communicating with peers for study purposes.

Law students also informed that they would use their laptops to communicate with their friends for social needs and for social information seeking around campus, the mode values for these were both at 5 = Agree. The lowest mode value of 3 = Disagree, was for using laptops when mobile around campus, illustrating the relatively restrictive nature of the larger laptop devices for use in such context when compared to the smaller smartphone which had a modal value of 5 = Agree for the same question. For median values (Table.50) the highest was for using laptops on campus for study-related information seeking and using them in the law library to quickly browse for social information seeking needs at 5 = Agree. The use of these technologies in discussion groups stood at 4.5 = Strongly Agree/Agree and using them on campus for social information seeking, communicating with peers for study purposes and communicating with friends for social information seeking; all had medial values of 4 = Somewhat Agree. The lowest median value was for using laptops when mobile around campus, this was the same as the mode value of 3 = Disagree and again illustrated the relatively restrictive nature of these technologies when compared to smaller devices such as smartphones.

Law students' mobile technology use – Where do you use your smartphone/tablet device/laptop whilst on campus?

Students used their smartphones to make voice calls primarily outside or around the university campus 84% (N=42) (Fig.89) followed by doing so in open spaces 66% (N=33). SMS/Text messages were sent mostly in open spaces 82% (N=41) and in the law library space 76% (N=38) as well as the lecture theatre 54% (N=27). This is possibly due to these environments being ones where talking or any kind of noise is strongly discouraged, and silent communication is the only means which students can utilise. The internet browser was also mostly used in open spaces 74% (N=37) and 70% (N=35) did so in the law library area. Social media was used mostly in open spaces as well 72% (N=36) followed by outside or around the university campus 68% (N=34) and the law library 60% (N=30). Apps, games and utilities were used less so but still restricted to around the campus 44% (N=22) and the open spaces 40% (N=20).
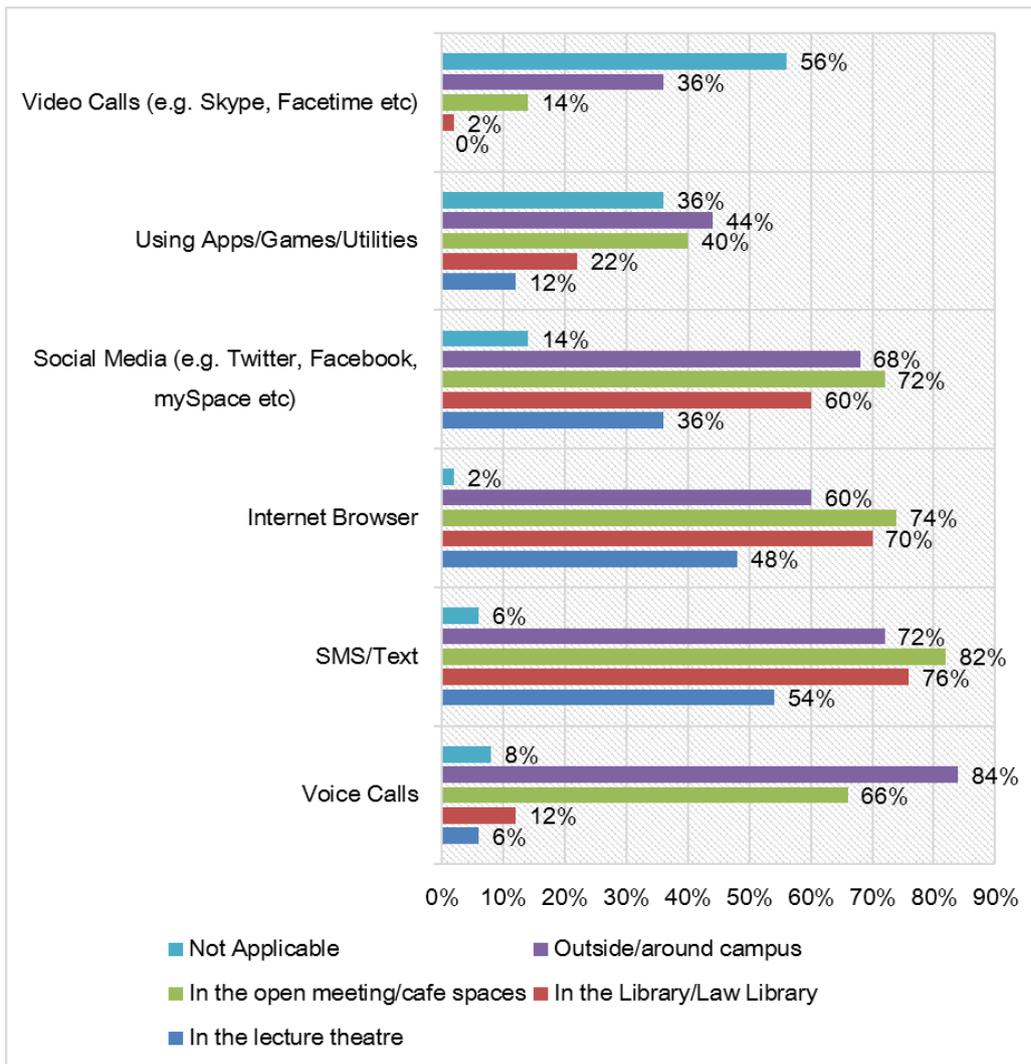
Figure 88: Where do you use your Smartphone whilst on Campus?

This data clearly showed that smartphones were personable communication devices and opportunities to use them in an academic context were limited to say in the least, however there was evidence of students utilising these devices for information search and sharing.

Chi-Squared Test - Smartphones

We undertook a Chi-Squared test for significance using the number of choices the sample group made for each function against the physical location of usage. Our null hypothesis stated that there was no significant difference between the various functions used on Smartphones vs. the location on Campus these functions were used at.

We found our final Chi-Squared value ($\chi$) = 203.2 with our degrees of freedom set as 20 and our probability value of 0.05, giving us a P value of 31.410. Since 203.02 > 31.410 then this shows a significant difference between the observed and expected values for the use of the listed Smartphone-based functions at the given locations in the University Campus. Hence the probability that the difference is due to change is less than 5% and the null hypothesis can be rejected.
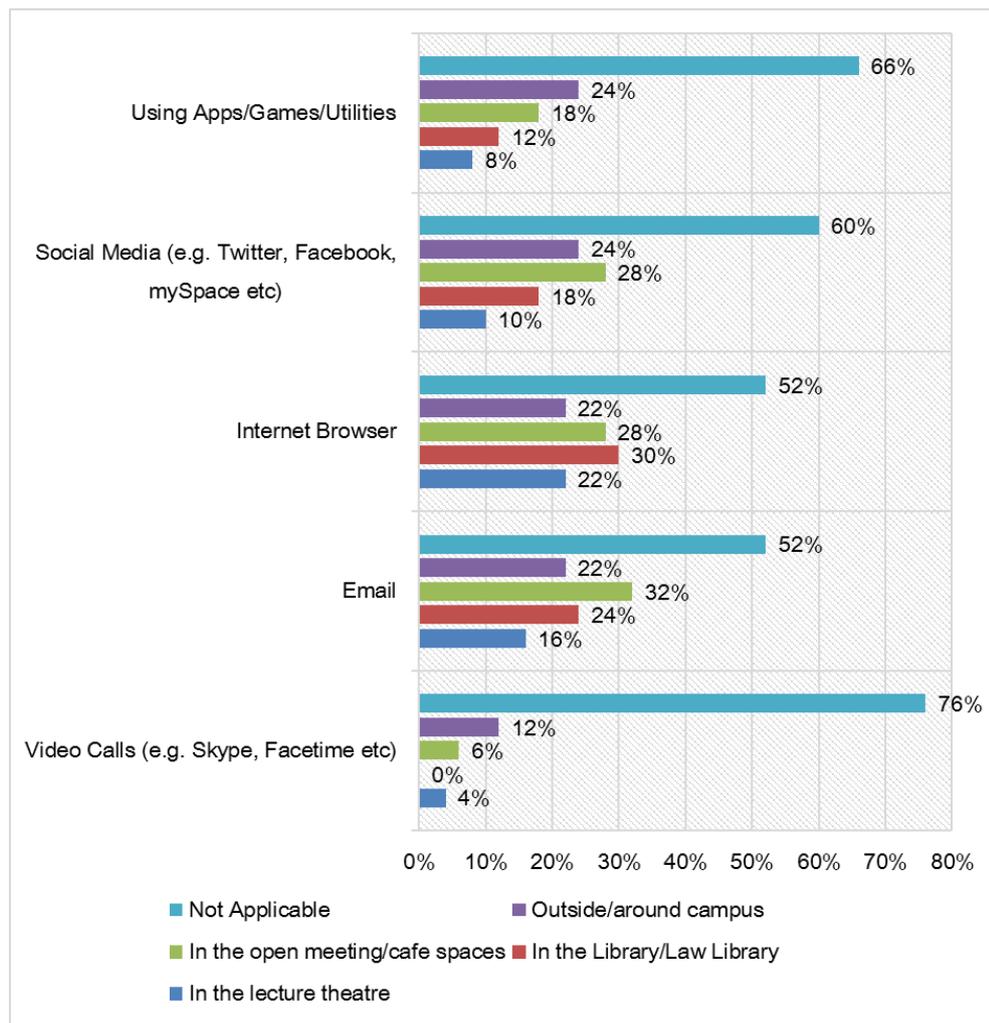


Figure 89: Where do you use your Tablet Device whilst on Campus?

Tablet devices were used outside and around campus with 24% (N=12) (Fig.90) noting that they used these devices for apps/games/utilities and social media. A slightly smaller percentage of respondents 22% (N=11) used tablets in the same environment for email and internet browsing.

The largest contextual use was for email in open meeting/café spaces at 32% (N=16) and for internet browsing and social media usage, both at 28% (N=14) respectively. Usage of such technologies in libraries was also highest for email at 24% (N=12) and internet browsing at 30% (N=15). And for lecture theatre usage at 22% (N=11) for internet browsing and 16% (N=8) for email. Video calling features were the least likely functionality to be used on these devices, largely due to these functions already available on Smartphones. Also, for the other four listed functionality uses, most respondents did not choose to respond with a choice of locational usage.

Chi-Squared Test - Tablet Devices

Like for Smartphones we set a null hypothesis in that there was no significant difference in the functions used on a Tablet Device against the specific locations on Campus where these functions were accessed. We found our final Chi-Squared value ($\chi$) = 36.9 with our degrees of freedom set as 16 and our probability value of 0.05, giving us a P value of 26.296. Since 36.9 > 26.296 then this shows a significant difference between the observed and expected values for the use of the listed Tablet Device-based functions at the given locations in the University Campus. Hence the probability that the difference is due to change is less than 5% and the null hypothesis can be rejected.
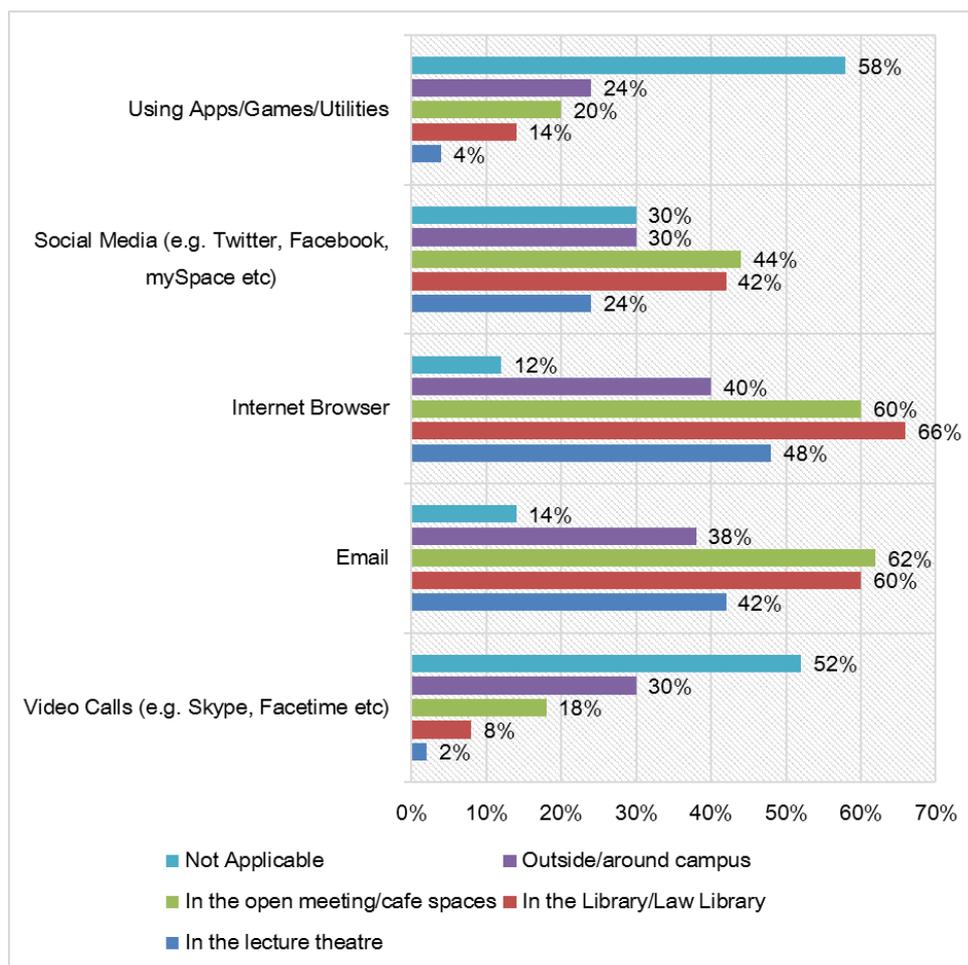
Figure 90: Where do you use your Laptop whilst on Campus?

Internet browsing was the most popular activity students did on these devices within the law library 66% (N=33), (Fig.91) with 62% (N=31) using email in open meeting areas and the cafe. 60% (N=30) also used email within the law library and 60% (N=30) used their laptops for internet browsing in open meeting spaces. 30% (N=15) of respondents used their laptops outside or around the campus and 18% (N=9) did so in cafés or other similar meeting spaces but this was for video calls only. Video calls 52% (N=26) and using Apps/Games 58% (N=29) were clearly, quite unpopular activities for laptop use and categories which showed the most change in location/contextual usage behaviour. Therefore, our noting that these devices were most used in stationary positions and that too for activities which related to information exchange and creation (Social Media, Internet Browsing and Email).

Our Chi-Squared test for significance set our null hypothesis to be the same as for the other two technology types in that there was no significant difference in the functions used on a laptop against the specific location son Campus where these functions were likely to be accessed. Our final Chi-Squared value was ($\chi$) = 103.5, our degrees of freedom set as 16 and our probability value of 0.05, giving us a P value of 26.296. Since 103.5 > 26.296, then this shows that there is a significant difference between the observed and expected values for the use of the listed Laptop-based functions at the given locations in the University Campus. Hence, like the test for Smartphones and Tablet Devices, the probability that the difference is due to change is less than 5% and the null hypothesis can be rejected.

## 8.4.4 Law Students' Use of the Library/Law Library

Law students' use of the library/law library – What is your main reason for visiting the library/law library?

39% (N=19) of the respondents stated that their main reason for visiting the law library was to find a quiet place to study, or to borrow material 27% (N=13) or even use paper-based resources 26% (N=13). Yet very small amounts of students identified the law library as a place where they would either access e-resources to use their laptop for their academic needs 4% (N=2) for both. This highlights that the law library was highly regarded by students as a place where relevant material can be accessed in a well-suited study-focused environment and that the resources accessed were overwhelmingly those which would normally be inaccessible outside the library domain.

Law students' use of the library/law library – If you used your smartphone/tablet device/laptop for your studies in the library/law library, which of the following tools would you/do you use?

Internet search was the most popular function law students would use on their smartphone if they needed to use the device in an academic information seeking context 70% (N=35) (Fig.92).

This was followed by Email 66% (N=32) and 46% (N=23) indicated that they would utilise the SMS/Text functionality. Only 2% (N=1) outlined that they would use their smartphone for creating and editing documents, affirming the responses received so far from both law librarians and law students that smartphones are not well suited for creating information and that any activity related to such was at a minimum rate. Noting that whilst this question allowed students to make more than one choice and so provided a broader picture of law students' search preferences, Internet search remained the most popular method for academic-related information search using smartphones, followed by Email and SMS/Text.
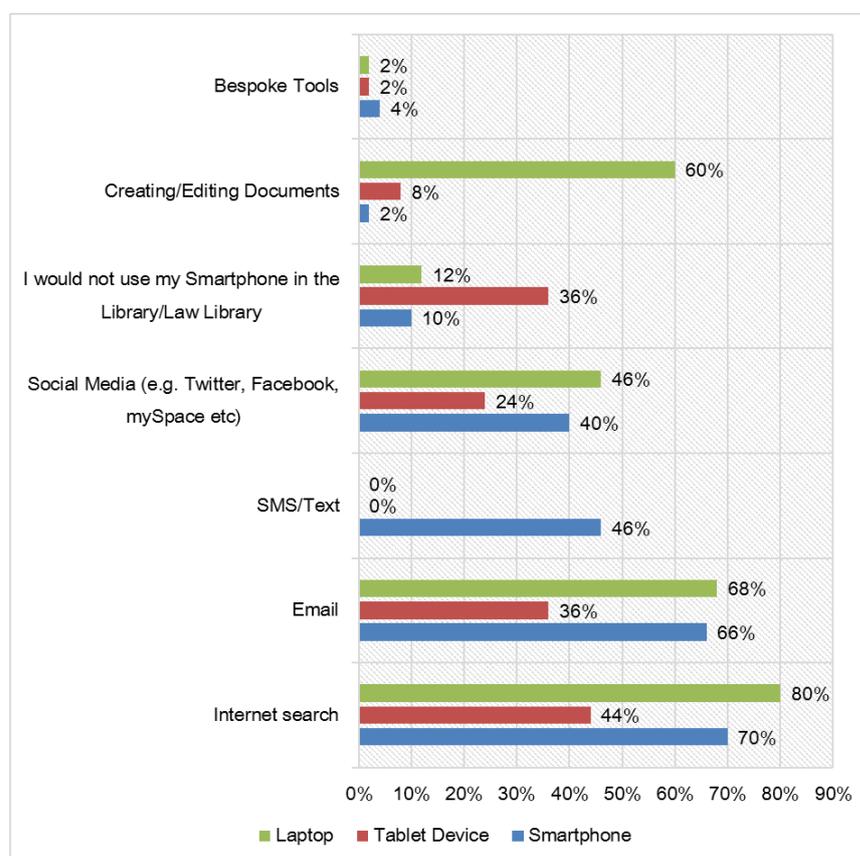


Figure 91: If you used your smartphone/tablet device/laptop for your studies in the library/law library, which of the following tools would you/do you use?

Like smartphones, tablet devices fared well in the category of Internet Search 44% (N=22), however a considerable proportion 36% (N=18) added that they would not use these devices in the law library, yet 36% (N=18) mentioned that they would use their tablet device for Email.

A slightly higher number 8% (N=4) students noted that they would use their tablet device to create and/or edit documents. Hence, we can deduce that whilst tablet usage overall was far lower than that of smartphones, the former devices fared favourably for creating and editing documents. Finally, we found that laptops proved to be the most popular for internet searching for academic information seeking needs 80% (N=40) followed by Email 68% (N=34) and there was a complete swing towards students opting their preference to use these devices for creating and editing documents 60% (N=30). However social media use remained significant on this platform at 46% (N=23). Overall, we found that our findings continued to be proven with laptops and smartphones being used comparably for email, internet search and social media. Yet, the usage behaviour differed when it came to using functions that were only reserved for smartphones (SMS) and creating/editing documents.

Law students' use of the library/law library – How do you feel about the following statements?

Students 24% (N=12) (Fig.93) indicated that they would use their smartphone more if there were more academic resources better suited for it.  20% (N=10) of the respondents were happy with the existing smartphone compatible resources provided to them through the law library and the same percentage 20% (N=10) sought more technical support for using their smartphones for their studies. There were, however, a fair number of respondents who disagreed with the support and resource provision and thus we noted strong calls for more support for smartphone use in this context 30% (N=15) as well as a need for more compatible resources for these formats 28% (N=14).
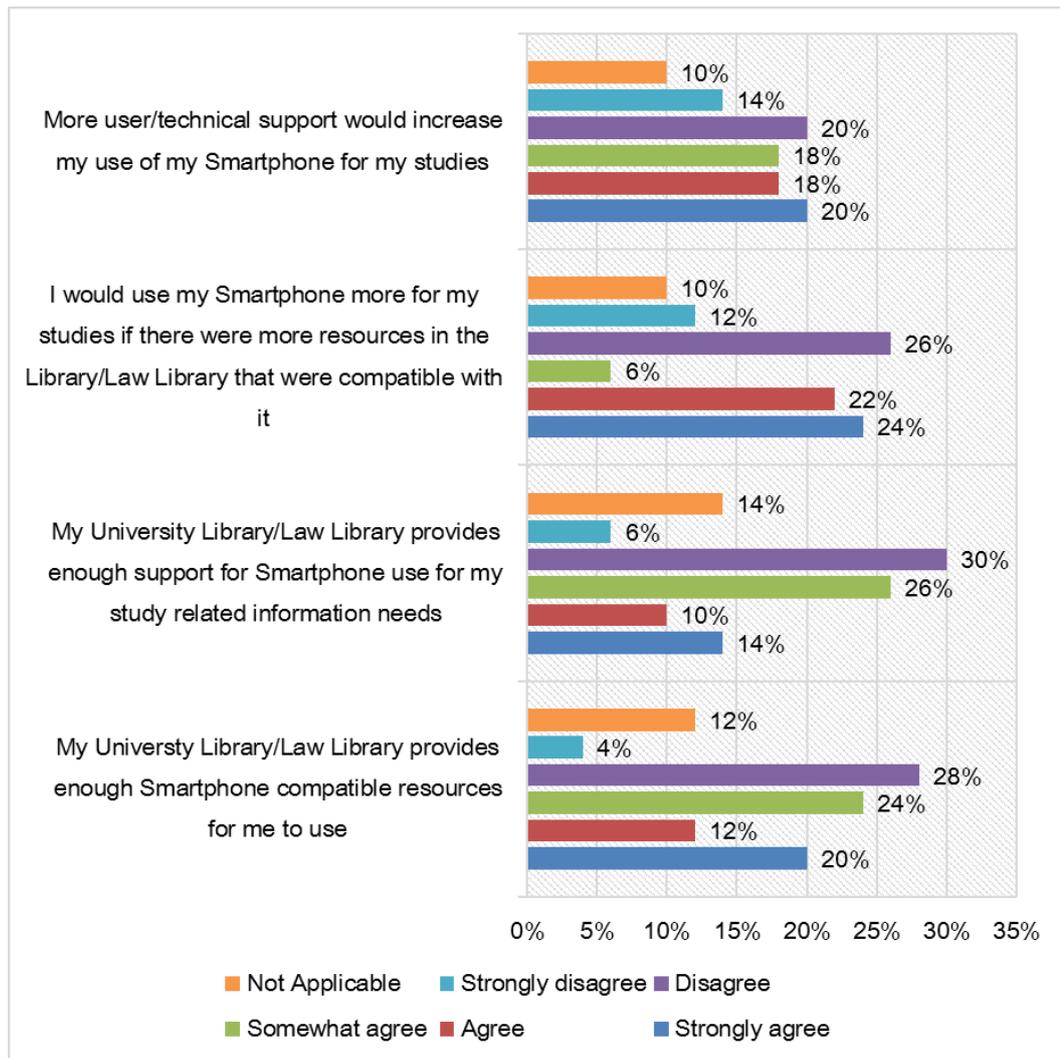
Figure 92: How do you feel about the following statements? (Smartphone)

Just over a third of the respondents indicated their disagreement or strong-disagreement in that increased support for smartphone usage for academic-related information seeking would not alter their present information seeking behaviour (26% + 12%) (N=13 + N = 6). Whilst just under half of respondents (24% +22%) (N=12 + N=11) either Strongly Agreed or Agreed that they would use their smartphones more for their studies if there were more compatible resources available.

Our statistical analysis (Table.42) of the responses showed that based on our Likert Scale

weighting score the sample group's mean values for the sub-questions, the mode values for all

the questions were at 3 = Disagree which showed that by large law students felt that there were

not enough smartphone-compatible resources provided to them nor was their enough support

for smartphone use in academic contexts. Also, we found that the mode value of 3 = Disagree

was for both using smartphones for academic studies if more compatible resources were

available as well as more technical support. This indicated that most of the cohort was not

prepared to use these technologies in academic contexts regardless of more compatible

resources or even increased technical/user support.

| How do you feel about the following statements? (Smartphone) | The Law Library provides enough Smartphone compatible resources for me to use | The Law Library provides enough support for Smartphone use for my study related information needs | I would use my Smartphone more for my studies if there were more resources in the Law Library that were compatible with it | More user/technical support would increase my use of my Smartphone for my studies |
|---|---|---|---|---|
| Mode | 3 | 3 | 3 | 3 |
| Median | 4 | 3.5 | 4 | 4 |

Table 43: Mode & Median of - How do you feel about the following statements? (Smartphone)

The median values for 3 of the questions were higher at 4 = Somewhat Agree and this was for

the cohort responding to whether their library provided enough smartphone compatible

resources for them to use, if they were prepared to use their smartphones for academic studies

if more compatible resources were made available to them as well as increased technical/user

support in this area. Overall the cohort seemed largely in disagreement towards using these

technologies for academic information seeking contexts and there seemed little appetite in

changing this habit.

We also asked related questions for tablet devices and laptops (Fig.94), there we found that 24% (N=12) of students strongly agreed with the support received for using their laptops for their academic information needs, with 34% (N=17) agreeing to the same statement. A further 22% (N=11) strongly agreed that the resources available to them were compatible with their laptops with 44% (N=22) agreeing with the same notion. As for tablet devices number of students either disagreed 18% (N=9) or strongly disagreed 12% (N=6) that more user/technical support would lead to an increase in their use of these devices for their studies. Additionally, 32% (N=16) responded to this sub-question as Not Applicable and this shows that there is little appetite for further use of tablet devices for academic information seeking.
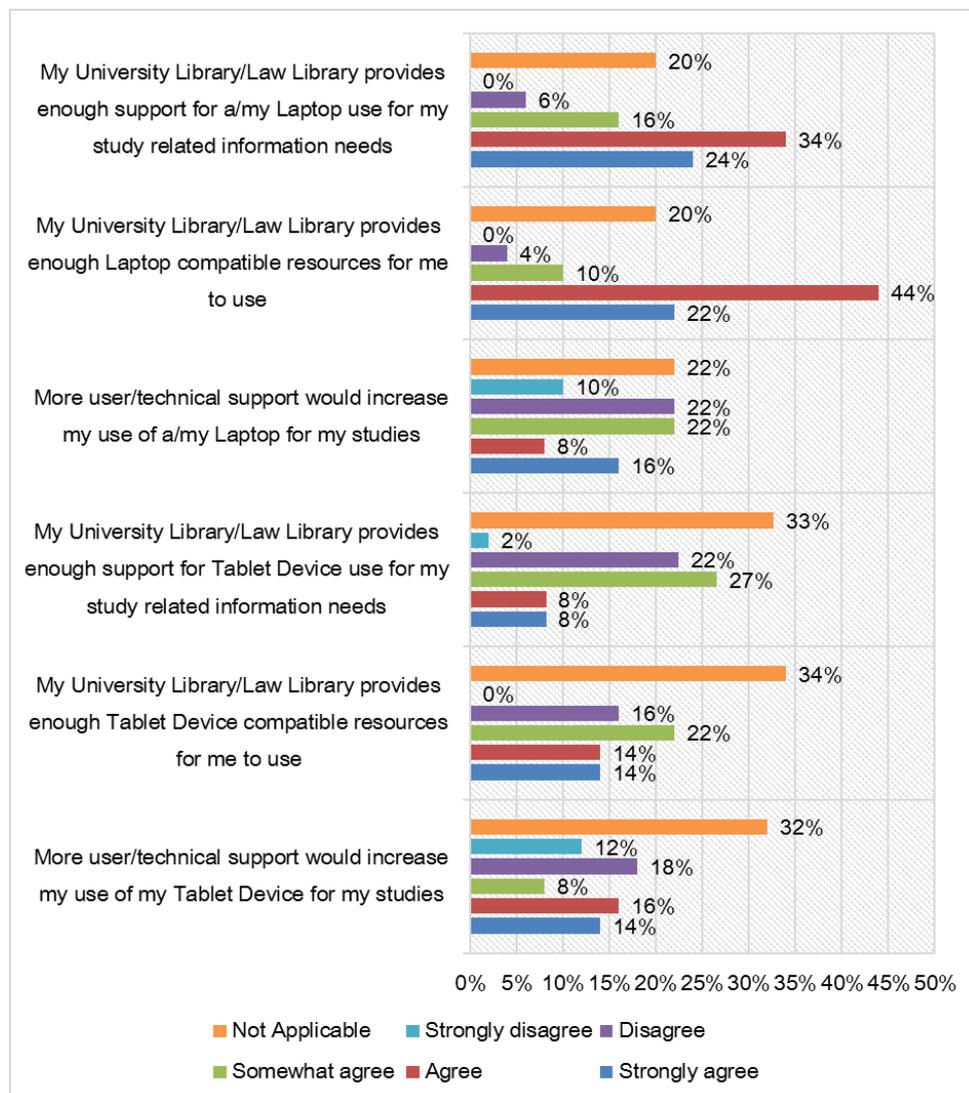


Figure 93: How do you feel about the following statements? (Tablet Device & Laptop)

We noted that the sample group was happier with the support and resource provision for their laptops and would also be more likely to use these technologies more if they were provided training. For tablet devices though we saw over a third of the responses as Not Applicable and the general replies as being skewed more towards the disagree and strongly disagree responses. The mode values (Table.43) were flat for all questions at 1 = Not Applicable, indicating that most of the cohort did not use Tablet Devices for academic study contexts, the median values were highest at 3.5 = Somewhat Agree/Disagree for law libraries providing enough tablet device compatible resources for academic information seeking use. Law students mostly disagreed with wanting to use tablet devices for academic studies and for receiving enough support to do so with the median value of 3 = Disagree for both questions.

| How do you feel about the following statements? (Tablet Devices) | More user/technical support would increase my use of my Tablet Device for my studies | My University Library/Law Library provides enough Tablet Device compatible resources for me to use | My University Library/Law Library provides enough support for Tablet Device use for my study related information needs |
|---|---|---|---|
| Mode | 1 | 1 | 1 |
| Median | 3 | 3.5 | 3 |

Table 44: Mode & Median of - How do you feel about the following statements? (Tablet Devices)

As for laptops (Table.44), the highest modal value was for both the law library providing enough laptop compatible resources for academic information seeking and the law library providing enough support for using laptops in this context, these figures were at 5 = **Agree**, followed by 3 = **Disagree** for an increase of technical support for laptop use and appropriate technical and/or user support for further adoption of usage in academic contexts.

The median values were the same scores as the mode values for all three questions.

| How do you feel about the following statements? (Laptops) | More user/technical support would increase my use of a/my Laptop for my studies | My University Library/Law Library provides enough Laptop compatible resources for me to use | My University Library/Law Library provides enough support for a/my Laptop use for my study related information needs |
|---|---|---|---|
| Mode | 3 | 5 | 5 |
| Median | 3 | 5 | 5 |

Table 45: Mode & Median of - How do you feel about the following statements? (Laptops)

Generally, there appeared to be a strong favouritism towards laptops over smartphones and more so over tablet devices, driven by the support law students received in using these technologies together with their user experience with resources and tools accessed through these conduits. This was expected, given that laptops were a more established technology and thus had more time to become embedded within the academic landscape with institutions being well-used to using and promoting their services through them.

<u>Summary</u>

Whilst law students indicated that increased support for using any of the mentioned technologies would not warrant further usage for academic information seeking, there were different drivers behind each of the technologies themselves. Specifically, for smartphones (Table.60) there was a high median value of 4 = **Somewhat Agree**, for tablet devices (Table.41) it was at 3 = **Disagree** and for laptops (Table.42) it was also at 3 = **Disagree**. The difference between using these two latter technologies came when we calculated the mode values, for laptops these were higher than for tablet devices. This informed us that whilst laptops may not have scored highly in terms of further adoption, they were already widely used by law students and that there was little further change, in terms of further adoption. This was followed by smartphones which whilst having relatively restricted use in terms of accessing academic information, still had room for further acceptance and an indicative appetite from the law students as such, driven mostly by the fact that smartphones provided a more comprehensive mobile communications platform and ownership, by large, was more prevalent.

Wilcoxon Ranked Sum Test

To provide more granularity for our interpretation we conducted a two-tailed Wilcoxon Signed

Rank test with a significance of P ≤ 0.05 and using a web-based calculator (Stangroom 2018)

as well as assessment methods from MacFarlane (2007), we found the following (Table.43).

| Wilcoxon Test | My University Library/Law Library provides enough support for [the technology] use for my study related information needs | My University Library/Law Library provides enough [the technology] compatible resources for me to use | More user/technical support would increase my use of my [the technology] for my studies |
|---|---|---|---|
| Smartphone vs. Laptop | **0.21498** | **0.10100** | 0.03156 |
| Tablet vs. Laptop | 0 | 0.00044 | **0.14706** |
| Smartphone vs. Tablet | **0.0536** | **0.05** | 0.00164 |

Table 46: Wilcoxon Test Results

Where the figures in bold indicate values (Table.43), which are not significant at P ≤ 0.05.

Those not in bold text indicate significant values. One value which was significant were for p-

value 0.03156 < 0.05 for the comparison of law students using their smartphones or laptops in

the academic context if they were afforded more user/technical support. Values which were

highly significant included the p-value 0.00044 < 0.01 where law students were asked if they felt

their library/law library provided them with enough compatible resources for them to use either

their tablet devices or laptops. The highly significant p-value indicates that there was a marked

difference in student's willingness to use tablets over laptops and this coincided with our

findings above. Also, the other highly significant p-value of 0.00164 < 0.01 for where law

students were asked if increased user/technical support would increase their use of

smartphones or tablet devices showed that students were more likely to use smartphones over

tablets.

Finally, our lowest p-value of 0 < 0.01 for law students opining that their library/law library provided enough support for them to use tablets or laptops showed a highly significant difference between the two technology devices being used within this context given the circumstances outlined in the question.

## 8.4.5 Law Students' Preferred Mobile Technology Resource

Law students preferred mobile technology resource - What functions would you deem useful for a study-elated app to have for your smartphone?

In the final part of this research instrument, we wanted to build a greater understanding of what an ideal legal information resource would look like for law students and to help us built this picture we sought to find out the drivers and barriers which would form part of the many functions and attributes of such resources. For an ideal smartphone based app for academic uses, students 62% (N=31) (Fig.95) wanted the app to remember their search history, 54% (N=27) noted the functionality to provide brief search results as well as better graphical display, followed by 50% (N=25) opting for the ability to print wirelessly and 51% (N=25) seeking the ability to copy/paste into notes for future reference.
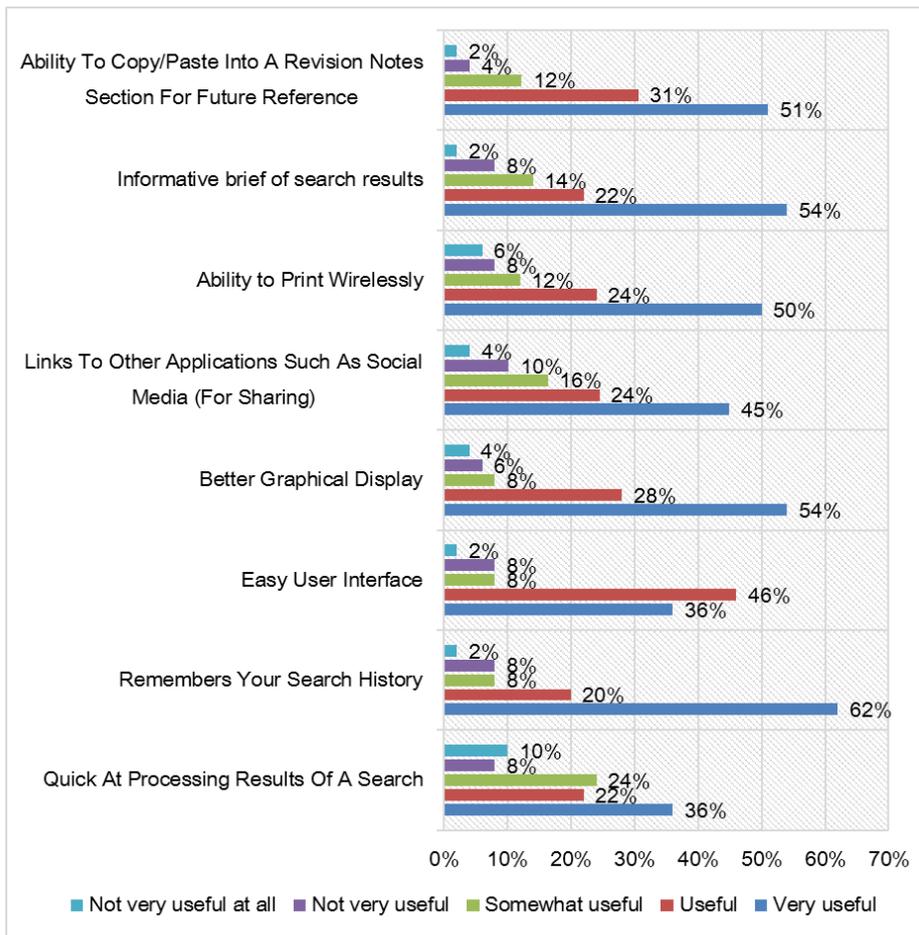
Figure 94: What functions would you deem useful for a study related app to have for your smartphone?

These choices indicate a strong focus on the size of the screen as the ability to recall previous searches would impact the time take to search for more information based on what had already been obtained, brief search results, better graphical display and the ability to print wirelessly match the feedback obtained from other research components. Given the proportion of law students who voted favourably for these attributes illustrated the compelling demand for such functions to be made available. For tablet devices, 56% (N=28) (Fig.96) of the respondents responded that the processing speed of search results and the ability to print wirelessly were Very Useful. 54% (N=27) felt that the ability to copy/paste content into revision notes for future reference was also Very Useful. 56% (N=28) felt that the speed of the App was important, this was followed by the ability to print wirelessly and being able to copy & paste content into another section for future reference, both at (56% or N=28).

Search history, easy user-interface and an informative, summary of search results was also chosen as Very Useful, all at 46% (N=23) respectively.
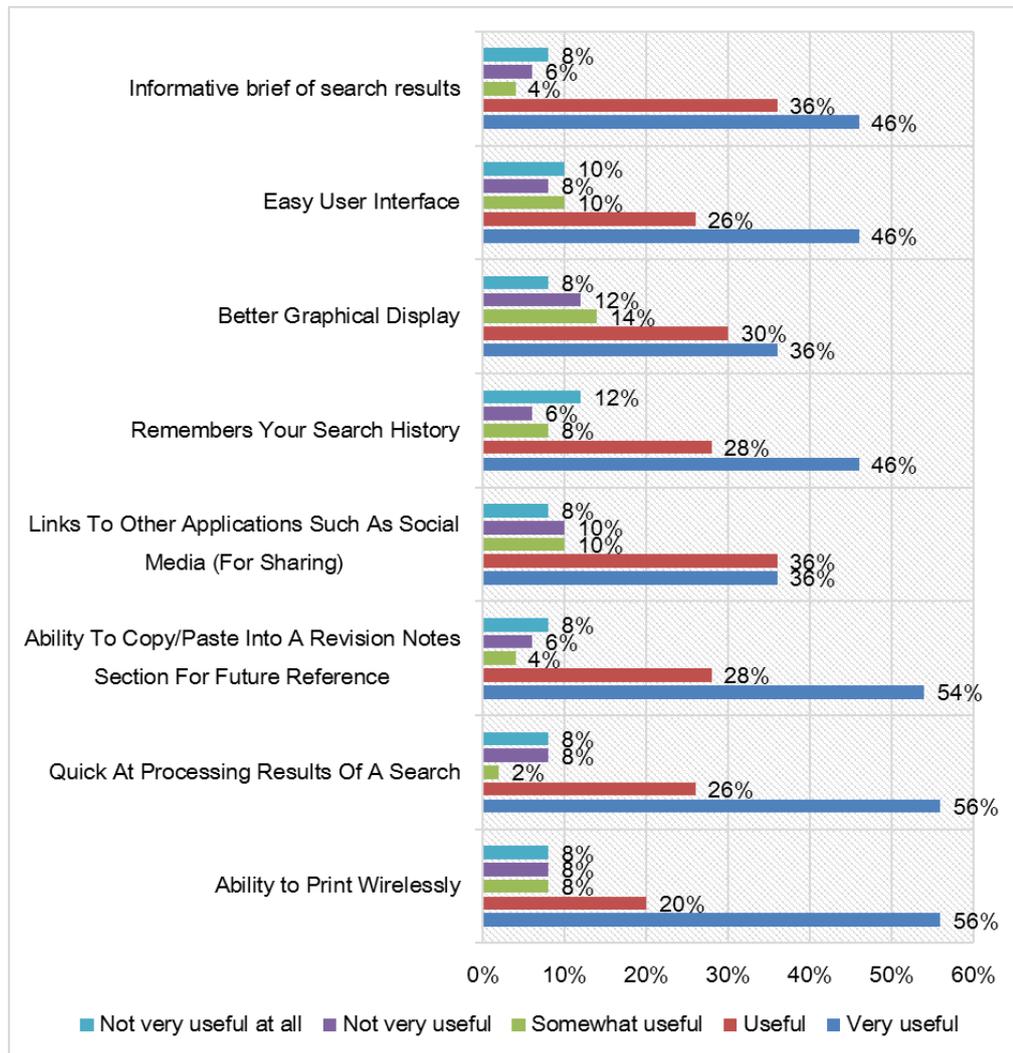


Figure 95: What functions would you deem useful for a study related app to have for your tablet device?

Our modal and median values for both technologies for this question were compared side-by-side. Here we found that for smartphones (Table.46) the mode values as per the Likert Scale from Section 4.8.3.1 were at 5 = Very Useful for all the listed attributes a study-related app could have, apart from the user interface which had a mode of 4 = Useful. For the median values, the range was between 5 = Very Useful to 4 = Useful with one attribute regarding wireless printing halfway between the two Likert Scale choices at 4.5.

For tablet devices the mode values were all at 5 = Very Useful apart from one attribute at 4 =

Useful and this was for a better graphical display. The median values were mostly at 4 = Useful

with only 3 of the attributes being listed with a Likert Scale rating of 5 = Very Useful and this was

for quick processing of results, search history cache and easy user interface.

| What functions would you deem useful for a study related app to have for your smartphone/tablet device? | Quick At Processing Results Of A Search | Remembers Your Search History | Easy User Interface | Better Graphical Display | Links To Other Applications Such As Social Media (For Sharing) | Ability to Print Wirelessly | Informative brief of search results | Ability To Copy/Paste Into A Revision Notes Section For Future Reference |
|---|---|---|---|---|---|---|---|---|
| Mode – Smartphone | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 |
| Median - Smartphone | 4 | 5 | 4 | 5 | 4 | 4.5 | 5 | 5 |
| Mode - Tablet Device | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 5 |
| Median – Tablet Device | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 4 |

Table 47: Mode & Median of - What functions would you deem useful for a study related app to have for your smartphone/tablet device?

Barriers to using a smartphone-based app for studies included a slow responding app 60% (N=30) (Fig.97), incompatibility with their smartphone 56% (N=28), lack of functionality 54% (N=27) and instability 48% (N=24). This indicated a need for a resource that was rapid, responsive and provided well-used functionality that could integrate well with smartphones. Also, we noted that students appeared to be more tolerant towards adverts and pop-ups as only 38% (N=19).
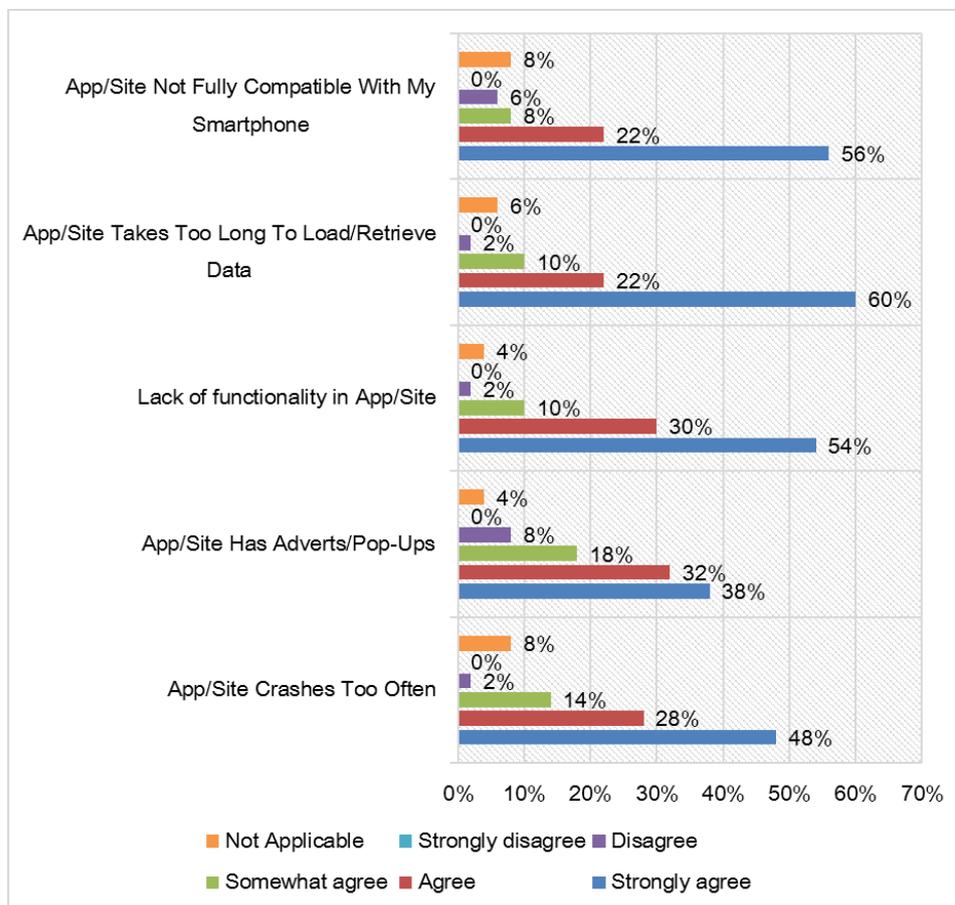


Figure 96: What would prevent you from using an app/smartphone-centric website for your study-related information needs?

For tablet devices (Fig.98), an unstable app 46% (N=23) was the most significant barrier to using a study related App on a tablet device.

This was followed by 44% (N=22) stating that the App taking too long to retrieve results, incompatibility with mobile devices and lack of functionality were at 46% (N=23) and 44% (N=22) respectively.
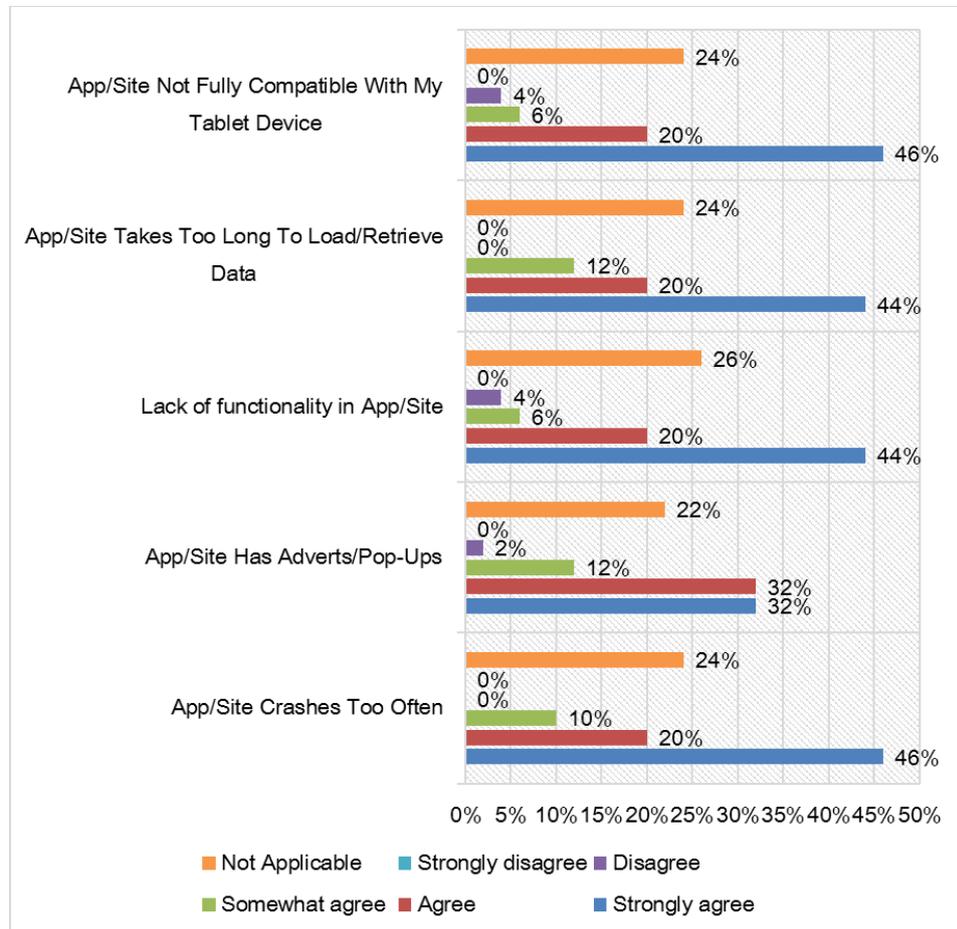


Figure 97: What would prevent you from using an app/tablet-centric website for your study-related information needs?

We found that the App or site crashing or not being compatible with the technology being used were the greatest barriers closely followed jointly by lack of functionality and the App taking too long to load or retrieve data, we again noted that adverts or pop-up notices were not considered as barriers as much when compared to the other attributes at 32% (N=16). The relatively high percentages indicated that the poor user experience for both types of technologies was similar and that there were clear instances where law students had experienced these challenges when accessing resources via these devices.

Smartphones & Tablet Devices

The mode and median values (Table.47) for both types of technologies was calculated and we found that all of the attributes had a high most occurring frequency of 6 = Strongly Agree for Smartphones, the median values for the same technology were also high at 6 = Strongly Agree with only two attributes at 5 = Agree and this was for the app/site crashing too often and having adverts/pop-ups appearing when using the service. For tablet devices (Table.47) the mode values were also mostly at 6 = Strongly Agree apart from the attribute of the app/site having adverts/pop-ups which was at 5 = Agree. The median values were all equally at 5 = Agree.

| What would prevent you from using an app/smartphone/tablet-centric website for your study-related information needs? | App/Site Crashes Too Often | App/Site Has Adverts/Pop-Ups | Lack of functionality in App/Site | App/Site Takes Too Long To Load/Retrieve Data | App/Site Not Fully Compatible With My Smartphone/ Tablet |
|---|---|---|---|---|---|
| Mode – Smartphone | 6 | 6 | 6 | 6 | 6 |
| Median - Smartphone | 5 | 5 | 6 | 6 | 6 |
| Mode - Tablet Device | 6 | 5 | 6 | 6 | 6 |
| Median – Tablet Device | 5 | 5 | 5 | 5 | 5 |

Table 48: Mode & Median of - What would prevent you from using an app/ smartphone/ tablet-centric website for your study-related information needs?

This informed us that these listed attributes for an academic information site/app to have as barriers were choices that the cohort largely agreed upon. Instability, distractions, limited of functionality, slow responses and lack of compatibility. These barriers also helped feed into our refinement of the proposed LSISB model.

<u>Law students preferred mobile technology resource - What are the three most important</u>

<u>functions/abilities a smartphone compatible app/site should have in order for you to use it for</u>

<u>your studies?</u>

The results for this question were all divided by a total of 150 (N x 3) since each participant

could name 3 functions/abilities for both types of technology (Smartphone and Tablet Device).

Our results found that 32% (N=16) (Fig.99) did not comment on naming any preferred attributes

for tablet devices whilst for smartphones this number was very small at 3% (N=1.5). This again

showed that law students did not have much of an appetite to use tablet devices for their

studies. The 3 most popular functions for smartphones were user-friendly Interface (18%, N=9),

utilise document editing capabilities (17%, N=8.5) and speed of the App/site (13%, N=6.5).

For tablet devices, the 3 most popular functions were the utilisation of document editing

capabilities (17%, N=8.5), use of internet access/interconnectivity (12%, N=6) and the device

having a user-friendly interface (10%, N=5). Thus, both technologies had similar preferred

attributes which would help drive adoption with the only differential being that where for

smartphones law students valued speed and for tablet devices it was internet

access/interconnectivity.
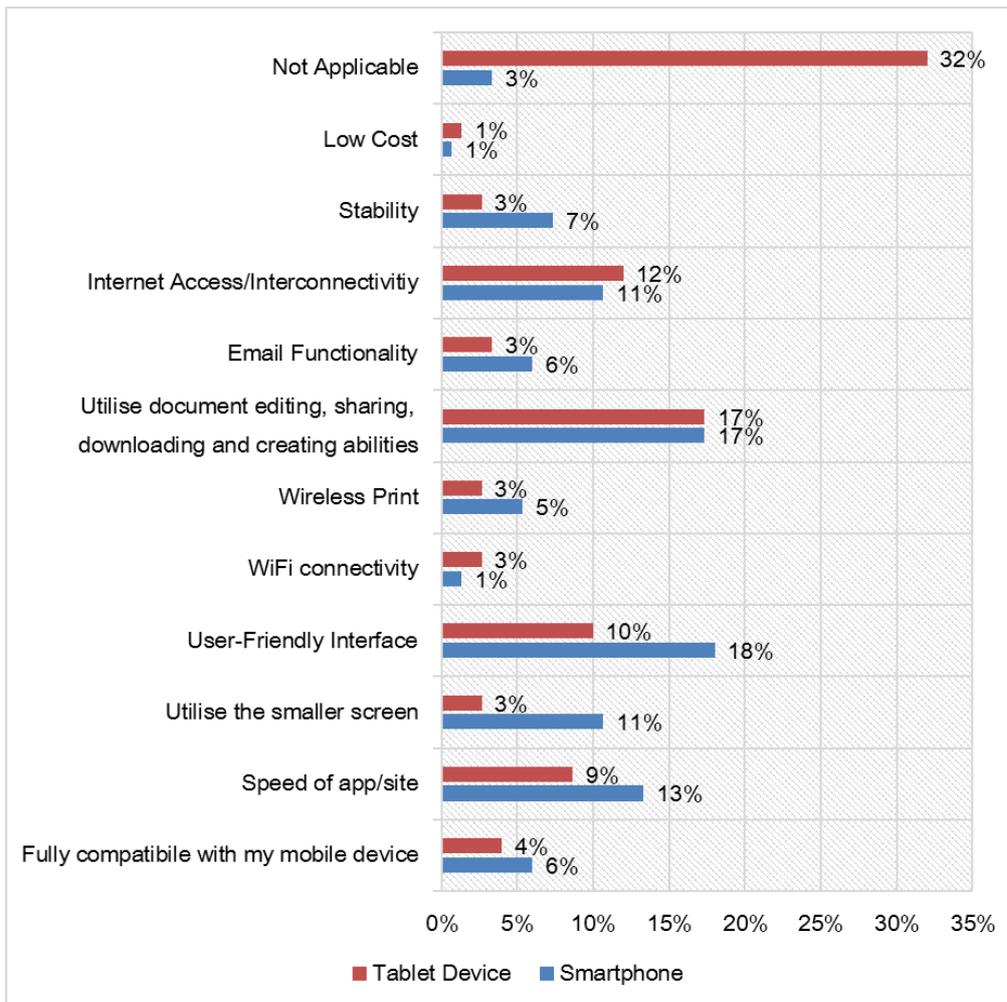
Figure 98: What are the three most important functions/abilities a Smartphone/Tablet Device compatible app/site should have in order for you to use it for your studies?

Overall, we noted that there was far more enthusiasm for using smartphones in this context than tablet devices, evidenced by the fact that most participants (32%) chose Not Applicable as their selection for tablet related functions. As for the popular functions, both technologies fared the same for user-friendly interfaces and document editing capabilities, but they differed on all the other named choices.

## 8.4.6  Discussion of Results

Law students' feedback for research instrument II showed that the quality and size of the screen on a smartphone was the most important aspect of the device. This tied in with the comments made earlier by law librarians who repeatedly pointed out the challenge law students would face when trying to read text on smaller screens. tablet devices had larger screens by nature but again for these technologies, the same attribute was of paramount importance to both cohorts (see Sections 6.3.1, 6.3.2, 6.5.2, 6.7.5 & 8.3.2).

Academic Information Seeking

For academic information seeking, law students mostly used a laptop or desktop PC, and this was a daily occurrence. The law library was also a valuable information source for approximately a quarter of the respondents, but this increased to over a third of the cohort when the frequency of using the information source changed to a weekly basis. Law students also reported that they would seek help from academic staff often on a weekly and/or monthly basis. What was interesting was that subject librarians were hardly approached for assistance and thus severely under-utilised. The provision of increasingly automated legal information resources on smartphones, tablets, laptops and the interaction with other students formed most of information sources for students and thus illustrated the competition law librarians faced to becoming the key information source for law students for their academic learning and research (see Section 6.10).

Academic vs. Social

Smartphones were used for academic information seeking but most of the time, this was for very brief periods only, as time increased, the frequency of using these devices for this purpose decreased. Though, for social information seeking, the usage frequency remained relatively steady and not significantly reducing over time as its use in the academic context showed.

Tablet devices showed the same usage patterns, and this matched with the feedback from law librarians where many commented that mobile devices would be best suited for short information seeking sessions only, especially given the text-heavy nature of legal content which would often require a larger screen to read and digest the data being read (see Sections 6.3.4, 6.5.3, 6.8.1, 8.3.2 & 8.4.2).

Long-Term Study Usage

When it came to laptops, the usage pattern was almost the opposite with students reporting a higher amount of usage as the duration of information seeking - both academic and social - increased. This demonstrated that students would use their laptops for long-term study of legal content but given the multi-functional capabilities of these devices, students would also be able to work and correspond to their colleagues, friends or their social circles simultaneously. laptops also provided a near-mobile user experience in terms of delivering a small physical form-factor which desktop computers could not and a computing capability that mobile technologies such as smartphones and tablet devices were unable to provide. Desktop computers however showed a rapid decrease in usage for both academic and social information seeking as the duration of the activity increased (see Fig.84 & 85).

Drivers for Mobile Technology Use

The most popular functions used on smartphones in the law library was the Internet browser, SMS/Text and the use of social media. This coincided with the comments made by law librarians who noted that their library catalogue was widely accessed by students using these technologies (see Sections 5.6.1, 6.7.3 & 8.3.1). Law librarians added that they had also witnessed the growth in the use of social media as a means of communication between the law library and the law student cohort and that this had been largely driven by the growing prevalence of "App" versions of social media tools being widely available on smartphones in general (see Sections 5.6.1, 6.3.3, 6.5.5 & 8.3.4).

And whist it was known that law students used smartphones primarily for communication and personal information seeking, there was a sizable proportion of the cohort which used these technologies to communicate with other law students for study related purposes as well as using them for quick browsing of academic information sources. Tablet devices were found to be used more in collaborative environments and group discussions, given their larger screens they were less personal and provided a means for small groups to engage with a digitally shared technology platform. However, given that smartphones could perform, by large, most of the functions that tablet devices could; albeit without a larger screen, they were observed as an additional technology that law students did not see the value in procuring.

Well-Suited Academic Uses

Laptops were the most popular technology that law students used for academic information seeking and studies in general, with Email and Internet browsing being the most popular functions being used (see Sections 5.6.1, 6.3.2, 6.5.3, 8.3.2 & 8.4.3). And tablets were not, as some would envisage, capable of challenging that position given their inability to provide the required functionality for writing notes and multi-tasking (Jackson 2014), (Perez-Hernandez 2014), (Hart 2015) & (Benson 2016) (see Section 8.4.4). Further challenging the footprint of tablet devices was the fact that many smartphones that were appearing on the market had larger screens, one of the strongest drivers that tablet devices had over smartphones – consequentially this was now diminishing as more smartphone models could provide a near-similar user-experience with all the other functionalities that a smartphone possesses intact.

Using the Law Library

Despite the many different technologies available to law students, they continued to use the law library to use legal resources, borrow material or find a quiet place to study (see Section 6.5.5 & 8.4.4.). Within the law library itself, Internet search and the use of email remained the most popular functions that law students used on their mobile technologies including that on laptops – however for the latter technology – the creation and editing of documents was also a very popular activity (see Section 6.3.2 & 8.3.2).

<u>Accessing Library Resources</u>

Law students were almost equally divided when asked about using their smartphones to access legal information resources provided to them. They also sought more holistic support in using resources via these platforms as well as more technical and user guidance (see Section 6.5.5 & 8.4.4). For tablet devices, support and resource provision was lacking from law students' perspectives, additionally, over a third of the cohort showed little interest in using these technologies in an academic information seeking context (see Section 8.4.4). For laptops, the feedback showed a clear popularity and favour towards using them with the majority to students reporting that they were supported and provided with enough resources to use for their studies (see Section 8.4.3). There were clear opportunities for using technology to build innovative information services that would enhance the law students learning experience and ensure that the law library leveraged these inventive ways of learning effectively (IGI Global 2015).

<u>Building a Suitable Resource</u>

We found that for smartphones, the ideal legal resource would be expected to have several attributes that were like those found in applications installed on laptops such as wireless printing, ability to copy/paste content to create revision notes etc. With retrieved content to be condensed so that it could be read on a smaller screen and a graphically enhanced user-interface that remembered search queries (see Fig. 68, Fig. 95 & Table 46). For tablet devices, we found the priority of the desired attributes to be somewhat different, in that law students showed that they were more inclined to be impatient when using tablet devices than smartphones (see Fig. 96 & Table 46). Students also wanted resources on tablet devices to have better designed interfaces, conversely, smartphones were expected to provide a better graphical display and links to other applications and social media tools. Again, these were indicators of the cohort's requirements for greater adoption of digitally formatted academic information services that the law library could work towards building. Efforts had been made in this area nonetheless with the law librarian cohort advising on such examples of mobile-friendly library catalogues, providing mobile tablet devices to law students with pre-loaded content as

well as interactive user-classes to help encourage the effective use of digital legal databases and other legal products (see Sections 5.6.1, 6.3.3 & 8.3.3). Studies in this area, such as that of Spezie et al (2013) & (Peters 2012), have also been carried out to help guide law librarians through this significant digital transformation whilst maintaining publisher and content neutrality and ensuring that all resources get the most exposure to the end user conducting a search. At the same time, barriers for using a smartphone for academic information retrieval included instability of the application, pop-up adverts leading to distraction, lack of functionality or restrictive functions, slow responses to search and poor compatibility with the smartphone operating system/form-factor (see Fig. 67 & Fig. 97). The same barriers were highlighted for tablet device-based resources, but their priorities differed also especially around functionality where law students indicated that they would be less tolerant of using a resource that lacked functionality on a smartphone than that on a tablet device (see Fig. 98). Also, for smartphones, law students expected resources to work faster and deliver results for searches in a shorter time-span.

## 8.5 Responses to Research Instrument III – The Law Student Search Study

This research instrument was more qualitative in nature the results were grouped together in a spreadsheet using thematic analysis (see Section 4.14.1-5). Similar comments made by law students were clustered and then any other comment made which was like the theme was counted towards it. For the demographics please refer to Section 8.4 as the cohort was the same for both research instruments II and III. This research instrument created a contextual scenario for law students and sought to find out how they would react and conduct information searches based in this given situation. The pre-amble to the questionnaire stated;

*"You recently undertook an assignment, and this required you to search for information to provide you with background/detail for your said task. This questionnaire is designed to understand which resource(s) you used, why and what your views are on the resource(s) itself."*

## 8.5.1 Locational

Locational – Where did you go to look for this information for your task?

The law library was the most popular location students chose when seeking for information relating to their studies 49% (N=24), this was followed by Home 35% (N=17) and then by PC Lab or Halls of Residence 8% each (N=4), this question was poorly posed as it asked for "Home" and "Halls of Residence" thus splitting the responses between those students who were based at their permanent homes and those who were based at the residences of their institution. Consequently, the response to this specific question was somewhat skewed and not a fair representation. What would have been better is a single question covering both "Home" and/or "Halls of Residence".
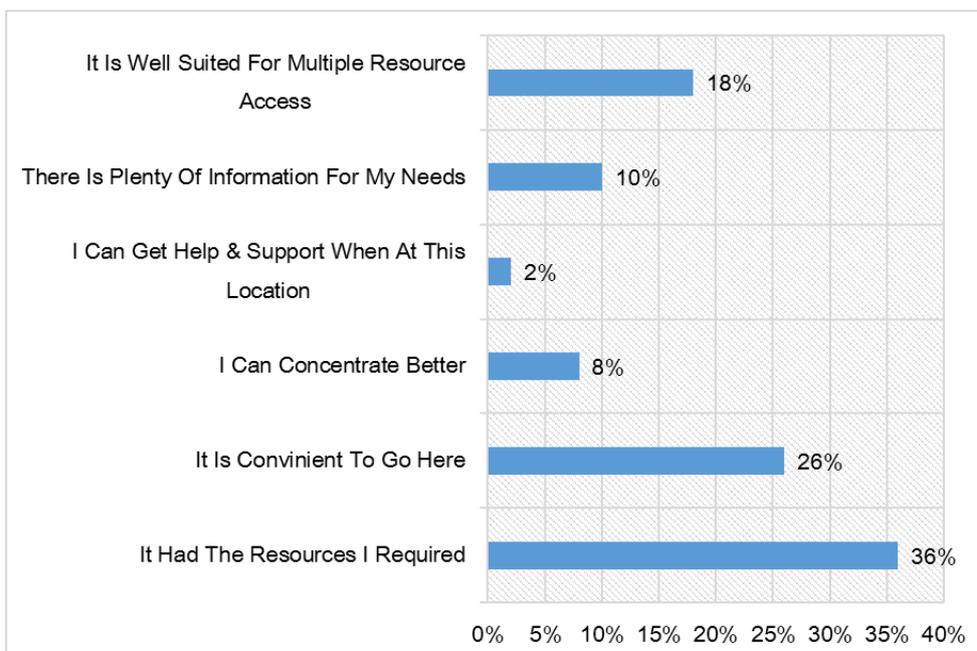


Figure 99: Why did you go to this location?

<u>Locational – Why did you go to this location?</u>

For these places noted (Fig.100) reasons behind going to these locations include, Resource availability 36% (N=18), convenience of location 26% (N=13) and the availability of multiple resources 18% (N=9).

## 8.5.2  Resource Focus

<u>Resource Focus – What resource(s) did you use to find the information?</u>

Electronic databases were the most popular resources 26% (N=33) (Fig.101) that students used, followed by web search engines 18% (N=23) and both text books and library catalogue at 12% (N=15) each.
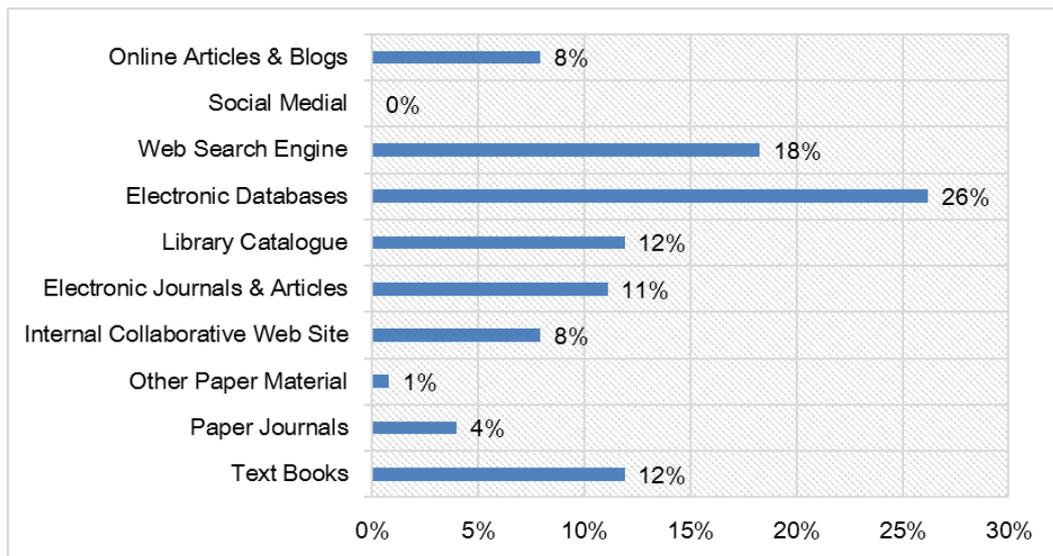


Figure 100: What resource(s) did you use to find the information?

Almost half 80% (N=40) of the participants said that they consulted resources due to the reliability of the content, this was followed by the usability 56% (N=28) and the accessibility 32% (N=16). Thus, we concluded that law students did value the content of the information they were receiving, and it was not just down to speed at which they could obtain it.

Most students 38% (N=19) found the required information within 15 minutes with 24% (N=12) taking longer up to 30 minutes and a further spending up to 45 minutes to fulfil their information need (12%, N=6). Also, most students did not seek assistance during their search process 82% (N=41), which showed that many of the resources were relatively well-designed and provided students with what they required thus little support related intervention was required.

The remaining 18% (N=9) that did seek assistance conducted this in the form of consulting with friends/fellow students 56% (N=5) or library staff 44% (N=4). Overall from their information search almost all the participants found the information they sought 86% (N=43), with the remaining 14% (N=7) needing to conduct further searches. Most of the students who were happy with their results 92% (N=46) praised the quality of the resources and the content, those who were not 8% (N=4) cited that some resources did not have the granular information they required as well as the resources providing too much focus on the academic context as opposed to taking a practical law one.

## 8.5.3 Result Focus

Result Focus – Did you consult other resources for your information search? Please explain why/why not?

56% (N=28) of respondents did not consult any other resource other than the main one they used when their search started, citing that the resources that they required were readily available 18% (N=9) or the resources used were sufficient 38% (N=19), the remaining 44% (N=22) who did need to consult more resources, 36% (N=18) informed that this was due to the original source not having sufficient information and 8% (N=4) outlined that they did not have enough time to use the first resource they came across.

## 8.5.4 Resource Feedback

<u>Resource Feedback – What did you like most about your most preferred resource for this information (3 reasons)?</u>

We asked each law student to provide 3 reasons for choosing their most preferred resource, we sought to extract the drivers behind their choices and once we had the result these were divided by 150 to ensure that the ration of students (N=50) was kept in line with the 3 choices each made. Our results showed that convenience was the most important driver 25% (N=13) followed by the depth of information and the user-friendly interface of a resource – both at 19% (N=9).

<u>Resource Feedback – What did you like least about your most preferred resource for this information (3 reasons)?</u>

Conversely out of this group of respondents, the 3 most listed barriers were the resource being hard to access at 27% (N=13), resource not being user-friendly 25% (N=12) and the resource being too time consuming 16% (N=8). These results all coincided with the outcomes so far that whilst students wanted to retrieve information quickly, they valued convenience and the design of the product as well. Most students did not collaborate with others during their search activities at 90% (N=45) with the remainder conducting some small-scale collaboration. This outcome was largely due to the nature of their task and their desire to study in isolation. Additionally, the requirement to complete an individual assignment was also a key factor.

## 8.5.5 Collaboration & Tools

<u>Collaboration & Tools – If you haven't already, would you consider using a smartphone/tablet device for the information search?</u>

We then started to find out if students would use mobile technologies for their studies and the user-experience behind this.

We found that 44% (N=22) of the respondents would not consider using a smartphone for their information search, however 34% (N=17) would and 22% (N=11) had already done so, this represented a 56% (N=28) total positive attitude towards using such technologies in this context. We also found that 36% (N=18) of the law students polled stated that they would consider using a tablet device for their academic information search. 30% (N=15) informed that they had already done so and the remaining 34% (N=17) advised that would not consider using this technology for this purpose. These results show that overall, 66% (N=33) of the sample group was in favour of using tablet devices for Information Seeking.

Collaboration & Tools – Please explain why/why not? (Would you consider using a smartphone/tablet device for the information search)?

Most students stated that the driver(s) for using a smartphone for their information seeking needs included the suitability of these devices being used whilst in transit 22% (N=11) and being well-suited for quick information seeking activities 20% (N=10). However, on the negative aspect, barriers for use included the lack of suitable functionality that allowed for extensive information searching and inputting of data 18% (N=9) as well as the screen size of a smartphone in general, being too small for extensive searching 20% (N=10). The lack of suitable resources was also a barrier 12% (N=6). Almost a third of the respondents 30% (N=15) indicated that tablet devices were well suited for academic information seeking, this was followed by a further 22% (N=11) who found these devices to have better user interfaces than that of smartphones. For barriers, 16% (N=8) informed that they did not want to use such a device for academic research and 14% (N=7) advised that they did not own a tablet device. The interfaces for tablets were more popular amongst the sample group than those compared to smartphones, furthermore this impacted the use of the specific technology for extensive information searches. However, we found that whilst students complained about barriers for smartphones, there was a group of students who did not want to use tablet devices at all, at 16%.

Collaboration & Tools – If you did use a smartphone/tablet device for your search, what were the 3 key reasons for you to do so?

Only 29 of the cohort responded to this question thus for this question only our sample group became (N=29). Of this total, 41% (N=12) voted that smartphones provided a relatively quick means to fulfilling an academic information need, 38% (N=11) outlined that they used smartphones for academic research as it enabled them to conduct this activity whilst in transit and the remaining 21% (N=6) used these devices when they were unable to use laptops or desktop PC's. For tablet devices, more of the cohort responded (N=35) to name the 3 drivers for using tablets chose convenience at 77% (N=27), speed at 57% (N=20) and the larger screen 51% (N=18) as being the most important aspects for using these devices for their studies. For tablets, we learnt that speed was not such an important driver in comparison to smartphones, portability was also not as important but convenience at having a larger screen device which would require less setup than that of laptops or desktop PC's yet provide a better readable experience than smartphones made tablets appear to be more favourable in certain aspects at least.

Collaboration & Tools – If you did not use a smartphone/tablet device for your search, what were the 3 key reasons for you not to do so?

For this question, all the students still responded, even those who did use these devices for their studies. We used these outputs as further opportunities to find out what other barriers there may exist for this contextual use. Hence of the total cohort (N=50), we took the total number of barriers (3 x N) and divided this figure by 3 to provide the proportional representation of the cohort. It was learnt that 25 % (N=13) complained that there was a lack of suitable resources for smartphone usage in this context, 23% (N=11) outlined their preference of using laptops or desktop PC's instead and 22% (N=11) highlighted the small screens as being a hindrance to use.

For tablet devices, 27 of the students responded to this question out of the total (N=50), from within this subset we found that 23% (N=6) preferred to use a laptop or desktop PC, 19% (N=5) stated that tablets were unable to multi-task and 16% (N=4) informed that tablets' lack of effective document editing or printing capabilities was a barrier.

## 8.5.6   Discussion of Results

Results from Research Instrument III outlined the drivers and barriers for the use of Mobile technologies for academic information retrieval. Our discussion included a number if vignettes from our research feedback.

Why use the Library?

Given its contextual basis we found that the law library was by far the foremost place that law students would got to find information for their academic needs. Comments included;

*"I went to the library as I knew it was the place I could concentrate the most. Additionally, I knew that if I incurred any issues when conducting my research there would be staff there that could help me with any needs.*"

This was followed by students opting to go home largely due to students having the relevant materials at their residence and electronic resources being accessible from this location via an internet connection;

"*Locations tend to vary depending on resource needs. Roughly 90% of materials are accessible directly through our online server, so I can gain access from my PC and then work from my Halls of Residence or in libraries. At the beginning of my degree, locating hard-to-find materials required me to head over to the law library but many of these are increasingly being uploaded to the same server already discussed.*"

Use of Resources

Electronic databases and Web Search engines were the most popular sources of legal information and these were used for brief periods with students managing to find the information they needed without having to look at other resources elsewhere.

Amongst others, the key drivers for using these resources were reliability of content, user-friendly interfaces and the depth of information and content they provided;

"*Law databases have concrete articles and authors which would be related and they are searchable by keywords, authors, and articles are linked to the specific and relevant cases.; JSTOR would be used for other academic articles which may not be available in WL or LN, or for topics which may not be 100% law related.; Google can be useful to uncover some harder to find articles or general arguments and conceptions of the topic.*"

Also, some functionalities that were part-and-parcel of electronic resources such as search capabilities had proven to be very popular;

"*Generally everything would be available online and it's more economical to use the computer especially with functions such as control-F which renders the hardcopy law journals tedious and laborious.*"

Barriers for Usage

Where barriers to use existed, these were identified as lacking user-friendly interfaces, information overload and difficult to access;

"*Sometimes, getting too much information can become a problem*" And "*Lack of consistency of document quality - a minority of articles are badly photocopied from hard copies and thus have unreliable search functions.*"

Poor functionality proved to also been quite frustrating;

"*…in case of expiration of on-line session, I lose my search results - this is a significant inconvenience*" And "*May not be categorised properly, one still has to sieve through the results*"

Most law students reported that they had used their smartphones for their information search given the speed at which these devices provided information as well as their portability;

"*It's like a mini computer and is a convenient way to obtain information.*"

Some even used it as an alternative information seeking device to their laptops;

"*I use it when my laptop has run out of battery.*"

But those who did not, advised that the small screens on these devices, poorly formatted user interfaces and lack of functionality prevented them from doing so;

"*Too fiddley to work on a small screen. Also, takes too long to load and the websites are rarely compatible.*"

Law students were just as willing to use tablet devices for their academic information search, citing the larger screen and speed at which information could be retrieved as key drivers;

"*It is as easy as a mobile device but a larger screen.*"

In addition to this, the matter of accessibility was also raised Legal information was the core service that was provided by law libraries, hence access, access for the disabled student population, control, ownership and management of this content was an essential topic and products that challenged or changed this way of operation would naturally face hesitation towards further adoption and integration into the law library domain (Osborne 2012), (Dieker 2016). With the market for these products rapidly changing in terms of content and provision together with modern technologies evolving at a fast rate, law librarians throughout both the exploratory study and detailed investigation appreciated the necessity to be able to understand and keep informed of these changes to best manage their service offering.

Ownership of Technologies

However, one of the key blockers that prevented usage of these devices was ownership and the fact that the physical difference between a tablet device and a laptop was less than that of a smartphone and a tablet device, thus may law students were with the mindset that if they had already reached the point of using a tablet device then the use of a laptop became more appealing given the additional capabilities that the latter technology could provide.

"*Most tablet devices currently lack the functionality of a larger computer and are again meant for convenience and transportability. Though I would be more inclined to use a tablet device than a smartphone for research purposes, as the screens are larger, I would still prefer to use a laptop or desktop computer.*"

Also, tablet devices were not as widely owned as smartphones and thus usage was not always down to any fault of the technology but ownership of it, students pointed out that the cost and the need to carry another technology simply could not be justified enough as well as the indication that possessing a smartphone and laptop was enough;

"*Not owning a tablet - they aren't cheap!*" and "*It just wasn't necessary because I had my laptop*"

Too Many Technologies

It became clear that whilst there was an appreciation of tablet devices, the gap between the functionalities and capabilities of smartphones and laptop was not big enough to warrant the need for yet more technology. Law students were overall happy to work with smartphones and laptops in their respective contexts, and where available, prepared to use tablet devices but would not go out of their way to do so. We learnt that law students looked at Smartphones initially to scope out the availability of the content they were after and then use that as a determining factor on whether to consult electronic or non-electronic resources based on their contextual environment as well as the complexity of the content that they sought to examine.

Emerging Themes

The emerging commonalities that were found in the output from this research instrument were;

Design of Electronic Resources for Law Students

Where the screen size directly impacted on the access and use of legal information on a technology platform and functionality was a key driver and barrier for using a technology for legal information seeking.

Law Students' Use of Mobile Technology

Where laptops remained a popular and well-trusted technology that provided the right level of power, functionality, capability, interoperability and durability for most if not all the law students' needs, and no clear winner was apparent for legal resources on mobile platforms.

The themes of law students' use of mobile technologies and the design of electronic resources being used by them continued to be apparent throughout the feedback analysis. We also used the feedback from these Research Instruments to map out the attributes raised against the technologies we discussed to provide the following updated table (Table.48).

| Technology | Attribute | Description | Law Student - Detailed Investigation |
|---|---|---|---|
| Smartphone | Driver | Need quick results/small segments of information | ✔ |
| Smartphone | Barrier | Lack of battery power on the Smartphone device | ✔ |
| Smartphone | Barrier | Small screen/poorly designed resource interface | ✔ |
| Smartphone | Barrier | Lack of network or Wi-Fi signal in surrounding area | ✔ |
| Tablet Device | Driver | Larger screen making it easier to read legal content | ✔ |
| Tablet Device | Driver | Detailed information need and being physically mobile | ✔ |
| Tablet Device | Barrier | Lack of battery power on the Tablet Device | ✔ |
| Tablet Device | Barrier | Lack of Wi-Fi signal in the surrounding area | ✔ |
| Tablet Device | Barrier | Need to edit existing and create additional information | ✔ |
| Laptop | Driver | Need to write document | ✔ |
| Laptop | Driver | Require multi-session search | ✔ |
| Laptop | Barrier | No power sockets available for charge | ✔ |
| Laptop | Barrier | Lack of Wi-Fi signal in the surrounding area | ✔ |
| Desktop | Driver | Require lengthy information search | ✔ |
| Desktop | Driver | Require multi-session search and other resources | ✔ |
| Desktop | Driver | Need to write document | ✔ |
| Desktop | Barrier | Need quick results | ✔ |
| Desktop | Barrier | Not available for use | ✔ |
| Paper | Driver | Need specialist legal information not available digitally | ✔ |
| Paper | Barrier | Paper resource unavailable | ✔ |
| Paper | Barrier | Student not in location where paper resource accessible | ✔ |
| Paper | Barrier | Resource difficult/laborious to locate | ✔ |

Table 49: Identified Attributes of Information Behaviours Using Technologies – Law Students Feedback from Research Instruments II & III (Detailed Investigation)

We still needed to find out more about legal resources and not just the technologies used to

access them. These resources would undoubtedly have their own drivers and barriers together

with rationale for motivation of use and other attributes behind accessing them, especially

through mobile technologies. Because of this requirement, a more detailed study was

conducted which is outlined in Chapter 9.

# 9 A Detailed Investigation into Students' Mobile Information Seeking Behaviours – Phase II

## Chapter Overview

In this chapter we present the findings of the other 3 research instruments (IV, V and VI) we used for the detailed investigation, these instruments were built from the findings of the first 3 research instruments (I, II and III) and were geared towards extracting more specific thematic information and detailed specifics on the usage of electronic legal information resources. The cohorts are introduced and from this, the results are outlined and discussed. The proposed LSISB model is also re-visited with the findings from the focus group and adjustments to the proposed model made accordingly as well as refinement from the drivers and barriers we have noted from the responses of the cohorts in general.

## 9.1 Cohort Overview

We used the approach of re-visiting members of both cohorts (law librarian and law students) who had participated in the research to re-recruit them into participating in research instruments IV and V. This participation was conducted using the same consensual methods as previously agreed with the ethics committee as well as the participants in that their input remained anonymous.

### 9.1.1 Law Librarian Participation

Only three law librarians could participate in this component (Table.49), these participants were recruited from the previous cohort used in the exploratory study (See Chapter 6).

| HEI Location | University Type | HEI Count | Percentage (%) |
|---|---|---|---|
| England | Old University [A] | 2 | 66% |
| England | New University [B] | 0 | NIL |
| Wales | Old University | 0 | NIL |
| Wales | New University | 0 | NIL |
| Scotland | Old University | 1 | 33% |
| Scotland | New University | 0 | NIL |
| Northern Ireland | Old University | 0 | NIL |
| Northern Ireland | New University | 0 | NIL |
| **TOTAL** | | **3** | **100%** |

Table 50: Law Librarian Participation in Research Instrument IV – The Law Librarian Thematic Questionnaire

## 9.1.2  Law Student Participation

The cohort consisted of 11 law students (Table.50), these students had already taken part in the previous questionnaires (Research Instruments II and III) and had identified themselves as willing to participate in future studies when the initial rounds of questionnaires were fielded., hence they were approached for participation in Research Instrument IV in May 2016. The breakdown from a HEI perspective was as follows;

| HEI Location | University Type | HEI Count | Percentage (%) |
|---|---|---|---|
| England | Old University [A] | 5 | 83% |
| England | New University [B] | 0 | NIL |
| Wales | Old University | 1 | 17% |
| Wales | New University | 0 | NIL |
| Scotland | Old University | 0 | NIL |
| Scotland | New University | 0 | NIL |
| Northern Ireland | Old University | 0 | NIL |
| Northern Ireland | New University | 0 | NIL |
| **TOTAL** | | **6** | **100%** |

Table 51: Law Student Participation in Research Instrument V – The Law Student Thematic Questionnaire

**NOTE**:

**A**: Old Universities are defined as HEI founded prior to 1992, **B**: New Universities are defined as HEI founded after 1992

The total counts for the various demographics were as follows (Tables 51 - 53).

| Gender | Count | Percentage (%) |
|---|---|---|
| Male | 6 | 55 |
| Female | 5 | 45 |

Table 52: Gender Count

| Academic Year | Count | Percentage (%) |
|---|---|---|
| 1st | 6 | 55 |
| 2nd | 3 | 27 |
| 3rd | 2 | 18 |

Table 53: Academic Year Count

| Study Course | Count | Percentage (%) |
|---|---|---|
| LLB | 8 | 72 |
| LLM | 3 | 28 |

Table 54: Study Course Count

## 9.2 Responses to Research Instrument IV – The Law Librarian Thematic Questionnaire

The thematic questionnaire for law librarians was built from the responses obtained from research instrument I – which were themed and then based on the findings more questions created to provide more granular details which would work towards answering the research question.

Theme – Ownership vs. Access

Do you feel that there are significant differences between collections of physical and electronic resources? Please give specific examples to illustrate your answer wherever possible.

Control

Of the three law librarians who took participated in Research Instrument IV, all expressed their frustration over their lack of control they had in the development of electronic resources vs. paper-based ones. The prime concerns raised were how electronic resources were being developed, marketed and deployed with little engagement of law librarians;

"*In my view, the current situation of electronic resources makes me very uncomfortable as I feel law librarians have no power and if vendors have a technical issue with their database and we lose access to it temporarily then we don't get compensated for this. There is also a concern that the larger legal database providers are seeking to incorporate more specialist material within their collection and then use this as a justification to charge more fees for the larger collective group.*"

<u>Ownership</u>

There were also concerns over the lack of ownership of electronic resources as access was via subscription basis only and ultimate ownership lay with the vendors; who were at liberty to remove access to the said material if the subscription fees were not paid. Loss of resource access due to technical faults either due to the vendor or the law library's infrastructure was also a concern, complexities in technologies increased this risk which did not exist with paper-based resources, in the latter formats case the materials were either available on the shelves or not. Whereas with electronic resources the picture was more complicated.

"*Additionally, it's a case of physical ownership, if we subscribe to legal material for many years and we have copies of it, we keep it, even if we unsubscribe. With electronic resources, regardless of the duration of subscription, once we unsubscribe, that's it, we lose - access. From my standpoint, vendors have all the power in this process and we have none, we are at the mercy of the vendors and this is very uncomfortable.*"

Another participant commented;

"*The main different I see is that with physical resources, we own them, and this gives us the confidence that we will retain access in perpetuity. With electronic, we don't have this advantage and constantly fear losing access to the information.*"

<u>Standardisation</u>

The way electronic resources were packaged and sold to the academic market was also something that law librarians were not happy about, largely due to a lack of customisation of the content and more focus on "standardisation" of the collection which was then sold to the HEI.

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"*Problem here is that if, for example our faculty only has 20 students out of 600 who may need that specific resource then we would need to pay for the entire 600 to access it, since it will be part of a larger collection of more general legal material. Thus, consolidation on this level with this type of pricing strategy is not welcome.*

*What law librarians would like to see is all vendors, especially the two largest ones to sign up to the EDUSERVE agreement which promotes a more transparent pricing structure throughout all the HEI's in the UK and ensures that we get the same deal. Westlaw and Lexis are not part of this process and thus are at liberty to charge individual HEI's what they like.*"

<u>What do you think are the overheads for managing electronic resources? How do they differ from those needed to manage physical resources?</u>

<u>Licensing and Infrastructure</u>

Licensing costs and other technology costs associated with managing access to these materials were a challenge, the administration of electronic resources was observed as a complex process which was not always streamlined and easy to interpret.

"*The administrative overhead for managing electronic resources is quite complex, we need to continually look at things like access to the resources, license updates, availability.*"

Charges for electronic resources were subscription based, thus cessation of the subscription fees often resulted in immediate termination of access to the information;

"*Costs for online resources are often subscription based, which require an ongoing financial commitment.*"

<u>Access Management</u>

There were also challenges where access to electronic resources needed to be better managed to prevent unauthorised use and costs to manage this risk was substantial;

"*Associated IT platforms – such as managing access to our resources and ensuring that only approved persons have access to the material. We invested in Shibboleth to help us manage this. Training is another overhead, this tends to be more required for electronic resources.*"

Overheads for managing paper-based resources were well-established within the psyche of the law library domain, whereas electronic resources, which provided near unrestricted access irrespective of location and time, still had their own challenges as mentioned above;

"*Physical resources tend to be easier to manage and, in our control, requests for support is also typically based around our opening hours. Whereas for electronic resources, support can be requested at any time and from remote locations – this is something we find challenging.*"

Do you think that there are any limitations to either physical or electronic resources?

Accessibility

Physical resources did have restrictions of their own, primarily the need to have enough physical copies for all law students to be able to use them. Accessibility of physical resources was a prime barrier;

"*Physical resources have the natural limitation of one-user at a time and we find that when resources are scarce but in high demand, some students would tend to "hide" these resources so that others cannot have access to it. This is a bad practice, but it happens.*"

Physical Restrictions

A thematic analysis of the text (Fig.102) showed that physical resources were somewhat limited by their tangible attributes in that there were only a limited number of books a library could stock, thus if demand increased and supplies were not available then there was always the risk that students would not be able to access required resources.
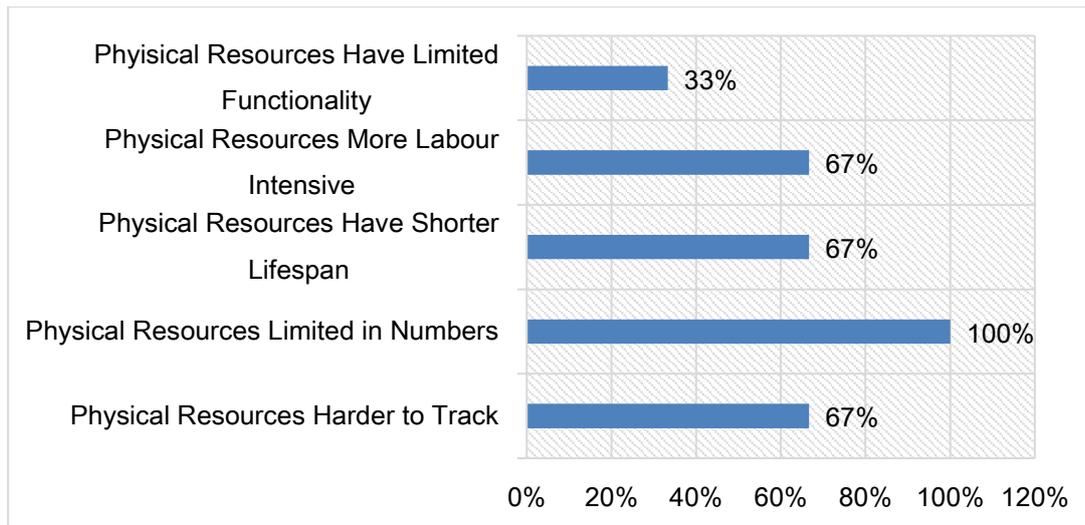
Figure 101: What do you think are the overheads for managing electronic resources? How do they differ from those needed to manage physical resources?

Physical resources were also limited by their shorter lifespans, wear-and-tear, requiring manual labour to manage as well as being more difficult to track in case of theft or vandalism. Digital resources removed all of these risks very quickly. Physical resources were noted to be harder to track (physically) and had a shorter shelf-life in many cases as well as being more labour intensive to manage.

"*Also, for text books, we find that when academic staff recommend them then there is a flurry of requests, sometimes at very high volumes and we tend to err away from purchasing too many copies as text-books tend to have a 2-year use-life.*"

Vandalism was also a concern;

"*For physical resources, one key limitation would be that if we hold one copy of a resource then by virtue, access is limited to this number.*

*Also, we tend to be faced with vandalism of physical resources where pages from books are missing or books misplaced so that other students cannot find them.*" There were some limitations to electronic resources in terms of suability and accessibility, especially when technical faults arose;

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*"Electronic resources are sometimes seen as limiting by overseas students and mature students who may not be as technically confident as most our undergraduates. Similarly, there are times when the technology fails, and this can lead to widespread impact on the accessibility of resources, this has even happened at a time when we were conducting an assessment for a key course and many students suffered as a result."* Other risks such as plagiarism and increased printing costs were also mentioned;

*"We find that electronic resources are less labour intensive, but students have problems sometimes reading the text on the screens or wanting to print and annotate the material, some e-copies do not allow printing or those which do, largely lead to significant printing. Also, the copy-and-paste activities that students tend to use can often lead to plagiarism and this is something we need to keep an eye out for as it is a significant risk."*

<u>As a Law Librarian, what do feel is most important to you when choosing a resource?</u>

Content was the most important aspect when law librarians chose a resource, especially ensuring that it met the requirements of the study course. Usability and the cost of the resource were also important. The student user-experience was noted as being of prime importance, but law librarians were restricted in choice due to budgetary pressures, hence they struggled at times to choose between the two different formats of resources;

*"One of the drivers for me is that the materials need to align with our teaching requirements and needs of our course content. Moreover, the resources need to provide a good learning experience and support our teaching areas. Our funds are limited so we need to be very careful in how we invest in resources so when there may be more than one type of resource covering the same area I would look at the ease of use of the resource, licence costs for accessibility (specifically if the resource is electronic and some publishers place restrictions on the number of students who can access the item)."*

Which electronic legal resources do you feel are the most popular? Please list them.

Westlaw and Lexis were the most popular electronic resources, the reason for their popularity included;

"*Westlaw is the most popular as it is more user friendly, its interface is a lot clearer and less busy when compared to other legal databases. Also, it enables students to run search queries in a more intuitive manner. Lexis is second most popular, and this is due to its content more than anything, especially since it contains Halsbury's Legal Encyclopaedia which is a very well used resource.*"

Some resources were popular as they catered better for a specific sub-set of law students such as those studying for the BPTC and LPC courses;

"*Practical Law Company is, I would say, the third most popular in that it tends to be used mostly by BPTC and LPC course students as it contains legal forms, templates and current legal information which is very relevant to their particular needs. Also, it is very good for current awareness of legal topics.*"

Commonly, law students were left to start using any of the resources available to them and then built up a rapport with these materials over time, as their confidence with the specific product increased so did the likelihood of using it/them;

"*Generally, if students find a particular resource to work, then they continue using it.*"

Please can you explain what you think each of the resources named previously in your responses is used for?

Electronic resources' popularity was driven by several factors and this included a large variety of material contained within, this would include specialist content as well as general legal information. Relevant content which suits the taught course(s) and findability of information that is required.

Some electronic resources were viewed as highly valuable, but their promotion and marketing did not manage to capture the attention of law students, hence some law librarians opined that some vendors needed to ensure that their products were brought to the attention of the law student body effectively;

"...Justcite... is a small company and so not as driven in its marketing and promotions as the other two thus not used as much as it could be."

For each named resource, please can you explain why you think you/law students prefer them?

The participants outlined the following attributes for preference of some electronic resources;

"I. It just looks a lot friendlier and less clutter, a bit like a "google" like interface helps. Its navigation function is excellent.

II. Lexis contains a lot of text and this tends to put people off.

III. Justis' interface is also a bit like "google" but this is specifically for case laws and a lot of its content crosses over into Westlaw and Lexis so not all universities subscribe to all of Justis' functions."

Some noted the perceived usability as well as the content contained therein.

Can you identify any factors that may encourage the use of these particular resources?

Again, perceived attributes that encouraged use of some resources included;

"I. Westlaw use tends to be driven by its content and user-friendliness

II. Less clutter in the interface

III. Nothing to comment on but improved marketing and promotion of the resource would help its use amongst law students"

Also, some products were promoted better in terms of marketing as well as providing on-campus support persons who actively engaged with law students to support them and given them hands-on training in using the products themselves.

<u>Can you provide examples of how the usability of these electronic resources could be enhanced?</u>

<u>Content</u>

Content, which was outlined as a major driver for the use of some resources was also noted as a barrier where it was limited;

*"I. Content – in terms of Journals, is not enough, the journals don't go back further than 1985 and when student need to refer to historical text, this does not help. The students then end up having to look elsewhere."*

<u>Findability</u>

The required effort to locate information was also a barrier, especially where too much effort was required, this often-pushed law students to look elsewhere;

*"Also, when using the case-locator function, it often requires students to carry out multiple "clicks" to get to the information they need and often this is not contained within Westlaw. However, it is not clear whether it is available or not so students get frustrated at clicking - multiple times and discovering that they text they need is not available. What would help is if Westlaw could introduce some sort of icon within the case-locator which would identify if the text is available or not – this would help."*

<u>Quality</u>

Some suggestions were made to improve the quality of content that could be retrieved through better integration with other information sources;

*"Greater linking between searches and full text (thinking about Lexis and Westlaw here) students use more than just UK, needs to be greater integration between national and international."* But this too was sometimes limited due to corporate and technical restrictions;

*"Westlaw and Lexis would be used more if they were able to be searched via our internal Library search function (Primo), however this requires for our system to be able to access the metadata structure of these resources and the vendors are not prepared to do that. Thus, if a student searches for legal information via our internal search function then legal resources -*

*excluding Lexis and Westlaw are returned in the search and students then have to use the two databases directly if they want to check further."*

Having said that, the present situation did sometimes force law students to actively think about using various sources of information and utilise effective research skills;

*"On the other hand, however I can see that this can benefit law students somewhat in that it encourages them to independently look at other resources and not simply focus on a single search source, to be honest, in the industry they may not have access to such a search function as our library search engine."*

<u>Research Skills</u>

The lack of research skills of law students was all too apparent and cited again as a concern, especially given that some electronic resources were perceived to be doing a lot of the research effort for them, albeit in a biased manner where the content was dictated by the vendor who often provided the search interface;

*"However, the concern I have is for students who may be studying legal materials as part of a component of their course, e.g. students studying surveying may need access to property law and may not have the time, skills or need to have to access many other resources, they would often go straight to our Primo search system and no further."*

Studies within the area of law students' use of digital resources have recommended that institutions provide more structured training in using appropriate material as part of their academic instruction (Kadli & Hanchinal 2015) & (Anyaegbu 2013). This recommendation has come into being from the changes in teaching styles and the growth of technology within the classroom which most incoming law students have been widely exposed to, thus would ensure a continuation of such a successful pedagogic approach.

<u>Interface Design</u>

A poor user-interface was also a barrier and where too much effort was needed to locate information, compounding the law students' search effort;

*"II. Lexis' user interface is quite hard to use and requires too many clicks before the content becomes available for a search, this is a real barrier and it is not as intuitive as it could be."*

Frustratingly, some resources possessed good user-interfaces but were not as well marketed and promoted thus the lack of product awareness amongst the law student body resulted in low usage;

*"III. Justis' product is good however it lacks the marketing proficiency that the two other competitors have. In fairness, they have a great product called the "precedent map" which is very useful."*

Overall, the challenges of resources and their design included the content, usability, functionality and marketability. Some resources were well built and marketed so their use was widespread, this however led to a dependency on the product itself and if the content was varied enough, it inadvertently discouraged law students to look elsewhere. On the other hand, some products had poor user interfaces, and this hampered law students' efforts to search for information, at times they may be successful in their search but other times they may simply give up and look elsewhere. At the other end of the spectrum were resources that provided good user-interfaces, but poor or restricted marketing did little to raise their profile before the law student cohort and this in turn hampered their user population.

## 9.2.2 Discussion of Results

The discussions with the law librarians found more detailed background on their perspectives of electronic and non-electronic resources. The focus on electronic resources showed that whilst these types of products were highly used in the law library domain, there was still plenty of room for improvement as well as calls for effective management of these products in terms of their usage, promotion and development. At the same time, law librarians felt that they did not have the same level of perpetual control of electronic resources as they would over their paper-based holdings.

Their frustration was furthered by vendors making changes to access, designs and product content often without consultation and in several isolated cases, unilaterally removing access due to some internal business change despite the HEI paying the subscription fee. This type of activity was not solely reserved to the legal information industry as reported by Dieker (2016) and there is ample evidence that the issue of digital content ownership is not an isolated one but something being actively discussed (North Carolina Consumers Council 2016) and (Fellmeth 2016). Ultimately law librarians had a vested interest in ensuring that the law students' user-experience was as best as possible as well as their research skills were not hampered through the inadvertent encouragement of over-dependence on specific electronic resources and denying them the opportunity of looking at other legal sources.
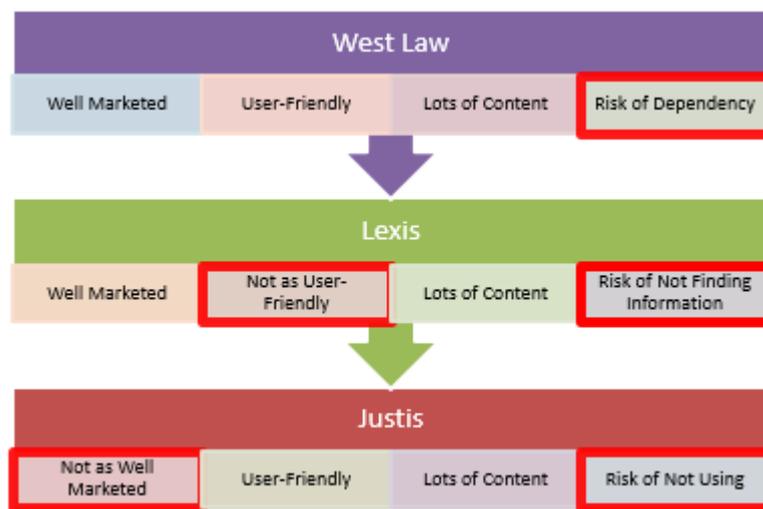


Figure 102: Drivers and Barriers of Electronic Resources

The illustration (Fig.103) shows the three main electronic resources discussed in this research instrument and the individual drivers and barriers (outlined in red boxes) observed. Each product provided an opportunity to look at the drivers and barriers and see where improvements could be made to ensure that dependency was controlled, user-experience was effectively delivered and managed, findability of information was made possible and awareness of the resource was made.

The challenge to the law librarians was that they needed to provide a more balanced collection of resources to law students so to ensure that a wide variety of legal information was accessed for their research and learning. Some electronic resource providers had a clear head-start in terms of product availability and this only compounded the law librarians' efforts.

Despite the informative responses this Research Instrument received, we were limited to the responses of only three law librarians, two of which were from old HEI's in England and one from an old HEI in Scotland. New HEI's from England, Scotland, Wales and Northern Ireland or old HEI's from Wales or Northern Ireland were not represented. This was due to the time constraints that were faced by the research project as well as law librarian availability to participate. Because this Research Instrument was primarily focussed on attributes not specifically targeted at technologies used by law students but more on resources and their ownership, the attributes table was not applied here. The feedback to this instrument was used for our greater understanding and towards the recommendation's deliverables.

## 9.3  Responses to Research Instrument V – The Law Student Thematic Questionnaire

The purpose of this research instrument was two-fold, firstly to explore in greater detail what mobile technologies are used by law students for their academic information seeking needs and second, to specify and elaborate on the various legal information resources at law students' disposal and find out what the drivers and barriers are for their use. Where possible, the participants were asked to elaborate specifically what drove them to using specific resources and identify what discouraged them from using some resources at the same time. Two electronic questionnaires were built using the themes that were outlined from the earlier research rounds, these questions were also designed to obtain a more granularly focussed output towards the use of mobile devices in general for academic legal information seeking as well as resource use experience.

Of the 11 respondents, two did not complete the questionnaires as instructed hence their responses were discarded and our final count of participants went from 11 to 9. In the first instance, 70% of the participants informed that they used a mobile technology to access legal information for their studies, whist 30% did not. Those who did not, were asked to only complete questions 5 and 6, whilst those who did, completed questions 1, 2, 3 and 4.

Law students' use of technology – Question 1. What kinds of mobile technologies (hardware) do you use for your legal studies? (e.g. smartphone, tablet, etc.)

55% (N=9) of the respondents indicated that smartphones were the most widely used mobile technology for their legal studies. However, many respondents also informed that laptops 44% (N=4) and tablets 44% (N=4) were also used in conjunction with these devices as they conducted their research.

Law students' use of technology – Question 2. Why do you use mobile technologies to access legal information for your studies?

33% (N=3) of the participants replied that they used a mobile device to access legal information for their studies because it was quicker, a further 22% (N=2) indicated that resources delivered via mobile platforms tended to be more current than compared to paper-based resources - essential in many instances for legal research, the same amount 22% (N=2) of students informed that mobile devices allowed them to access information quickly and to work whilst moving around.

Law students' use of technology – Question 3. What do you think are the benefits, if any, of using mobile technologies for your studies?

66% (N=6) of the responses showed that students thought felt that one of the main benefits of using mobile technologies for their studies was that mobile devices were portable. 33% (N=3) opined that mobile technologies provided the benefit of allowing them to access information quickly.

Law students' use of technology – Question 4. Does your use of mobile technology change from time to time (i.e. do you use different types of mobile technologies to access legal information resources in different situations?) Please can you provide examples of your use of mobile technologies to access legal information for your studies if this is the case.

Over half 56% (N=5) of the responses showed that students switched between mobile technologies depending on the level of detail they required for their studies and22% (N=2) indicated that they varied their use of mobile technology based on the duration of their search, with another 22% (N=2) outlining that their choice of mobile device changed due to the activities required as part of the information search activity. This showed that students' use of technologies was somewhat matured enough for them to determine when to change the type of technology they were using given their specific context.

Law students' use of technology – Question 5. If you do not currently use mobile technologies to access legal information resources for your studies, please can you explain why this is the case?

Of those students who advised that they did not use mobile devices for their studies, 44% (N=4) could not provide a reason. 22% (N=2) outlined that there was a lack of effective legal information resources built for mobile platforms whist 1 student cited reasons such as mobile technologies did not allow for multi-tasking or creating notes as well as having smaller screens, also 1 student.

Law students' use of technology – Question 6. Please could you explain what would persuade you to use mobile technologies for this purpose?

Almost half of the students 44% (N=4) did not have any suggestions that would persuade further use of mobile technologies in this context. Though, there was other specific feedback such as the need to improve mobile resource interfaces 22% (N=2), make resources more seamlessly scalable to mobile form factors 22% (N=2) as well as leverage innovative technologies to improve the student-user experience, 1 student.

The second part of the questionnaire focused more on the individual resources and why law students preferred to use them. Students were asked to provide examples for relevance and illustrate their rationale behind their choices of resource(s).

<u>User Interface</u>

Hein Online was praised for its journal content and its user interface. Comments included;

> *"Journal searches. Hein Online is superb in this regard."*

> *"The sheer number of journal articles is breath-taking. This holds true for older material."*

However, there were concerns over the search function requiring a lot of effort to get the required output;

> *"My only gripe with both Hein Online is that the search function might be improved. If you are not very precise with the search information, a given article may not come up."*

There were calls for a mobile application "App" of the resource to be made available since some students responded that they accessed this resource via a mobile device anyway using smartphone at 22% (N=2), tablet device 11% (N=1) and laptops at 22% (N=2).

<u>Content</u>

The most popular resource mentioned was Westlaw; which was noted for its easy-to-use interface and the depth of its content. Comments included;

> *"Easy and clear to use"*

> *"I then follow up with Westlaw to get a feeling for the case law and when cases were decided"*

Westlaw provided a suitable alternative to paper-based resource and saved students time, it was used mainly to research for cases and articles. There were comments from students that they had used the Westlaw App in one form or another and several students accessed Westlaw via their smartphone at 33% (N=3). Students made calls to have Westlaw present its information in a more logical format aligned to the case being looked at as this would enhance the students' ability to understand the content flow;

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*"Westlaw would benefit most from a more logical presentation of how cases developed. Trying to figure out when and how cases were decided (or overturned) is tricky and easy to mess up."*

Lexis Nexis was the second most popular legal resource with law students using it for a variety of information resource types including case law, articles and journals. It was also praised for its content and user-friendly interface;

*"Can put a date and find whatever cases you need with just a part of the case name"*

*"More comprehensive cases particularly useful for mooting etc."*

Though, the search functionality of Lexis Nexis was noted to be a challenge to use and students recommended that the function be enhanced to be more like that of Westlaw as well as the general navigational interface requiring improvement.

*"I find the Lexis search facility non-intuitive, especially when it comes to selecting the sources you want to search from"*

The App version of Lexis Nexis was reported to have been used by only one of the respondents with the remainder citing that they either did not use the App version or were unaware of its existence. Lexis Nexis was used by law students via a balanced mix of technologies including mobile and laptop devices.

<u>Other Resources</u>

Wikipedia was used to providing a high-level introduction to a legal topic. Its use was limited not due to the usability of it but the lack of in-depth information it provided. Lawtel was a well-regarded resource, found to be suitable for legal submissions, opinions and exam preparation. Google Scholar was used to find extracts from legal books and searching for articles and scholarship material on legal aspects. It was found to be a relatively easy resource to use with access sometimes restricted with certain content.

Library Catalogue & Remote Access

The law library catalogues were popular resources for distance learning students and enabled those who could not physically be present in the law library to be able to access paper-based resources such as books, articles and journals, thus needing to access resources remotely.

*"For us distance-learners the Primo catalogue is indispensable. Without Primo the distance-learning LLM would not be possible."*

This was also convenient for students who often studied out-of-hours and whilst highly appreciated, the law library catalogue systems were still expected to have more online resources made available within their ecosystems.

Well Designed Resources

PLC was listed by 33% (N=3) of the sample group who found it particularly useful for practical real-life scenario based legal research. PLC was noted as being easy to use, in-depth content and flexible enough to provide students with an association as to when the legal content could be relevant with a contextual situation. Access to PLC was via both smartphone and laptop devices and it was recommended that the resource be more aligned towards mobile technology interfaces including providing brief text summaries (more applicable to read on smaller screens) as opposed to long section of text. E-law resources site was useful for high-level legal information, but it was not seen as a resource that could be entirely trusted for its content.

Mobile Access

Kluwer Arbitration was mentioned for being used as a means for accessing e-Books via smartphone device. This resource was praised for its variety although it was recommended that its browser/interface be made more user-friendly. JStor was only outlined by one participant and they highlighted that their use was driven by their need for articles from law as well as other disciplines. No improvements for this resource was suggested and the student advised that their mode of access for resources was via their laptop.

Other resources were outlined but these were either too specialist and did not contain as wide as range of legal content as the above three or the resources were not officially sanctioned and vetted as those paid-for products.

<u>Suitable Technologies</u>

Where possible, law students did access resources on their smartphones and if available, then the App version was used, however this was not as popular and widely used as one would hope. Clearly there was a need for a porting of resources to small-screen form factors as well as a better provision of these resources in terms of design, functionality and awareness to the law student body.

## 9.3.2  Discussion of Results

This questionnaire sought to home in on specific legal resources that were openly mentioned within responses from both law librarians and law students in research instruments I, II and III. Instrument V sought to concentrated more on the technologies (mobile) that law students used to access legal information resources, the drivers and rationale for use these technologies as well as any barriers that may inhibit if not prevent use. As well as the legal information resources used by law students and they key aspects that enticed students to use these resources in the first place. The key aspects of the most popular functionalities as well as the most unpopular functions that the product(s) could do without.

<u>Speed and Portability</u>

The feedback provided some thought-provoking insight, with most the cohort (70%) reporting that they used mobile technologies to access legal resources in some form or another. Smartphones were the most popular type of mobile technology used by students for accessing legal information, with reasons for using mobile technologies in general for this purpose being the speed (37%) at which information could be retrieved as well as the portability these devices provided (63%). Feedback from Research Instrument III in the earlier phases of the study showed some supportive statements;

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*"I use my iPhone, when I cannot access a computer, to access Lawbore, Westlaw and Lexis Nexis."*

*"Sometimes you need little bits of information, googling terms for example that a smart phone is easy for. Also, if you're out and about. My smartphone loads adobe, so I can use it anywhere for larger files and articles as well."*

Students switched between the different types of technology 57% (N=5) depending on the detail of information required. This showed the level of information seeking maturity amongst the cohort in that they could opt for different technologies based on their contextual requirements. Some also noted that their choice of technology was driven by the duration of their search 22% (N=2).

Lack of Suitable Resources

For those participants who did not use mobile technologies for this purpose, 33% (N=3) felt that there was a lack of effective resources for mobile platforms, 1 student responded that their reluctance to use mobile technologies was fuelled by the inability to create notes, multi-task and the naturally smaller screens. These points also correlate well with the outputs from the previous research instruments where both law librarians and law students voiced similar concerns.

Innovative Usage

On a positive note, more than half of the cohort did recommend more use of innovative mobile functionalities, improved scalability on smaller screens as well as better user-interfaces. This feedback also correlated with the responses to the second questionnaire that was fielded where Hein Online was praised for its user interface, yet at the same time, concerns were raised by students over the complex search function which required extensive effort thus making usability on a smaller screen tedious.

<u>Limited Participation</u>

The potential weakness in the results obtained from Research Instruments IV and V was that the number of law librarian and law students who could participate was significantly lower than what we would ideally like to have. Only 3 law librarians managed to take part in completing research instrument IV's questions and 9 law students completed the questionnaire for research instrument V. This was because both law librarians and law students were unable to participate in greater numbers as they were busy with annual examination commitments at the time when this exercise was conducted. Nonetheless, the research managed to utilise the contribution the cohort made and examine this to extract a significant amount of data.

<u>Summary</u>

Overall, Westlaw and Lexis Nexis were the most popular resources that students mentioned, this matched the feedback from Research Instruments I, II and III from the earlier sections of the study where student interest and dependency on these two resources were well-noted by law librarian's due to the extensive content within these products as well as the ease-of use (Westlaw). Lexis Nexis was generally viewed as the primary resource for students with more experienced legal research skills due to its complex search page and general content – aimed at more specific legal topics and more relevant to advanced legal study. Both resources were mentioned by law librarians in over (50%) of the interviews as being the most popular. Wikipedia was also cited as a regularly used resource however its usage was inhibited by the content students could find on it, thus it was generally used for high-level legal topic insights, law librarians during Research Instrument I had voiced their concerns at law students' use of this resource given its questionable quality and accuracy – driven by its "Open Source" nature. However, the issue seems to have fixed itself with the limitations of this resource well-acknowledged by the student community. The library catalogue also made a positive appearance in the responses with law students citing the depth of information, the accessibility, relevance as well as the availability for out-of-hours study. We took the attributes outlined within this Research Instrument and highlight them in the following (Table.54).

| Technology | Attribute | Description | Law Student – Thematic Analysis |
|---|---|---|---|
| Smartphone | Driver | Need quick results/small segments of information | ✔ |
| Smartphone | Driver | Need information retrieval whilst being physical mobile | ✔ |
| Smartphone | Barrier | Small screen/poorly designed resource interface | ✔ |
| Tablet Device | Driver | Larger screen making it easier to read legal content | ✔ |
| Laptop | Driver | Need to write document | ✔ |
| Laptop | Driver | Require multi-session search | ✔ |
| Laptop | Barrier | Not contextually suitable | ✔ |
| Desktop | Driver | Require lengthy information search | ✔ |
| Desktop | Driver | Require multi-session search and other resources | ✔ |
| Paper | Driver | Need specialist legal information not available digitally | ✔ |

Table 55: Identified Attributes of Information Behaviours Using Technologies – Law Students Feedback for Research Instrument V (Detailed Investigation)

So, Research Instrument V delivered a more focussed feedback set from the law students with the core areas being mobile technologies and electronic resources – both of which we now had a better insight into the rationale behind their use. However, again, we faced a challenge in recruiting law students to complete the questionnaire. This was largely due to students taking part in their course examinations at that time.

## 9.4   Responses to Research Instrument VI – The Focus Group

The focus group consisted of 6 students who were all law students at a HEI that had already participated in this research study. This institution was based in London, U.K.

The participants were recruited through the assistance from the University Law School with the incentive that their participation would be compensated by a £20 cash payment. They would also be entitled to receiving a copy of the results of the study once completed. The focus group study was held at the University on Wednesday 23rd November 2016 and it ran from 14:00 – 16:30 with a 10-minute comfort break in between.

The responses to the questions for this research component were of qualitative nature and thus students were free to mention as many technologies and services as they could, hence if a student mentioned smartphones and laptops, each was counted as a separate entry. Focus group participants' paraphrased responses are also included and indicated as FGPX (Focus Group Participant X; where X is the numerical identifier of the participant);

Initial Question. What do you hope to learn from this focus group?

The participants showed a strong willingness to learn innovative ways to conduct legal research with comments such as;

> *"I hope to learn about different ways of doing legal research"* (FGP3)

> *"…from this focus group, I want to learn as to how other people use technology and whether we share any similarities or differences"* (FGP4)

Whilst another sought to find out more about why law students were becoming dependent on modern technologies;

> *"I hope to learn and understand why us students are dependent on our phones and laptops so much, if it really benefits us"* (FGP5)

Question 1. What electronic resources do you use for your studies?

The laptop was widely used for more detailed information searches with resources such as Westlaw, Lexis, Moodle and Lawbore used through this technology. Other resources such as Google books, Wikipedia and YouTube were also used on laptops but for general overviews of legal topics;

> "*There is a hierarchy of which resources I will consult first*" (FGP3)

However, this use depended on what students' information needs were at that time. Smartphones were used but mainly for general fact finding and light reading;

> "*I don't use my mobile device for studies unless it is to hear a recording or read notes on the train home*" (FGP5)

Laptops and smartphones were often used interchangeably with the laptop providing the greater computing power and multi-tasking capabilities and the smartphone giving the rapid information seeking capability in a portable context;

"*My laptop is the main technology I use as I type notes on it, read books and download files etc. my smartphone is used for quick access*" (FGP4)

One participant used assistive technology that read-out cases and notes automatically, though due to licensing issues, this software did not work on the student's personal laptop, but did on their Smartphone, hence the use of the technology was driven by licensing limitations and not individual preference. Other technologies such as Dictaphones were also mentioned and used primarily for recording the audio outputs of lectures. Smartphones were also used for this purpose. Printers and photocopiers were also noted as technologies students used for their learning. With one student voicing their dislike of reading books online but leaning towards paper-based versions, still using a laptop for taking notes and writing essays and smartphone for quick searches of legal information and recording lectures. YouTube was also used by one student for learning as well as eBooks. Having said that, one participant did show a preference to reading from paper-based resources over electronic formats.

Question 2.a. What technologies make it easier to use electronic resources?

For this question the participants could select more than one technology in their qualitative response. However, we still counted the mention of the technologies. Here the laptop was the leader (just about at 46%) in this area with students noting the large screen and ability to multi-task as leading factors, this technology was widely praised for its near universal capabilities in computing power, compatibility, desktop publishing functions as well as providing a near portable facility which students could utilise to not only obtain information but also create it.

"*It (laptop) has a relatively large screen and can be used to access a lot of the information that I'm looking for*" (FGP3)

There were also examples where legal resources were more compatible with laptops than other technologies;

"*Laptops are easier to access resources such as Lexis Nexis, Westlaw etc. as they are more open to files. Also, when downloading content having laptop is handy as I can open files in Zip formats…*" (FGP4)

Smartphones which came a close second place (45%) were noted for their portability and instant-access factor, in that they did not take long to load, and information could be obtained very quickly;

"*The smartphone provides the opportunity to listen to books and cases whilst on the move and allows access to more books and journal articles*" (FGP1)

However, smartphones did face criticism in this context where there would be a poorly formatted resource that would require a constant need for zooming in-and-out of the page to be able to read all the information presented. This proved to be a cumbersome exercise which risked students not seeing all the information that would normally be visible to them on a larger screen. Desktops were used largely due to the compatibility of some specialist software that would only work on these technologies due to licensing restrictions;

"*Desktop is easier to use with Claro Reader and Dragon Voice Recording software*" (FGP1) But where possible, laptops were preferred, again, largely due to the compatibility of some essential learning tools that one of the participants required for their studies.

Some showed a preference to paper-based resources given the ability to freely highlight and copy select texts over attempting to do the same using a Smartphone;

"*…with books, you can easily highlight/copy/select texts as opposed to a Smartphone*" (*FGP4)

Question 2.b. What technologies make it harder to use electronic resources?

Just as before, students could mention more than one technology, and each was counted. The small screens on Smartphones were cited as an issue (50%) that made information seeking on these devices a challenge, lack of multi-tasking capabilities and the formatting of some legal resources – which was often quite poor – further aggravated the student/user experience;

"…the screen is small, and the format of websites is usually not great when using a Smartphone; if they (legal resources) work at all" (FGP3) And "Web browsing is difficult on the smartphone as some pages don't load up" (FGP4) And "smartphones are much harder to use in this context because of the screen size. You are unable to multitask with them like you can for laptops" (FGP5)

Smartphones were also noted for their limited compatibility with file formats (13%) and any attempt to obtain files would often require more effort than that compared to using a laptop or desktop;

"…It's a long and mundane process to access Westlaw through the phone. Some files' content is just not supported" (FGP4)

Some partakers voiced their frustration at the limitations that legal information vendors had placed upon their products through complex licensing models;

"…EBooks' are very limited by their licensing agreements and so can only be accessed on one computer at a time" (FGP1)

One student did find the use of textbooks challenging, favouring digital technologies more. (FGP2) whilst another participant furthered this sentiment by stating;

"textbooks can be harder to use as there is only a limited number to read" (FGP5)

Question 3. If you could design an ideal information support/service, what would it look like?

Students sought a resource which would pool all the different pieces of legal information from the vast array of resources and then place them into a single resource (50%). With functions and content such as;

"A list of legislation for each taught module, a list of cases for each module such as which topics they link to, a list of revision notes in a mind-map format for each module within the topic and finally, essay examples that will provide students with a good idea of the required standard expected" (FGP2)

They also voiced their desire to have a function where high-level overviews of certain legal topics would be available and enable them to focus more on what they needed to read and not risk taking up too much time to look at material which may not be relevant at all. As well as the ability to intelligently track the search history and being accessible without constant internet access;

"*…you can then keep tabs on the cases/journals and use them when offline. It would be like a law version of Spotify*" (FGP4)

There was also a call for an improved facility to assist in the locating of paper-based resources within the law library, especially for physical resources that were in short supply or hard to get, would sometimes be over-subscribed and difficult to obtain.

Some did show a desire to see as many legal information resources to be made available in e-book format as possible and the ability to customise the display interface and include audio feedback to suit personal preferences;

"*…with a choice of background colours and a selection of speaking voices*" (FGP1)

Some software such as Dragon Voice Recording software was widely praised and there were calls for software such as these to be made more widely available to the law student population given the benefits it would bring to them. There were also requests for more video-based resources to be publicised more given the potential popularity of these types of information, these calls were based on readily available examples where academics had already utilised videos for teaching;

"*All cases and texts to be made available in YouTube clips that can also explain the topics – this is following an example of a Harvard Professor who has done the same type of thing*" (FGP1)

One participant did voice their concern at over-supporting law students and risk weakening their research skills;

"*It is important not to spoon-feed all the information student might need. After all, we also need to learn how to do research and find information that would normally be difficult to locate*" (FGP3)

Overall, students recommended an improvement in the process where law libraries could share their resources more seamlessly and enable students to access legal resources – mainly in paper-based formats from other institutions in a more streamlined manner.

Moreover, electronic resources were recommended to be more user-friendly and accessible across numerous electronic formats with the capabilities to intelligently determine which technology was being used to access it and then adjust its screen format accordingly to ensure that the information contained with the resource was not compromised in any way.

The IT department was identified as an area that could help more in ways of supporting Law Student's use of the various technologies as well as Law Schools in general taking note of the feedback law students provided in their legal resource usage experience and apply it to the design and build of their own services accordingly (12%).

Question 4. Proposed Information Seeking Model Analysis

Law students were presented the proposed draft law students Information Seeking Behaviour Model (LSISBM) as outlined in chapter 6. They were asked to outline whether they agreed or disagreed with the various drivers and barriers illustrated and to mention any others that may not have already been articulated. The participants were given a section within their question sheet where they could articulate their agreement or dis-agreement on the drivers and barriers already included in the proposed model as well as gave them a section where they could write down and additional attributes that they felt would help towards bringing more completeness to the model. At the end of the focus group study, the barriers and drivers already contained as well as those proposed were counted, any that comprised of >50% of the group (i.e. >3 student participants) were left in the proposed model (if already included) or added to the model (if proposed by the students). Further details are in the following section (See Section 9.5.2).

### 9.4.1 Discussion of Results

The focus group could have been enhanced by being a slightly larger group of approx. 10 law students with representation from at least 3 HEI in the U.K. this may have provided a more differing perspective depending on the HEI the law students were from, their attitudes towards mobile technologies and teaching methods at their respective institution.

Nonetheless, our focus group study proved to be very engaged and it was clear that the participants were passionate about the topic being discussed. And although many students had different attitudes towards technologies based on their own preferences or needs, the overall picture was the same; they needed support in navigating through the ample collection of digital data that was increasing all the time. Our engagement with law students at this time re-ignited the clear differences between what law students held to be important to them in terms of legal information resources vs. what law librarians deemed as important. These differences were outlined in Research Instruments IV and V above. After completing the focus group study, we realised that these differences could have been better explored by hosting a focus group between both law students and law librarians to see how they would respond directly to the differing opinions of the sides. This would have provided a lot of rich discussion content and perhaps helped deliver another set of recommendations which would come from a naturally fitting cohort of both provider of information and end-user representation.

<u>Strong Interest</u>

Law students were clearly passionate about the topic and they regularly took note of each other's comments and inputs, often taking on board what was being raised and then actively applied them to their own personal contexts. There was a suggestion made on establishing a law student user-group that would be positioned so to advise on the design, build and deployment of any future information services for law students. This approach was highly favoured.

Suggestions for Design

There was a significant lean on students wanting more legal resources to be made available to them, electronically with many functions and capabilities such as multi-tasking, preferential search, ability to annotate and incorporating a multitude of resources not just a few. Overall there were, however, gaps in many resources' designs and law students' perceived lack of knowledge on what resource would be the most appropriate given their specific legal information need. These matters have been noted in related literature (Onwuchekwa 2013), (Makri, Blandford & Cox 2006), (Danner 2016) & (Kroski 2013).

Sense of Urgency

The focus group exercise allowed us to see law student's sense of impatience and the need to access legal information at near-immediacy speeds, demonstrating the change in user behaviour to that of students from earlier generations where mobile technologies and high-speed internet access was not the norm (Parker-Pope 2010), (Morin 2015), (Matteson 2014) and (Mening 2016). Law students were more concerned with the content and examining that as opposed to strengthening their research and discovery skills, their view was that electronic resources were capable enough to conduct the research for them and enable them to spend more time digesting the actual results as opposed to finding it in the first place. Additionally, the focus group participants showed that they expected relevant content to be readily available to them and the research for it was fast becoming an irrelevant exercise. This presented a significant shift in end-user behaviour compared to earlier generations of law students who would often spend hours in the law library searching through the vast paper-based collection of content.

Changes in Learning

For the last point, students pointed out that they found it made more sense to them if they could access the legal resources easier and spend more time on deciphering the actual content itself and place greater effort on the task at hand. Students found the typical search process to be too cumbersome and laborious to risk compromising on their examination of the texts.

However, one participant pointed out that this would lead to a weakness in the law students research skills, in that simply placing all the required information in a single place for students to access, not only eroded any abilities students could acquire in their research abilities but also run the risk of providing them with a pre-selected collection of information and reduce any potential serendipitous discovery.

## 9.5 The Research Deliverables

The research deliverables consisted of a proposed LSISB model together with a list of recommendations for law librarians and legal information service providers. These lists were built from the responses received throughout the studies contained within this thesis through the research instruments used to obtain this. We begin firstly by using the responses received from research instrument VI – The Focus Group to refine the proposed LSISB model.

### 9.5.1 Overview

Continuing from Section 9.4.1.1 each of the participants in the focus group was asked to elaborate on the drivers and barriers presented to them in the proposed LSISB model. They were also asked as to whether there were any further drivers and barriers that could be added into the model. Any proposed attribute which had been proposed by over 50% of the cohort was implemented into the model, any attribute that was proposed by less than 50% of the participants was discarded.

### 9.5.2 Adjustments to the Law Student Information Seeking Behaviour Model

As stated the proposed model was first presented to the focus group participants and they were invited to comment on the existing attributes contained within it as well as make suggestions for any additional attributes that they may deem necessary to be included.

It was felt that the focus group would complement the proposed model given that the model was based on the information seeking behaviours of law students.

### 9.5.3 Methodology

We focused on each technology presented in the model and the participants were invited in a round-robin method to comment on the specific technology (Witkin & Altshuld 1995), their own personal experience of using that technology to access legal information together with their views on the listed attributes and any additional ones that they felt would benefit the proposed design. We cycled through each technology and its corresponding attributes to seek the students' validation as well as opportunities for adjustments where required, by consensus. Each participant had the opportunity to agree or disagree with the existing attributes as well as list up to three more of their choice.

**NOTE:** Given that our total participant cohort stood at (N=6) we were aware of the risks of us reaching a deadlock on attribute choices, as a result Participant 6 – the student assistant – was asked not to take part in this exercise, reducing our student participation count to (N=5).

<u>Motivation</u>

The motivation behind our strategy was to engage the participants in thinking deeply about a specific context and keeping the questions short and focussed. We could have simply presented the technologies and asked the cohort to state whether they challenged any of the attributes overall or not. However, this may not have enabled the participants to give a more insightful reasoning behind their choices and suggestions as often thinking of many different uses, needs and blockers at the same time could pose to be a challenge (Krueger & Casey 2000).

<u>Benchmarking</u>

Although List (2001) advises on using a consensus barrier of 75%, we chose to use a 50% barrier which would determine whether a specific proposed attribute would be implemented into the model or not.

This approach whilst challengeable, was chosen due to the relatively small size of the group itself (6 students) and thus the rate of % would increase or decrease significantly as opposed to groups with higher participants. Furthermore, our findings from relevant literature showed a varied approach to counting a "majority" figure, where numbers even as low as 44% were calculated as a "majority" (Mallow et al 2016), others referred to a majority at 61% (Clark et al 2017) or from 67% up to 84% (Nyumba et al 2017) and Stewart (1998) using "80%" for the same description. Although these numbers were varied, it showed that there was no official standard for appointing a fixed benchmark in the context of focus group studies, and thus gave us confidence in our approach in using the figure of 50% or greater as the threshold upon which we could determine a popular agreement within the participant sample, especially given its relatively smaller size.  We also used vignettes in the form of quotes students made against specific technologies and attributes to provide a greater depth to our response analysis and rationale for the changes that may be applied during the model's refinement (Breen 2006).

Attribute Changes

We were conscious that whilst a selection of >50% of a specific attribute may deem for that attribute to be added to the proposed model, we would need to justify why any attribute that did not get the agreement of <50% could remain. Our strategy was to leave any pre-existing attributes intact as these were included from the interviews of the law librarians and initial engagements with law students in the previous stages of the research, removing them would mean that the entire model was solely built through the focus group and our intention was never that. The aim of using the focus group to comment and make suggestions on the existing and potentially new attributes was purely to complement what we already had from previous research stages and thus would provide us with a model that was built from a larger consensus which included both law students and law librarians.

### 9.5.4 Updates to The Model - Smartphones

<u>Scenario: Smartphone - Existing Drivers Pushing Away the Technology</u>

The focus group agreed with the drivers pushing away from using smartphones for legal information seeking. The group also suggested that smartphones were a distractive technology with the availability of other "Apps" on them which often resulted in taking the focus of the student away from their information search and towards the social function instead. One participant stated;

"*I need to use the phone for music etc.*" (FGP1)

<u>Additional Drivers Pushing Away the Technology</u>

Additional drivers were also suggested which, again, mentioned the distractive nature of smartphones at 40% (N=2), but also the limited functionality of the technology at 60% (N=3). Since the latter opinion was shared by most of the focus group, it was added as an additional driver category on the proposed model. Specific comments included;

"*The screen is too small to look at web pages and zooming in and out of the screen is quite irritating, web pages don't work well*' (FGP2) And

"*The small screen causes a lot of eye strain and therefore I don't use my smartphone for reading a lot of material, the functionality to display text better is not there*" (FGP4)

<u>Existing Drivers Pushing Towards the Technology</u>

All 5 participants of the focus group agreed with both existing drivers pushing students towards using smartphones; the need for quick results and using the technology whilst on the move. Students added comments such as;

"*I can view results quickly just to get an idea of a legal topic*" (FGP4) And

"*smartphones are useful if I am looking for some small bits of legal information and am on the move*". (FGP2)

Whilst additional drivers were suggested, the number of students voting for each remained under our 50%> threshold, hence were not added to the model. These drivers included accessibility 40% (N=2), availability 20% (N=1), portability 20% (N=1) and functionality 40% (N=2).

Existing Barriers Preventing Use of the Technology

All of the participants (N=5) agreed that the barriers preventing use of this technology made sense and students could relate to them, these included low battery power, small screens on the devices as well as the lack of a Wi-Fi or Cellular signal, comments included;

> *"Screen is small, so it gets annoying if I have to zoom in all the time"*. (FGP3) And

> *"Don't have available Wi-Fi so I have to use data."* (FGP5)

Additional Barriers Preventing Use of the Technology

Students mentioned the incompatibility of some legal resources with smartphones as being a major barrier to further use of this technology at 60% (N=3) which was added to the model as per our methodology. Other barriers such as smartphones being distracting 20% (N=1) and the risk of loss/theft 40% (N=2) were not added.

## 9.5.5 Updates to The Model – Tablet Devices

Scenario: Tablet – Existing Drivers Pushing Away the Technology

For existing drivers on tablet devices, all the participants agreed that the inability to multi-task was a driver that would push them away from using the technology, also they largely agreed that if they needed a bigger screen to view information, they would refer to an alternative technology which could provide this facility 80% (N=4).

Additional Drivers Pushing Away the Technology

The focus group was split evenly for additional drivers that deterred or pushed students away from using tablet devices, all the attributes such as the device being too big, incompatible with legal resources, screen glare and lack of functionality were at 20% (N=1) and had no overall leading opinion. Additional comments noted were that some participants had more experience in these technologies than others, hence were more confident in their capabilities such as taking notes etc. Others were less experienced, tended to avoid tablet devices based on their perception that these technologies were simply larger versions of smartphones;

>*"Similar to smartphone but larger screen, not enough incentive to use"* (FGP4)

Existing Drivers Pushing Towards the Technology

The focus group largely agreed that tablets were good for reading detailed material at 60% (N=3) and for when reading was required for extended time periods, also at 60% (N=3).

Additional Drivers Pushing Towards the Technology

Tablets did provide a better user experience for academic information seeking compared to a smartphone due to the larger screen with 60% (N=3) agreeing with this as an additional driver, therefore this was added to the model;

>*"Easier to grasp than laptop and better than a smartphone (website formatting wise)"* (FGP3)

However, only 40% (N=2) added that portability was also an additional driver.

Existing Barriers Preventing Use of the Technology

All of the participants noted that the lack of Wi-Fi would be a barrier to tablet device use. Other barriers that were already included in the model were the unsuitable screen format 60% (N=3) and the need to edit documents – which tablet devices could not enable easily, at 100% (N=5). Comments included;

>*"If it(tablet) had a keyboard then this would persuade me to use a tablet over a laptop"* (FGP2)

The cost of tablet devices was mentioned by most of the group at 80% (N=4), with some citing that;

"*Tablets need keyboards and stylus' to work effectively, if you add up the cost of these plus other items such as carry cases and screen protectors then you think to yourself – I may as well buy a laptop!*" (FGP5)

Cost of this technology was added as a barrier due to the feedback above.

## 9.5.6 Updates to The Model – Laptops

Scenario: Laptop – Existing Drivers Pushing Away the Technology

The focus group agreed that the lack of power sockets available in areas where they would like to use their laptops to study was a driver that would deter them from using this technology in an academic context at 60% (N=3). The lack of suitable working space was also outlined at 60% (N=3).

Additional Drivers Pushing Away the Technology

60% (N=3) of the cohort stated that laptops were larger than tablet devices and smartphones thus using them in a truly mobile context was restricted, consequently, this was added to our model as a driver that would push law students away from using laptops;

"*Heavy and impractical to carry around everywhere*" (FGP3)

A smaller segment of the cohort complained that laptops were not as quick as tablets and smartphones when it came to loading data, 40% (N=2), with updates to operating systems being a prime example given;

"*Sometimes updates take long to install (Windows)*" (FGP2)

Existing Drivers Pushing Towards the Technology

Laptops were valued for their ability to provide a viable alternative to desktop computers, in that laptops came with a sizable keyboard as well as mouse/trackpad delivering a full desktop publishing experience and enabling law students to create documents and notes, all participants, 100% (N=5) agreed with this as a driver as well as the capability of laptops to effectively multi-task, also at 100% (N=5). Especially in some user contexts where more than one application or function was required;

*"Use word while listening to book out loud"* (FGP2)

Additional Drivers Pushing Towards the Technology

The greater functionality of laptops was a popular feature. Some students noted;

*"I can watch movies, play games, surf the internet, make notes, read, look at legal resources – the lot" (FGP4)* And

*"Legal resources work with laptops very well; they are as near-portable as tablets but with the functionality of desktops" (FGP1)*

Greater functionality was thus added as an additional driver to the model. Comfort was also mentioned.

Existing Barriers Preventing Use of the Technology

The participants agreed with the existing barriers outlined in the proposed model that would prevent the use of laptops. These barriers included the laptop not being contextually suitable at 60% (N=3);

*"The size and weight of the laptop."* (FGP2)

No power sockets being available at 60% (N=3) and the lack of a Wi-Fi or wired network capability at 100% (N=5).

<u>Additional Barriers Preventing Use of the Technology</u>

Whilst students listed additional barriers, such as the technology being too big at 40% (N=2), laptops not being as readily accessible, also at 40% (N=2) and the distractive nature of these devices given their multi-tasking capabilities at 20% (N=1). None of these attributes passed the 50%> threshold so were not added into the proposed model.

## 9.5.7 Updates to The Model – Desktops

<u>Scenario: Desktop – Existing Drivers Pushing Away the Technology</u>

All the participants advised that the immobile nature of desktops was a barrier if these technologies happened to be in a location that was not accessible, with comments like;

> *"Not feasible to use everywhere"* (FGP5) And

> *"My desktop is at home and I need to use it when at campus – I cannot, I'm simply unable to use it until I get home"* (FGP1)

60% (N=3) agreed that the lack of desktops was also a barrier as there were times when students needed to use them but not enough were available.

<u>Additional Drivers Pushing Away the Technology</u>

Also, 80% (N=4) noted that desktops were cumbersome to use, and this was added, as a driver to our proposed model, that deterred usage of desktop technologies;

> *"Cumbersome to use, I have to wait for updates etc."* FGP5)

Only 20% (N=1) added that desktops would often not be operational due to maintenance or breakages, so this could also be a potential driver that would discourage usage.

One participant's comments summed up the competition that desktops were facing;

> "*Laptops can do everything a desktop can*" (FGP3)

<u>Existing Drivers Pushing Towards the Technology</u>

60% (N=3) of the participants agreed that the three existing drivers that would push students

towards using desktops included the need to search for information for extended periods, the

need to multi-task and the need to edit documents, were all valid. Comments included;

*"Can use it for long periods of time "*(FGP3) And

*"Larger screen – it's that simple!"* (FGP2)

<u>Additional Drivers Pushing Towards the Technology</u>

Desktops' popularity was mainly driven by the larger screen which enabled a sound multi-

tasking experience which students valued, 80% (N=4) agreed with this as being an additional

driver and thus was added to the proposed model (See Section 9.5.3.6). Supporting comments

included;

"*You can add many screens to a desktop and that really helps when you need to have

multiple information sources open at one time and take notes electronically*" (FGP4) And

*"Screen size adaptable through use of multiple screens"* (FGP2)

One participant also noted the additional computing power desktops provided over laptops, in

general.

<u>Existing Barriers Preventing Use of the Technology</u>

For existing barriers, the need to process results quickly and desktops would often take longer

to load their operating systems, was at 80% (N=4) as was the technology not being accessible

at that time, also at 80% (N=4). All the participants agreed that desktops were limited in that

they were not as mobile as the other technologies being considered in the model.

<u>Additional Barriers Preventing Use of the Technology</u>

Cumbersome password management software was a key issue raised by students in the focus

group with 40% (N=2). Since many legal resources had their own login-portals, often students

would need to have multiple login credentials applied and this would be quite inconvenient to

manage, especially on desktops that were shared with other students at the University;

"*…have to login and can't save passwords on communal desktops*" (FGP3)

## 9.5.8  Updates to The Model – Paper

<u>Scenario: Paper – Existing Drivers Pushing Away the Technology</u>

For extended search periods, all of the participants agreed that paper-based resources were well-suited, also, the ability to access multiple resources simultaneously was pointed out by 80% (N=4) of the cohort. Both drivers were already included in our model.

<u>Additional Drivers Pushing Away the Technology</u>

Whilst 4 additional drivers for paper-based resources were mentioned, none of them were popular by the cohort as a whole with both the lack of functionality and outdated information at 20% (N=1). Comments included;

> *"Content can be outdated"* (FGP2)

Whilst excessive time and effort required to obtain information and lack of portability (for large volumes of books) at 40% (N=2) each;

> *"Time consuming and hurts hands if writing for too long."* (FGP1) And

> *"Cannot always carry law books around with you, if it is for reference only in the library."*

(FGP4)

<u>Existing Drivers Pushing Towards the Technology</u>

Existing drivers listed in the model for using paper-based resources were agreed by all participants with 100% (N=5) for the need to annotate and take notes as well as the need for specialist legal information which would not normally be available electronically. Some students found paper resources better to work with when it came to more complex legal topics that required dedicated concentration and note-taking to enforce learning (Table.99). Furthermore, there were still some specific legal areas which were still dominated by paper-based resources.

<u>Additional Drivers Pushing Towards the Technology</u>

Reliability of content was a driver that the cohort informed would help push them towards using paper-based resources more often at 60% (N=3).

With the ability to make annotations on photocopies also being listed as an additional driver at 40% (N=2). Feedback included the following comments;

>"*Best way to work through difficult concepts, I use a book to then write my own notes and help my understanding.*" (FGP3) And

>"*Certainty of the information being reliable.*" (FGP2)

>"*With paper-based resources, there is a certainty that the information is reliable*" (FGP3)

Existing Barriers Preventing Use of the Technology

All three barriers already featured in the proposed model were agreed upon by all the participants. This included the paper-based resource not being available, the student not being physically near the resource itself or the resource being hard to locate.

Additional Barriers Preventing Use of the Technology

Additional barriers that would prevent use of paper-based resources included the risk of fines at 40% (N=2) and the excessive time and effort it took to manually manage these resources at 60% (N=3);

>"*Can get mixed up if pages not numbered.*" (FGP2) And

>"*Paper resources can be misplaced easily thus finding them is made tougher.*" (FGP5)

Thus, the latter attribute was added to the proposed model (See Section 9.5.3.6).

Closing Question - What have you learnt from this focus group?

Student participants praised the opportunity to share their experiences with other students on legal resources, tools and technologies;

>"*I have learnt different ways of using the resources available to make studying easier and more efficient, I have also learnt about new resources that I could possibly use.*" (FGP3)

With some also realising that their challenges were not isolated but part of a wider topic that needed further discussion;

*"I know now that fellow students have similar experiences and challenges with electronic resources. I have also learnt that there are more options and ideas of resource use that I previously did not consider"* (FGP1)

There were also calls for applications that are normally reserved for students registered as disabled to be made more widely available to the general student population given the benefits these applications could potentially bring to the wider cohort;

*"Fellow students have similar experiences and challenges with electronic resources. New options and ideas of resources which I previously did not consider. As I am classified as a disabled student I have access to assistive technology which is incredibly helpful, and the other students should be able to access this as well through the university. Still a lot of work to be done to improve electronic resources."* (FGP1)

### 9.5.9  Updates to the LSISB Model

After finding the cohort groups feedback on the existing and proposed attributes against each of the technologies featured in the proposed model, we took the benchmark of a 50% or greater consensus for a new driver or barrier to be required for it to be added into the model. Consequently, we found the following drivers and barriers that needed to be added (Table.55).

| Technology | Barrier/Driver | Description |
|---|---|---|
| Smartphone | Driver Away | Limited Functionality |
| Smartphone | Barrier | Incompatibility |
| Tablet | Driver Towards | Better user experience than Smartphone |
| Tablet | Driver Away | Cost of technology |
| Laptop | Barrier | Too big a device |
| Laptop | Driver Towards | Greater functionality |
| Desktop | Drivers Away | Cumbersome to use |
| Desktop | Drivers Towards | Larger screen |
| Paper | Drivers Towards | Reliability of information |
| Paper | Barrier | Additional time and effort |

Table 56: Drivers and Barriers to be added to LSISB Model

Finally, we added all the attributes law students mentioned during the focus group discussions and produced a concluding table that summarised all the drivers and barriers outlined for the respective technologies during each stage of the research. We can clearly see how these attributes have increased between the two cohorts of law librarians and law students, noting that for the Law Student – Focus Group, only attributes that received a greater consensus than 50% were included in the table (Table.56).

| Technology | Attribute | Description | Law Librarian - Exploratory Study | Law Librarian - Detailed | Law Student - Exploratory Study | Law Student - Detailed | Law Student - Thematic Analysis | Law Student - Focus Group |
|---|---|---|---|---|---|---|---|---|
| Smartphone | Driver | Need quick results/small segments of information | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Smartphone | Driver | Need information retrieval whilst being physical mobile | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Smartphone | Barrier | Lack of battery power on the Smartphone device | ✓ | | | ✓ | | |
| Smartphone | Barrier | Small screen/poorly designed resource interface | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Smartphone | Barrier | Lack of network or Wi-Fi signal in surrounding area | ✓ | ✓ | ✓ | ✓ | | |
| Smartphone | Barrier | Incompatibility with information source | | | | | | ✓ |
| Tablet Device | Driver | Larger screen making it easier to read legal content | ✓ | ✓ | | ✓ | ✓ | |
| Tablet Device | Driver | Detailed information need and being physically mobile | ✓ | ✓ | | ✓ | | |
| Tablet Device | Driver | Better user experience than Smartphone | | | | | | ✓ |
| Tablet Device | Barrier | Lack of battery power on the Tablet Device | ✓ | ✓ | | ✓ | | |
| Tablet Device | Barrier | Lack of Wi-Fi signal in the surrounding area | ✓ | ✓ | | ✓ | | |
| Tablet Device | Barrier | Need to edit existing and create additional information | ✓ | ✓ | | ✓ | | |

| Device | Type | Attribute | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tablet Device | Barrier | Cost of technology | | | | | | ✓ |
| Laptop | Driver | Need to write document | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Laptop | Driver | Require multi-session search | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Laptop | Driver | Greater functionality | | | | | | ✓ |
| Laptop | Barrier | Not contextually suitable | ✓ | ✓ | | | ✓ | ✓ |
| Laptop | Barrier | No power sockets available for charge | ✓ | | | ✓ | | |
| Laptop | Barrier | Lack of Wi-Fi signal in the surrounding area | ✓ | ✓ | | ✓ | | |
| Desktop | Driver | Require lengthy information search | ✓ | ✓ | | ✓ | ✓ | |
| Desktop | Driver | Require multi-session search and other resources | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Desktop | Driver | Need to write document | ✓ | ✓ | | ✓ | | ✓ |
| Desktop | Driver | Need larger screen | | | | | | ✓ |
| Desktop | Barrier | Need quick results | ✓ | ✓ | | ✓ | | |
| Desktop | Barrier | Not in location of use | ✓ | ✓ | | | | ✓ |
| Desktop | Barrier | Not available for use | ✓ | ✓ | | ✓ | | |
| Paper | Driver | Need to annotate printout | ✓ | ✓ | | | | ✓ |
| Paper | Driver | Availability of information | | | | | | ✓ |
| Paper | Driver | Need specialist legal information not available digitally | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Paper | Barrier | Paper resource unavailable | ✓ | ✓ | ✓ | ✓ | | ✓ |
| Paper | Barrier | Student not in location where paper resource accessible | ✓ | | ✓ | ✓ | | ✓ |
| Paper | Barrier | Resource difficult/laborious to locate | ✓ | ✓ | ✓ | ✓ | | |

Table 57: Identified Attributes of Information Behaviours Using Technologies – Law Students Feedback for Research Instrument VI (Detailed Investigation)

The original model (Fig.104) that was proposed was created from influences of other information seeking models found in the literature review. Also, many aspects introduced were brought in from the feedback from Research Instruments I, II and III of the exploratory study phase.
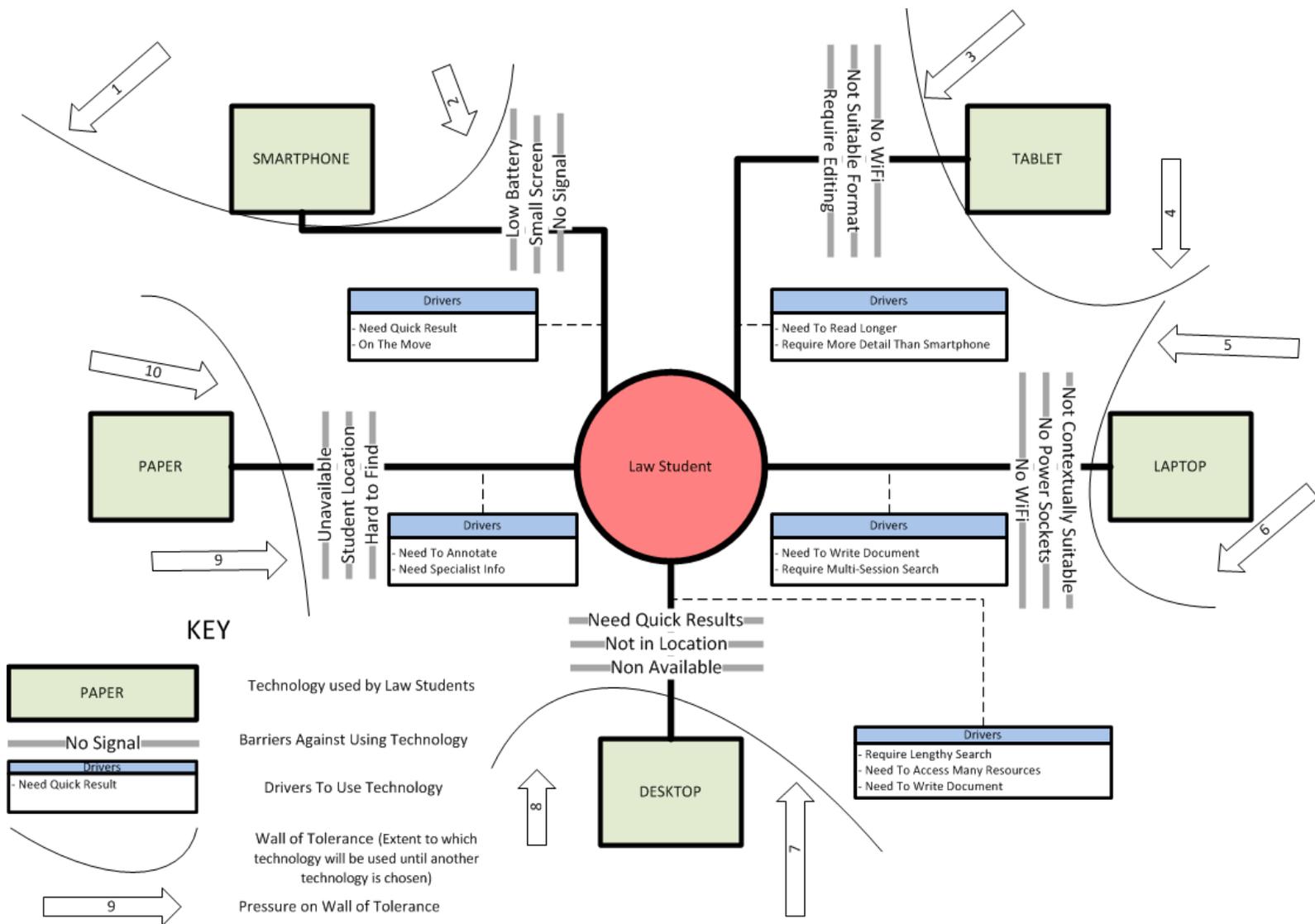
Figure 103: The Law Students Information Seeking Behaviour (LSISB) Model

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The numbered pressure arrows were used to illustrate attributes, aspects and behaviours which would ultimately push law students away from using a technology and are described below (Table.57).

| 1 | Need to view information on a larger screen |
|---|---|
| 2 | Need to take notes of information found on Smartphone |
| 3 | Require further information but opening another information source means closing existing one |
| 4 | Need a larger screen to read the information obtained on this device |
| 5 | Low battery power and lack of charging power sockets in vicinity |
| 6 | Lack of space to use device |
| 7 | Too many others wanting to use this resource |
| 8 | Resource is not going to be available after a certain time due to maintenance or system updates |
| 9 | Resource does not contain all the information in the same physical item or book shelf, making it easier to search electronically |
| 10 | Require taking notes and need to copy & paste content electronically for later referral |

Table 58: Pressure Arrows against Barriers of Usage Tolerance

The updates made to the model from the feedback obtained from the focus group are articulated in the following tables. These changes were made and consisted of additional barriers, drivers and some pressure arrows (Tables.58 - 60).

Additional Barriers

| Smartphone | Incompatibility |
|---|---|
| Tablet | Cost of technology |
| Paper | Time & Effort |

Table 59: Barriers Added to LSISB Model

Additional Drivers

| Tablet | Better user experience than Smartphone |
|---|---|
| Laptop | Greater functionality |
| Desktop | Need larger screen |
| Paper | Availability of information |

Table 60: Drivers Added to LSISB Model

| Additional (a) | Limited Functionality of a smartphone – leading to law students opting to use another technology such as a tablet, laptop, desktop or paper-based. |
|---|---|
| Additional (b) | Cost of technology (tablet device) – leading to law students looking to use another technology such as a smartphone. |
| Additional (c) | Cumbersome to use (Desktop) – Leading to law students using either a laptop, tablet, smartphone or paper-based resources. |

Table 61: Pressure Arrows Added to LSISB Model

Consequently, the resulting updates were applied to the model (Fig.105).
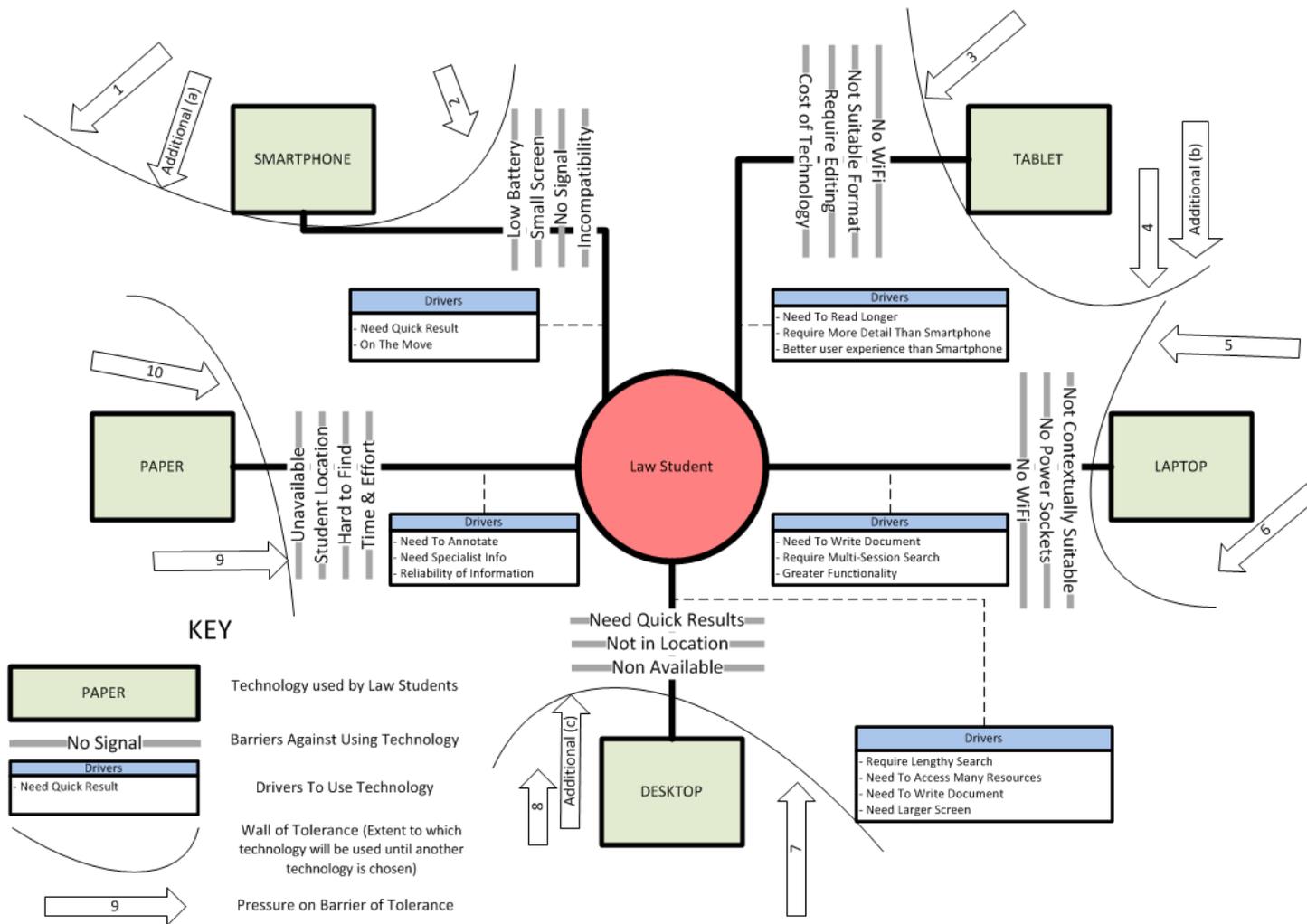
Figure 104: The Refined Law Students Information Seeking Behaviours (LSISB) Model

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## 9.6 Overview - Recommendations for Law Librarians

We built the lists of recommendations for law librarians based on the outcomes from our discussions with our sample group of law librarians who participated in our research exercise. We also used inputs from law students who had provided feedback on the legal information resources that were provided to them together with their experiences of accessing them, especially from mobile platforms. Our recommendations were also complimented through our findings from the literature available to us and it was through combining these components that we built our recommendations. The lists themselves were headed by a set of positive and negative observations which would be most relevant to that specific group, i.e. positive observations on resource provision was listed for academic law librarians whilst positive observations for legal information service providers would consist of feedback on legal resources where the design, functionality or service was well-received. Additionally, we included our observations of law students and feedback specifically geared for them, this would be beneficial to both academic law librarians and legal information service providers from a service/resource usage and delivery perspective.

Our recommendations were built incrementally as we progressed through this research effort, from the output of the exploratory study, through to both phases I & II of the detailed investigation, we used the summaries of our findings to extract key themes and aspects which would provide a high-level yet informative account of a specific behaviour, topic focus or activity relevant to the information seeking behaviours of law students using mobile technologies for academic study.

### 9.6.1 Our Observations from Law Librarian Feedback

<u>Positive</u>

Law librarians' perspectives of electronic resources varied with most showing positive attitudes but lacked the technical knowledge to comprehend the changes that electronic resources were and would continue to bring. Academic law librarians were very supportive of electronic resources and had provided a lot of support for law students however they needed support themselves from their IT Departments as well as institutions overall to fund the additional overheads for managing these products.

<u>Negative</u>

Ownership of digital content was a critical concern raised throughout the interview process and librarians were reminded of the harsh reality of digitalization of content when at times products were unilaterally changed by vendors without the librarians being aware or consulted. It was clear that digital content was a subscription-based model which presented a dramatic shift from the traditionally tangibility of paper-based resources that generations of librarians were so accustomed to and their departmental model built upon. Digital resources, given their functionality being so intrinsically different challenged this and librarians sought to meet this need for change. Law librarians were concerned at law students' lack of research skills and growing dependence on electronic resources as they improved over time. They were also concerned at the potential monopolisation of legal information in the hands of a few products. The cohorts' approach to electronic resources varied with a lack of a centralised or formal strategy driven by a larger consensus of like-minded professionals, all of whom faces similar challenges. We also found that each HEI was working largely in isolation and thus was unable to utilise a collective approach to addressing the challenges faced.

## 9.6.2  List of Recommendations for Law Librarians

<u>Management of Digital Resources</u>

Our research found that most of the law librarian cohort faced the similar challenges in terms of managing the increasingly digital resource collection they were subscribing to. Discussions led to the need to provide a more unified approach to address these challenges given the changes digital subscriptions present over paper-based subscriptions which are tangible and do not pose the same risk in terms of ultimate ownership. Therefore, we recommend that law librarians and their respective HEI create a steering group which will seek to build a forum upon which the changes that electronic resources are bringing to the law library domain can be outlined and addressed. This steering group will potentially provide greater combined customer base from which law librarians could leverage greater purchase discounts and manageability of service provision from legal information product vendors. Ultimately, a greater integrated forum for legal resource management will benefit all HEI in terms of a larger voice, procurement leverage and sharing of resources – where possible. HEI who are less well funded and at greater exposure of being pushed into electronic-only resources will be protected through having access to paper-based material via share-schemes with other better funded HEI. Concerns over the changes electronic resources bring to the law library domain can be shared with other HEI and efforts to find solutions realised more effectively. Changes in the law students' learning landscape will also be better understood through co-operative dialogue between the HEI distributed throughout the U.K.

<u>Instruction for Legal Research</u>

We found that law librarians faced challenges in training new law students in the skill of conducting legal research and that the growing digitalisation of the library domain added a layer of complexity inadvertently by making the search of legal content more user-friendly and less structured.

Law librarians were making isolated efforts to address these challenges in a variety of ways which were providing positive results, but we could not help but recommend that it would be more effective and meaningful for a wider strategic approach to such a key need.

Therefore, we recommend that law librarians create a standard set of training guidelines which can be applied to all law students throughout their studies, delivering a uniform approach to Legal Research and include both paper-based and electronic resources. A standard legal research training module would not have to be enforced upon all HEI in their entirety and HEI would be at liberty to implement customised versions to suit their specific training methods, however there are opportunities for HEI to combine their efforts somewhat, even at the basic level, to address a common change that they all face – the growth of mobile technologies in their space and the impact these devices have on law students' information seeking behaviours.

Joint Procurement

That law librarians throughout the U.K. combine their efforts towards procurement of legal information resources from vendors in order to leverage greater volume discounts. Mechanisms to share user experiences of legal resources and services to provide a wider forum through which greater insight and strategic usability approaches can be adopted. Where possible, sharing of resources between HEI be encouraged through resource-pooling schemes like many counties and city boroughs where libraries often share resources with others.

A National Framework Covering Legal Research Best Practise

A HEI led legal research training skills program where law students are provided structured guidance on how to best navigate through both paper-based and electronic resources effectively. Opportunities exist for HEI to work together on this and combine their learnings to build a comprehensive training feature.

## 9.7 Overview - Recommendations for Legal Information Providers

The list of recommendations for legal information providers was built in the same manner to that for law librarians (See Section 9.6). This was created using feedback from law students – the legal information providers patrons.

### 9.7.1 Our Observations from Law Student Feedback

<u>Positive</u>

Law students wanted to focus on doing the task of reading the relevant content itself and sought to utilise electronic resources to reduce the time it took to locate information in the first place. Smartphones were the most popular mobile device used but often neck-and-neck with laptops which although were less portable, provided greater computing capabilities. We learnt that law libraries were valued as places where research could be conducted and assistance in locating resources found. Law students were very time-conscious and so sought quick access to information in all areas and consequently there were calls for more collaborative functions to be integrated within electronic resources. The Web Browser on a smartphone was a key driver for its use for academic information seeking, as a result the law library catalogue was a popular resource. Law students showed a transitive behaviour for using mobile technologies in that their choice of device changed with their context and overall, electronic resources were popular and there was a demand for more resources to be made available in this format. Where found, well-designed user interfaces were very popular amongst both law librarians and law students. Overall, we found that products that ported well between the several types of mobile technologies and made intelligent use of the different form-factors and corresponding functionalities, would be a significant benefit to law students.

<u>Negative</u>

Some law students were reluctant to engage with resources that required effort and suggested that their information seeking tasks be made easier if not completely automated.

The cohort was also unable to decipher the difference between some of the legal information sources given that many were accessed through uniform interfaces – this impacted their product knowledge.

Despite the popularity of electronic resources, information printed on paper still retained its value. Vendors need to provide more detailed updates on when their products will be migrated off some third-party platforms and would be best advised to avoid selling bulk products where the use of many contents may not be required. Poor interface design and lack of functionality has significant impacts on the use of electronic products for law students and was widely observed by the law librarians we spoke to. E-book design; in particular; was raised several times as it was found to be poor and lacked the functionality that both law librarians and law students valued so much.

### 9.7.2  List of Recommendations for Legal Information Providers

Our recommendations were based on a combination of using the feedback from both law librarians as well as law students. For ou research we managed to achieve the participation of over 90 law students from many different HEI throughout the U.K. This cohort consisted of both male and female students engaged in full-time and part-time study of law in a variety of academic levels. This cohort was diverse and provided a fair representation of the U.K. law student cohort. We utilised the opportunity to extract as much information as we could around legal resources, electronic legal resources, the use of mobile technologies within the learning space and the use of mobile technologies for legal research. We also used law students' participation to help us evaluate our proposed information seeking behaviour model which was adjusted as per student comments in a focus group. Although we were restricted to a small sample size due to logistical and financial constraints, we still managed to build a collective platform from which group-themed discussions took place and this was also recorded.

Instruction for Legal Research

That law students are provided with instruction on how to conduct legal research and utilise the resources provided by the law library effectively and reduce the risk of over-dependence on specific products/services, similar for the recommendation to academic law librarians, we repeat this recommendation as outlined for law librarians but more geared towards vendors and providers of legal information services in the market. Our view stems from multiple concerns expressed by law librarians over this topic especially considering the change in information seeking behaviour that electronic resources have brought into the law library domain. The need for a common approach as opposed to multitudes of attempts to guide law students into developing well-rounded legal research skills amongst the realms of both paper-based and electronic resources would provide a cost-effective way to addressing what appears to be a nation-wide challenge. A better trained law student cohort may result in a balanced use of resources and prepare law students to be confident in accessing all kinds of legal materials when they enter the profession.

Technology Support

During our research we found law librarians noting a growing number of various technologies that were being used to access legal information resources, often the need would arise that the law library supports the usage of such technologies in this context. This need was gradually becoming an expectation and posed a challenge to law libraries in that they were not traditionally setup to provide technical support to such a comprehensive level, especially on the multitude of platforms that ere appearing on the consumer market. Nonetheless students continued to persevere regardless of whether they received support or not, this poses a risk as a better oversight and management of technology usage would empower law libraries to better channel their services effectively through the different technological formats available. i.e. the usage of smartwatches could provide law librarians the opportunity to send short and brief directions on where to find specific resources for certain topics to a class of law students.

Having said that, we recognise that the burden should not be solely based on the shoulders of the law library and that HEI's IT Departments would be well-placed to form a closer strategic partnership with librarians to build an effective support structure that would meet this need. Thus, our proposal is that law students are afforded support from their HEI's IT Department in using modern technologies for their information seeking needs – albeit within manageable expectations and in unison with their academic law libraries. Ultimately, greater integration of IT Departments into the cluster will provide the much-needed technical backbone required as more technologies continue to be deployed into the law library domain.

The Burden of Printing

Whilst electronic resources delivered information on a digital format, the demand for paper remained and our research found students using digital to create bespoke printed resource sets for their use. Paper remained in demand and this was due to several factors outlined by both cohorts including; annotation, readability of voluminous data and tangible ownership. The last aspect we will deal with separately but the first two have been found to be placing greater pressure to print content given that not all students would like to engage in reading legal information from a screen in its entirety. The cost of printing applies to most if not all HEI where such services are provided, and these charges are placed upon students who increasingly would be expected to utilise printing services to create their own forms of tangible content that they could be at liberty to read, examine and annotate. Bypassing the limitations at times impressed upon them by existing electronic resources where functions such as highlighting content are at best restricted and at worst not available at all. It is therefore our recommendation for both vendors and law librarians to recognise the need for print together with the additional burden this placed upon law students and develop novel ways in which costs could be reduced. Sponsorship of printing pages of resources at a subsidised cost, re-using printed copies of journals from digital PDF versions are amongst many initiatives that may be employed.

Needs of Law Librarians vs. Law Students

Our research found at times differences in what law librarians wanted from legal information resources compared to that of law students. i.e. law librarians were concerned about the ownership of the resources whilst students concerned about access. Therefore, each cohort, understandably, had its own requirements given their different contexts in relation to the legal information products that were available. Both cohorts' requirements would need to be met if not largely addressed if legal information providers wanted to act upon the feedback provided by the research participants in this study. To facilitate such a mechanism, we recommend that vendors should engage with both law librarians and law students through a consumer-group in order to ensure product purchases, usage reviews, feedback on service provision, upgrades and changes are discussed and any corresponding matters arising covered. Outputs from such forums could result in improved promotion, guidance, usage and ultimately adoption of products and services, leveraging existing technologies and infrastructures be it through the academic law library or through the technologies owned by law students.

Law librarians mentioned the pressure they felt from vendors when purchasing legal information resources in that their respective HEI's individualistic approach to legal content and corresponding collections were not given the due approach that would be the norm historically but more of a blanked approach where they were pushed to procure a set of products which would be provided as part of a larger package of services, irrespective of whether said services were used or not. Our recommendation is that vendors take note of this feedback and provide more due consideration to the individual characteristics of a law library and its corresponding needs accordingly, this approach would benefit both parties in that HEI's would be able to focus more funding on what they really needed to subscribe to and vendors be able to supply services with the insight that they would actually be consumed.

<u>Access vs. Ownership</u>

This topic repeatedly surfaced in our sample of law librarians and has also been documented in literature we reviewed, thus warrants detailed mention. Law librarians vented their frustration across the board over the challenges they faced when they would find themselves losing access to specific subsets of digital legal content within. Investigations into these incidents would often reveal that the cause for this was often due to specialist legal information providers building their own independent mechanism to deliver their content as opposed to utilising the services of aggregators, this would result in the subset of content being removed from the aggregators portal. Law librarians would often be caught off-guard at this practice and be forced to re-negotiate new agreements with the new specialist providers directly whilst still having paid aggregators for the same content despite not being able to access it any further. This was a key obstacle in academic law librarians wanting to adopt digital resources in lieu of paper-based ones as it sent a clear message of the intangible nature of digital media and the inability to be in ultimate control of the content that their departments were paying to access.

Some law librarians voiced that their paper-based subscriptions had suffered as a result of this, cancelling them to purchase digital and then losing access to that very content being a prime example. And thus, sought to guard their collection by subscribing to both paper and electronic versions of the same resource to realise the flexible benefits that digital content provided as well as safeguard the content that paper-based resources delivered. Some HEI did employ measures to protect their investments such as using dark archiving, but this was a relatively isolated approach. Our recommendation in light of the experiences shared with us and concerns raised by law librarians is that vendors need to understand and recognise the apprehensions raised over access vs. ownership and that this is a major stumbling block for further adoption of electronic resources.

Furthermore, vendors need to provide failsafe measures to ensure that their services are provided with as little downtime as possible and digital archiving of resources whose access is already paid for should be made available, just because subscription fees have not been paid for a time, the un-updated version of the digital service should still be accessible for perpetual access and use without restriction. The benefits would be mainly of confidence in the provision of such formats and perpetual access based not on a more tangible model aligned to that of paper-based resources would allow HEI to better focus their hard-pressed funding capabilities towards more digital content. Hence our recommendations are as follows;

- A standardised approach for legal research methods for law students is employed within the HEI in the U.K. based on our feedback, many of the law librarians raised the challenge of having to teach law students legal research skills which was further complicated considering the new technologies that had entered the legal information domain.

- Support for technologies should be more structured and formalised, especially in light of the increased variety of portable devices entering the consumer market and those which ultimately find their way in the hands of law students to access legal content. Local IT Departments would be well placed to take a lead role in building a support structure to cover this growing requirement.

- Printing appears to be a growing concern given the increased requirement of such services due to the present need of law students to be able to print content from digital sources. Costs for printing remain a concern given the already financially overburdened student population in light of tuition fees, effective means to utilise commercial methods to reduce printing costs would be welcome.

- A consumer group consisting of both law librarians and law students to provide feedback on legal information products and services, this would provide vendors with direct

insight into their higher education markets and better inform them on effective methods to develop, test, market and promote their products.

-        Vendors need to address the gap between tangible paper-based resources and subscription-for-access digital resources. The loss of access to digital content remains a serious barrier in the path to digital adoption and vendors need to employ mechanisms if not provide guarantees that perpetual access to digital content will be safeguarded from interference/inadvertent loss as it is for paper-based materials.

# 10 Discussion

## 10.1  Overview

In this section, we discuss the findings from the three research stages that formed part of this study and the research instruments employed within each stage. The findings are broken down by their respective research instruments which sought to cover aspects matched to address the research questions and objectives. Thus, the findings from a research instrument covers learnings obtained from all the research stages where that instrument was utilised.

## 10.2 Findings from Research Instrument I - the Law Librarian Interviews

We found that textbooks, legal journals and law reports formed the core collection of non-electronic resources that law libraries stocked. For electronic resources, legal databases (Westlaw/Lexis) and the library catalogue were the most popular sources of information for students and this was driven by the quality of the content, user friendly interfaces, accessibility through remote access and the speed at which students could extract information.

Resource Awareness

Law librarians were with the opinion that law students lacked an appreciation of the diversity of non-electronic resources and electronic and the latter format had created a culture of "dependency". This was leading towards an impediment in their thinking that electronic resources were created with little effort and could retrieve information for searches very quickly. Electronic legal resources were becoming more user-friendly with vendors appearing to create inter-dependencies with non-electronic products, so that librarians would be driven to purchase non-electronic resources with electronic versions.

Also, we found many complaints from the cohort that vendors were not clear on their product pricing strategy which often placed a lot of pressure on financially limited departments often challenged to procure comprehensive resources within their restricted budgets. This was a topic that has been widely discussed in literature and calls for a more collaborative purchasing model whereby costs can be controlled without compromising on the procurement of electronic resources (Chandel & Mukesh 2012).

Lack of Control

Law librarians were concerned that electronic resources caused a loss of control over the material as non-electronic products had a physical tangible presence whereas electronic could have access revoked instantly given the very nature through which information were delivered and retrieved. This concern was initially raised in the exploratory study and then again in the detailed investigation and led us to build a theme from it which was explored in greater depth as part of Research Instrument IV – the Law Librarian Thematic Questionnaire. Our results found that whilst this matter was of significant importance to law librarians, law students remained unaware/detached from similar concerns altogether with their focus being on accessibility, flexibility and usability. Many law librarians also found legal resources ill-suited for mobile platforms and believed one would prefer to use a desktop PC or laptop as conducting anything other than simple, brief searches would be taxing on small screens. This topic was also covered in the same research instrument as part of the detailed investigation, the design of resources was also covered under Research Instruments V – the Law Student Thematic Questionnaire and VI – Law Student Focus Group where students were given the opportunity to outline what their ideal legal information resource would look like. Our results found law students wanting better integration with other digital resources and improved search intelligence.

Formatting Suitability

More so the cohorts were yet to see a legal resource well designed for such small form factors and these barriers were compounded by the native incapability of mobile devices to perform multi-tasking and document editing functions.

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However, the use of mobile devices to refer to the library catalogue was a popular activity that many librarians had observed the law students doing, thus illustrating that given the context, resource and purpose of information seeking, law students would consciously use mobile devices if need be.

Consumer Driven

Student uptake of mobile technologies had influenced the way in which law libraries designed their electronic resources and delivered them, consequently, a small number of law librarians had engaged in activities that would encourage smartphone and mobile device use in general within the law library domain, this was done through distribution of literature, organising classes where students would be shown how to use some resources and conduct searches using these technologies. Yet this segment was insignificant compared to the rest of the sample group we interviewed. Hence, whilst most of the law librarians did not actually discourage the use of mobile technologies in this context, they did not encourage it either.

Product Indifference

Law students appeared to be indifferent to the variety of legal resources given the relatively uniform interface of electronic resources, librarians were concerned that this could lead to a culture where the individuality of the source of specific legal content would become diminished and students would no longer be used to consulting specialist products for specific legal content. Thus, what would be the normal attitude when using non-electronic resources was now changing for electronic – which had arguably started to demonstrate a near-seamless integrated search experience.

Calling on Vendors

Vendors were called to be more pro-active in building products for mobile technologies and their focus appeared to be a lot more on the commercial market than academic, consequently, law librarians took the initiative to working with vendors and playing a more active role in the development and procurement of products so that students would gain the most possible benefit.

Law librarians also wanted their staff to have more training on mobile technologies, so they could provide better support to law students and felt that mobile devices would encourage students to use more resources electronically. And whist the growing prevalence of such technologies would allow students to locate legal content with ease, there was the risk that it may hinder law students search experience due to the smaller screens and lack of multi-tasking capabilities so native to these technologies. Conversely, should vendors take note and work towards building a comprehensive legal information app, we may run the risk of possibly diminishing the chance of students retrieving the most relevant and best quality information available and relying almost solely on vendor specific products as opposed to consulting a variety of them.

<u>Changing Landscape</u>

Law librarians saw their departments becoming more akin to comprehensive centres of information provision, technology support and digital literacy. Where reduced amounts of physical resources would give way to increased provision for open and collaborative spaces and where technology can be used as a platform for legal information research and study. With the digital age in full-swing, law librarians appreciated the changes that were sweeping their environment, where students would once have to come into the library and approach them for help in locating resources, could now access resources remotely. Thus, the shift between having a guaranteed audience of patrons to one where patrons would have to be sought, called for change in the way legal resources were managed and promoted amongst the law student body (AALL 2001) & (Stirepe et al 2014). These changes would mean that law librarians would need to be firmly embedded within the law students' information searching activities and be an active if not lead part in determining how students conducted their research, utilising the rich and diverse resources available to them via the many evolving technological devices at their disposal.

## 10.3 Findings from Research Instrument II – the Law Student Mobile Technology Questionnaire

The output from research instrument II was mainly of quantitative nature with some qualitative elements. From this part of our research we found that screen size and quality of display is the most important aspect of a smartphone or a tablet device. Yet desktop PCs and laptops remained the most popular technologies to use for study-related information.

<u>User Behaviour</u>

Smartphones were used for study-related information seeking for short periods of time and our results showed a linear decrease in usage as duration increased, conversely these devices were mostly used for social information seeking for more stable durations with relatively minor change as duration increased. Smartphones were used by students as communication devices around the campus area and after voice and text, web browsers were the mostly used application. Tablets were used in greater frequency for study-related information seeking from the outset, compared to smartphones but the linear decrease was greater as duration increased, furthermore tablets were used in a comparable manner for social information seeking as they were for academic, whereas the usage for these two contexts differed for smartphones. Tablet devices were also more likely to be used in discussion group related activities and laptops favoured best for study-related information seeking with web browsing being the most popular tool used on them. Laptops usage over time showed that both study-related and social information seeking increased as duration using the technology increased. However, desktop PCs showed a similar pattern of use to that of smartphones and tablet devices for both study-related and social information seeking where long-term study related information seeking would decrease over time as would social information seeking.

## Library Usage

Law students favoured the law library as a popular place for study given its quiet ambience and availability of resources. Whilst at this location internet search, email and SMS/Text were the three most used functions students would use on their smartphones. Whereas internet search, email and Social Media were the three most used functions students would use on their tablet devices if used in the Library. If using laptops then internet search, email and creating & editing documents were the three most used functions students would use in this location. Our research also found law students to be more likely to consult their peers for help compared to law librarians.

## Technology Usage

Students were prepared to use their smartphones for study-related information seeking if they had more resources designed for these formats and there was a calling for attributes such as customised search history, enhanced graphical display, wireless printing and the ability to copy & paste as lead requirements for a study-related mobile device App. At the same time, students disliked pop-ups, slow speeds, instability and poor functionality in study-related mobile device Apps. For tablet devices, result processing speed, document sharing and editing, print wirelessly were key items noted by students for a study-related app whilst instability, slow response and pop-up adverts were the most disliked aspects. Overall, law students valued attributes which allowed them to create, edit and share documents, utilise the internet as well as leverage interconnectivity with social media. Law students had demonstrated a mature use attitude towards mobile technologies in that they simply did not just use one device over another, but interestingly had acknowledged that some technologies were better suited for specific contexts over others. Consequently, their usage of these technologies was influenced by several factors such as environmental context, content context and specific need/topic context. Students were not concerned with ownership of resources, but accessibility, usability and flexibility were key factors in determining whether a resource was used or not.

This was more so for distant learning students or those with special needs where technology played a large part in the facilitation to provide access.

## 10.4 Findings from Research Instrument III - the Law Student Study Questionnaire

For the qualitative engagement with the law students, we found that the cohort rated the law library as the most suitable location when searching for academic information, driven by resource provision and the expertise they could leverage from the law librarians and fellow students, however we noted that students were more likely to consult their peers than librarians. Also, some of the cohort informed that as their confidence in using legal resources and understanding of where to locate them online grew, their need to go to the law library decreased.

Resource Drivers

On the resource front, students were content with the variety made available to them with electronic databases being the more popular legal information product used. Driven by accessibility, reliability, depth of content, ease-of-use and speed at which information could be obtained with most students reporting that their information need had been fulfilled within 15 minutes of their search and that too often successful without having to search through other resources for the same type of information. These qualities have been documented in literature for not only legal resources (Wu 2005), but also for wider materials for other subjects (Chanel & Saikia 2012), (Kenchakkanavar 2014) & (Strang 2015). The attributes of convenience, depth of information and user-friendly interface where the 3 most important aspects that students preferred in the resource they used, regardless of the type it was. Again, literature covering these favoured attributes for electronic resources in general found a wider consensus amongst the general student populace (Manorama & Jeevan 2013) & (Habiba & Chowdhury 2012).

<u>Resource Barriers</u>

Conversely products that were time consuming, cumbersome to use in that some products relied on the student to be extremely specific on the search and this would often yield irrelevant search results leading to frustration. Unreliable in terms of content which could often be the result of inappropriate search terms, this too caused by poor user-interfaces were all aspects that would hinder students use of that specific resource and become barriers for further utilisation. Additionally, students informed that they were not aware of some electronic resources having mobile app versions, thus leading to a call for a greater promotion of products by vendors with better support and end-user guidance.

<u>Information Retrieval Speed</u>

Most students had a positive attitude towards using their smartphones for their study related information searching and those who did do so found the devices to be well suited for quick sessions of searches, searching whilst in motion and relatively suitable alternatives to other less portable devices. However, a proportion of the cohort did refrain from using smartphones for their study-related information seeking due to the lack of functionality that many resources were hindered with or other more device related barriers such as small screens, lack of network connectivity or shortage of power sources. These barriers were repeated throughout the research stages.

<u>Screen Size</u>

Students favoured using tablet devices for their studies with most agreeing that these devices were better suited for study-related information seeking compared to smartphones and the use of such technologies was driven also by the convenience in which they could be activated and readily available for use together with the relative speed at which information could be retrieved, an experience like that of a smartphone with the additional benefit of having a larger screen. Smartphones, whilst convenient, were held back for usage long-term due to the need for many students to examine text for lengthy periods of time.

Laptops and desktops were shown to be more preferred for study-related information seeking than tablet devices given their native multifunctional and the availability of peripherals which would facilitate the ability to create and edit content with relative ease.

## 10.5 Findings from Research Instrument IV - the Law Librarian Thematic Questionnaire

Law librarians' concerns about the lack of ownership that prevailed with electronic resources, was resonated throughout our engagement with this cohort, a theme that is well-documented within this report as well as the literature reviewed within. Research in this area clearly agrees with these concerns but also notes the many positives that electronic resources bring into the landscape (Schaffner 2001).

Tangibility and its Overheads

Whilst, paper-based resources provided tangible ownership, the overheads for managing these were high when compared to electronic resources, many of these overheads involved laborious tasks. And although electronic resources alleviated the access restrictions of paper-based resources, they too required management which meant another set of efforts of their own kind being brought into the domain such as management of increasing multitudes of vendors, diverse product marketing approaches and potential loss of access to content (Michalko et al 2010). We have found arguments both for and against electronic resources in the context of access vs. ownership with the shift going from just-in-case for paper-based resources to just-in-time for electronic (Kgomotso 2002). Kgomotso (2002) outlines that increased costs of paper-based resources, especially those of periodicals have made electronic equivalents more attractive, especially given the financial pressures that librarians face.

Furthermore, librarians would be best placed to focus on providing resources on a need-to-access basis, giving libraries the ability to deliver access to far greater amounts of information that physical products would not be as well-able to provide as well as being made to stocking volumes of paper-based products that may or may not be accessed at all.  However, law librarians noted that electronic resources which proved to be popular due to well-designed interfaces and ample functionality ran the risk of dominating the information search experience and increasing reliance on them. Furthermore, the well documented challenges that subscription-based electronic resources brought compounded law librarians' hesitation in fully embracing digital in lieu of paper-based materials (Johnson et al 2012).

Design of Resources

Literature covering product design for library resources showed us that advances in end-user interfaces resulted in far less laborious efforts required to retrieve substantial amounts of information and that too at significantly faster speeds when compared to the manual research energies required for paper-based products (Kgomotso 2002), (Rector et al 2008) & (Nadjla et al 2011). Additionally, whilst many niche legal resources are still only available in non-electronic format, it is strongly recommended that librarians and possibly teachers be the ones to educate law students on how best to evaluate electronic resources so that they are able to confidently make the assessment of the material being presented to them for their specific information need (Schaffner 2001), duly so, efforts have been made by law librarians to provide such instruction together with resources such as LawBore providing a structure around this way of thinking. Conversely, poorly designed electronic resources risked failing to provide law students with the most relevant information and resulting in ineffective research efforts (Makri, Blandford & Cox 2006) & (Loerstscher & Rosenfeld 2007). Librarians remained observant of all resources provided under their remit especially given the financial constraints that would require them to make the most of their investments, thus making the reasons to select the best designed, most user-friendly and most relevant content resource, even more essential for them to subscribe to.

Digital Content Availability

Law librarians also reported that occasionally they would find law students being surprised when some legal content was not available in digital format, given their assumption that all information they required was digital. Shaffer (2001) reports that this is also accompanied by the supposition that electronic resources are free, and cost is seldom considered in the mindset of the individual using the information. Paper-based resources, however, are a completely different proposition with the well-embedded understanding by patrons as well as students alike, that books and other similar resources, cost money. The reality is quite different in that costs for digital material can be at times comparable to physical equivalents.

Vendor Pressures

Librarians also repeated their frustration at vendors' marketing strategies and how it appeared that legal products were becoming too focussed on the commercial market; where profits would naturally be higher, whilst the academic sector would be left to navigate through the maze of product packaging and costing models, at times, ill-suited for their needs. And although theoretically speaking, electronic resources should be a lower cost option given that the need for paper and other printing infrastructures is no longer needed, this assumption is pure fallacy in that electronic distribution has its own costs.

There is often-natural assumption that newer methods of product delivery could be the "better" option than traditional formats, digital products and the growing electronification of the library does have several advantages, most importantly the capability of providing students with remote access to vast amounts of legal content, the lesser need for scarce physical shelf space and the enablement of multi-channelled rapid information retrieval. However, these benefits come at a price (Johnson 2012).

Library Space

Despite this, our discussions showed that the library remained a key physical location where law students congregate for information retrieval, information understanding, collaboration and academic enquiry.

Paper-based resources were still in demand and it was well noted by law librarians that students preferred to read from pages as opposed to screens, especially for detailed legal content which would require lengthy examination (King 2017). That said and knowing the increased provision of electronic material which is prevalent in this domain, we cannot openly welcome the newer format within the law library landscape without being actively conscious of the several challenges that have been raised by the law librarians in this study as well as voiced in the literature we have examined; thus, the provision of digital formatted information should be handled carefully (Shaffer 2001).

## 10.6 Findings from Research Instrument V - the Law Student Thematic Questionnaire

Our results from this research instrument showed that Smartphones remained the dominant mobile technology of choice for mobile information retrieval. This was notwithstanding the well-known limitations these technologies had compared to other less mobile technologies such as Tablet Devices and even Laptops. The use of Smartphones in this context was primarily driven by the capabilities of the technology to facilitate instant access to information and relatively rapid speeds of results from searches.

Law students were part of a generation where modern technology had reduced the amount of time and effort it took to achieve several daily routines and corresponding processes such as searching the internet, online retailing and even viewing multimedia (Muther 2013), (Carr 2013) & (Krishnan & Sitaraman 2013).

Speed as a Priority

We find ourselves with a student cohort which values speed, efficiency and rapidity of information retrieval more than ever and presents a new challenge to law librarians as well as vendors of legal information products into accommodating for this new attribute alongside quality, user-interface design, compatibility and functionality (King 2017).

Whilst ownership vs. access was the key theme for law librarians, speed, mobility and design of user-interfaces was the dominant topic set for law students. And design too plays a significant role in relation to the speed at which information can be retrieved, in that, given the prevalent use of mobile devices to access, exchange and create a growing multitude of information types, we seek to leverage these innovative technologies whilst avoiding the compromise of their capabilities – smaller screens and relatively limited computing power – when compared to non-mobile technologies such as laptops and desktop computers (Knizner 2014).

Market Driven Usage

The growth of mobile device ownership continued to expose more electronic resources to smaller form factors and whilst some products fared better than others, notably the online library catalogue, which was regularly mentioned by both cohorts in this report, other resources were not mentioned as much in this particular contextual use. Students nevertheless wanted more, they sought to be able to study from these smaller screens, albeit to a limited extent, but still they wanted to be able to retrieve information for their courses without being restricted by the noted limiting attributes. We learnt that students would not want to look at smaller screens for extended periods of time but would want to be able to read legal content to get the key points and core gist of the topic, thus making the need for better design, less intrusive applications and effective use of text more important than ever (Myrberg & Wiberg 2015) & (Gutierrez 2016).

Self-Developed Searching

We were assured by learning that despite the relatively unstructured use of mobile technologies in the learning space, law students had self-taught techniques for making the most effective use of a specific technology based on their information need, the detail and structure of the information content and their physical context at that specific time. Students would intently move from using a Smartphone to find resources within the law library to either locating the physical resource itself or examining it using a device with a larger screen or even printing it for further examination or annotation needs (see Section 6.5.2.2 & Section 6.5.2.3).

Literature covering the benefits of working with larger screens to read electronic content concurs with this behaviour is also well documented (Lynch 2016) & (Biersdorfer 2017). Accordingly, whilst Smartphones were ideal for brief information search sessions where the depth of the content being studied was light, the use of technology shifted towards laptops, desktops and even books or other paper-based materials as the complexity of the information increased and the need for larger screens to view this content grew.

<u>Wants of Students</u>

Finally, our cohort informed us that they valued well-designed resources with high-quality content and that which would intelligently leverage functionality to provide a relatively seamless yet conscious search experience where powerful search capabilities would enhance the results being retrieved. Law students appreciated that they would have to play a lead part in the efforts to search for legal content but they strongly signalled a desire to see electronic resources carry out more of the manual research efforts for them thus allowing students to have more time to focus on the retrieved content of the legal information itself and that too being of the most relevant, easy to understand and functionally integrated with other systems for use.

## 10.7 Findings from Research Instrument VI - Law Student Focus Group

Our focus group exercise provided us with the opportunity to speak to a group of law students face-to-face as well as share our findings from our research to date with them and make detailed observations of their opinions and perspectives on electronic resources in a mobile form-factor context. We noted that law students had become more assumptive in thinking that electronic resources would conduct most of the research burden on their behalf and had no reservation about expecting such.

<u>A Change in Behaviours</u>

Clearly students' expectations had shifted from being able to conduct research, locate information and then intelligently analyse, examine and interpret it, into activities which included less of the research effort and more of the examination of the content and that too would be filtered and designed in a more user-friendly way. The focus group informed us that they had developed creative strategies through which a variety of technologies were used for academic information research.

This included using smartphones to download content for reference when network connectivity was not available, using laptops to access specialist software that would not normally work on smartphone or tablet device based operating systems and prizing large display screens which would enable both reading and typing of notes at the same time (Lynch 2016) & (Biersdorfer 2017).

<u>A Change in Technology Usage</u>

It was the latter activity that drove the popularity of laptops, the law students where near unanimous in their call for better designed legal resources on smaller-screen form factors as until then, laptops would be the key technology which could provide them with the multi-tasking and editable capabilities they required whilst enabling some sort of mobility albeit at a restricted scale. Tablet devices, on the other hand, were perceived as an additional expense as opposed to a key technology requirement, students had learnt to work relatively well with Smartphones and Laptops, interchanging their use as and when required, depending on the context. Whereas Tablet devices could provide a bigger display screen, they were still unable to give the same functionality as that of a laptop, thus the cohort tended to invest more into a Smartphone with a larger screen and use these technologies for brief information seeking increments, reserving longer search sessions and detailed analysis of content to be done on laptops.

<u>Meshing of Resource Formats</u>

As for resources themselves, the focus groups view was that electronic resources should be more embedded within their courses and that most of the sources of information that they would need be articulated to them in advance. Again, the groups emphasis was on examining the content itself and the desire to spend time and effort searching for it was clearly not as strong as law librarians would like to have seen. This clearly showed a significant shift in the attitudes and more so the information seeking behaviours of law students in today's era where modern technology had allowed for information to be retrieved at greater speeds, with richer variety of content and all this in a near ubiquitous manner through mobile devices, resulting in the creation of an impatient generation (Muther 2013) & (Carr 2013).

<u>Digitally Hungry Students</u>

Overall the message we heard from the cohort was more of digital content, more flexibility, better integration with other technologies and near seamless embodiment with their study courses. The cohort also contributed towards reviewing our proposed Law Students Information Seeking Behaviour Model and outlined some additional changes to the barriers and drivers contained within it (See Section 9.5.3.7). We saw these comments as a call for more focus group-based studies where students feedback on course design and integration with mobile technologies as well as electronic resources could be uncovered and evaluated. There were plenty of opportunities for such rich discussions to take place and the positive input the cohort provided was evident of their enthusiasm to engage more on this topic. More than ever, it was clear that the patrons of academic law libraries were evolving into a more digitally focussed information seeking cohort which prized access, flexibility and speed. Content quality was also valued. The generation of today had been changed, well before they entered the realm of higher education, their mindsets were already moulded into thinking and working like digital natives, these changes set from their childhood homes, primary and secondary schooling as well as social aspects of their livelihoods (Jones et al 2011), (Adler 2013) & (Pepper 2015).

## 10.8  Summary of Highlights

For all the highlights obtained from the research instruments, the key findings showed that despite the growing prevalence of electronic resources in the law library space, paper-based resources still managed to keep a significant amount of interest amongst law students and libraries maintained their position as the leading place for students to study and find legal information.

Impact on Students

Contrary to our initial assumption, paper-based resources remained popular especially in context where electronic resources could not facilitate a satisfying information seeking experience, i.e. consuming copious amounts of textual content. Yet students' dependence on electronic resources remained high (largely due to the growth in mobile technologies) with expectations being that most if not all legal content was or should be made available in digital formats. Law students' behaviour towards traditional legal information seeking was now becoming more impatient, less focus being on the finding of information but more on the actual digestion of it and using the time saved to locate the content to concentrate on the creation of more information; essays, revision notes and so forth. Their traditional research skills were also being diminished largely due to the improved search capabilities and increased integration that electronic resources contained, our focus group study showed the emergence of a law student whose appreciation towards legal research was not as complex and consuming to that compared to earlier generations of students who would need to contend with paper-based resources in a far more time effortful and consuming manner.

Impact on Law Libraries

Our research showed that digital resources were widely available amongst academic law libraries but many HEI had to often reduce their paper-based subscription in lieu of paying the higher charges that electronic subscriptions often demanded.

And despite the advantaged of flexibility and near-immediate access, these resources were never owned outright, consequently law librarians were often painfully reminded of this aspect from isolated experiences where some vendors would unilaterally remove access or change functionality of their service provision. The result was a growing reluctance on the part of law librarians to increase their electronic subscription and those who did, continued to maintain their ownership of paper-based resources, largely out of concern of losing access to the content if their sole method was electronic. This approach was often seen as a costly measure to purely guarantee the HEI perpetual access to information. This issue in many cases compounded law librarians' efforts to manage an effective legal information collection whilst keeping within ever-decreasing budgets. Our literature review on this matter showed that this experience was not just isolated to law librarianship but also to other wider areas of digital content (tVPN Admin 2012). As a result, electronic resources, although still welcomed, were still viewed with caution (Shaffer 2001). Other literature on this subject showed that ownership of material was critical to librarianship throughout, by virtue, librarians sought to provide a neutral ground from where information can be accessed in all perpetuity, digitalisation of information and the subscription model that provides access to such data conflicts with these very core values (Colomb et al 2013). The outputs from our research activities supported these concerns throughout the research stages of this study and our recommendation for a wider discussion to include this concern as part of our research deliverables was a consequence of this discovery.

A Model Mapping Technology Usage & Behaviours

For mobile devices, smartphones were the most popular and showed little sign of being superseded even though tablet device usage was still present, it lacked the full communication capabilities of its smaller competitor and the true multi-tasking attributes of the larger technology; laptops; which remained the mainstay of a law student's technology resource and something law librarians also agreed with.

Students had developed their usability habits and created their own independent strategies for using different technologies in different contexts, compared to the law students' pre-digital resources, the modern-day law students' information seeking behaviour journey was clearly transformed. It was no longer just about using books, journals, monologues and other paper-based resources but had evolved into interacting with a vast collection of technologies and mechanisms which would change several times over the time it took for them to examine the legal content they required. Our proposed model was initially built to illustrate this journey using the exploratory study findings by pooling the responses obtained from both law librarian and law student cohorts. The model was one of the deliverables for this research project and was then refined during the detailed investigation, more so as a feature in one of the research instruments – the focus group study which was used to directly engage law student feedback on the model's attributes.  The model's purpose is to help better inform on the design of legal information resources for law students by incorporating each of the technologies used to access such services and for each of these technologies, illustrate the drivers, barriers and constraints within.

By leveraging the proposed model effectively and building further on the other findings from the research activities, we are presented with an opportunity to build a national legal information application which could intelligently format the information channelled through it per the device it was being accessed from, as well as uniformly incorporate some of the functionalities that law students outlined as those most beneficial for their studies.

Our efforts resulted in a stronger understanding about the changes taking place in the law library in relation to electronic resources and the challenge these products posed to law librarians – who although welcomed these formats due to their flexibility and depth of information – were primarily concerned about the new consumer model that was taking shape.

This model was no longer one of tangible ownership but one of subscription-to-access and this

considerably challenged the very nature of the law library which traditionally was a corpus of

physical, tangible information that would always be accessible, and ownership was due outright

under the command of the law librarian in all perpetuity. Electronic resources, whilst providing

rapid access through a web-browser, could just as quickly be removed for access due to either

technical issues.

Subscription related matters or even if the vendor decided to market their product differently and

this may have not been understood by the recipient law library. A painful reminder of the change

and one that remained a concern throughout our discussions. Law students on the other hand

were oblivious to this issue, for them it was about having access to more electronic resources

and more intelligent applications that took away the burden of research and automated it.

Law students sought to utilise their energies more on examining the legal content and not

conducting legal research itself. Law librarians differed with this view significantly, advising that

research was an essential component of the greater effort and training that formed the key

requirements to becoming effective at legal practice.

# 11 Conclusion

## 11.1 Overview – A Narrative

A narrative (previously outlined in the methodology chapter) was created to help better illustrate the work of the research project together with its components and findings, this is shown in Chapter 4 – Methodology (Fig. 53).

## 11.2 Narrative - Literature Review

The literature review sourced many information seeking models which covered a variety of behaviours, contexts and professions. However, there was a clear gap in literature covering the information seeking behaviour of law students as a cohort. Also, the different technologies law students would often have at their disposal to access the various resources they would use had little mention in any of the models - and literature for that matter - that were consulted. Literature in this area also found that reviews of the use of mobile technologies was often focussed on specific cohorts in academia and specific tasks, i.e. investigation of using tablet devices in English classes (Reader 2012), using mobile to support learning in general (Farley et al 2015) and impacts of mobile technologies on student learning (Heflin et al 2017) to name a few examples. From the findings of the literature review, two things emerged;

- The need to build a stronger understanding of law students information seeking behaviours and include the perspectives of both law students and law librarians, by including both cohorts we would obtain a more holistic perspective which would provide a customer and supplier perspective and deliver a complete picture.
- The need for a model which would articulate the behaviours of law students when searching for academic information and how they interact with the various resources provided to them using the different technologies at their disposal.

We engaged in a series of 3 research study stages, each of which covered a part of the UK's academic law librarians and law students.

Each research stage employed a set of research instruments whose results were used to develop our understanding of the landscape and work towards addressing the research questions as outlined earlier in this report.

## 11.3 Findings from Law Librarians

The findings started to strengthen the concerns that first began to emerge during the Exploratory Study phase primarily that the lack of control and ultimate ownership of electronic resources was of significant concern. Further discussions with the cohort noted the risk of over-dependency on well-developed electronic resources could lead to the law student cohort being denied the opportunity to discover legal material from other sources as well as foster a culture where legal research was watered down to actions akin to simply using a Web search engine.

Law librarians noted that vendors were not fully transparent on their marketing of products and often law librarians felt compelled to make purchases of items they did not need or want. The cohort did not completely trust the way in which electronic resources were delivered, especially during times when technical outages rendered these products inaccessible or other procedural technicalities led to the vendor withdrawing access to the information completely. Paper-based resources never had these complications. True that paper-based resources did have physical overheads as well as limitations, but these had been something the Librarians were well accustomed to and despite the difficulties these formats presented, they could deal with. Whilst it was recognised that electronic resources brought many benefits in terms of accessibility and manageability through automation, but the lack of control and intangible attributes were too much of a worry.

## 11.4 Findings from Law Students

Our examination of the UK Law Student cohort found that mobile technologies were very popular and used widely for academic information retrieval – smartphones were the most preferred type of mobile technology.

Other findings noted that speed of access and portability were key drivers for mobile device use. We also found that law students did not use mobile technologies in isolation but switched between devices depending on their information search context. Law students voiced that interface design would be a key winner for greater mobile device use for academic legal information retrieval and that too which was seamlessly usable between several types of technology platforms given their perceived use of a variety of technologies for academic research varying between different use-contexts.

We found that resources with greater amounts of content coupled with user-friendly interfaces fared better than other resources that had either of the two qualities and that electronic resources were most popular with law students who had logistical challenges such as being distance learners or requiring flexible access. Laptops were the most preferred technology overall as they provided portability and functionality whilst mobile technologies were best used for information consumption whilst less portable laptops and non-portable desktops for information creation.

For law students, what was apparent was that mobile technologies were used for brief information seeking sessions whilst more detailed research would be left to be conducted on devices with larger screens. Granted electronic resources were popular and law students had become quickly accustomed to the flexible benefits these products provided, however little appreciation – if any – was shown for paper-based materials. Rather than show the appreciation for paper-based resources, law students would be irritated that the content was not available electronically. In short, law students had seemed to have lost the relationship with books and other physical materials and their focus appeared to be on being able to access content quickly, on demand with little effort.

A perspective which was directly opposite to that conveyed by law librarians – who had often voiced their concern at the decline in the paper-based resource culture that was impacting the law library domain.

Law students' transitive use of technologies continued to be voiced in the Focus Group study with most participants outlining that they often interchanged between the several types of technologies at their disposal dependent on their physical context and the information being sought. Smartphones remained to be used for brief, light-content information seeking only with more in-depth research conducted on laptops – which was the most popular device for electronic resources. Also, the focus group revealed that electronic resources on mobile formats were often poorly designed and provided a limited user capability.

Law students showed strong signs of over-dependence on electronic resources, wanting specific content to be readily available with little effort of their own in locating it. Paper-based resources were hindered by their corporeal restrictions such as limited availability and accessible through on-site means only and the general perception was that paper-based resources were time and effort consuming. Law students looked at existing social-media type products utilising multiple media formats as inspiration and suggested that legal resources be built in a comparable manner – i.e. Spotify and YouTube and there was a demand for greater digitalisation of legal resources. There was no mention or consideration was shown towards the issue of access vs. ownership of legal information resources, the general assumption was that the information should simply be available, digitally in most if not all cases. Law students also favoured the idea that the IT department should play a greater role in the relationship between the law students and the law library. Our abstract observations noted law students' poor use of grammar and punctuation when completing the question sheets by hand – a possible consequence of the widely available and used automatic spell-checking tools in many applications used throughout. Whilst this aspect was not in scope of this research it was felt to be worth noting.

## 11.5  Addressing the Research Questions

To ascertain the success of this research project, each research question was measured against evidence gathered which would was then used to ascertain whether the said question had been answered or not, the totals for the cohorts that participated in the research activities comprised as shown (Table.105);

| Research Instrument | Description | Cohort | Cohort Count |
|---|---|---|---|
| I | Law Librarian Interview | Law Librarian | 1 – Pilot Study<br><br>12 – Exploratory Study<br><br>13 – Detailed Investigation |
| II | Law Student Smartphone/Mobile Device Questionnaire | Law Student | 8 – Pilot Study<br><br>34 – Exploratory Study<br><br>50 – Detailed Investigation |
| III | Law Student Search Study | Law Student | 34 – Exploratory Study<br><br>50 – Detailed Investigation |
| IV | Law Librarian Thematic Analysis | Law Librarian | 3 – Detailed Investigation |
| V | Law Student Thematic Analysis | Law Student | 9 – Detailed Investigation |
| VI | Law Student Focus Group | Law Student | 6 – Detailed Investigation |

Table 6205: Total Cohort Participants

A total of 26 academic law librarians participated in Research Instrument I with 3 completing the questionnaire set for Research Instrument IV. For Research Instruments II and III a total of 91 law students successfully took part, another 9 law students contributed to Research Instrument V3 questionnaires were fielded (Research Instruments II, III and V) as well as a further detailed engagement through the Focus Group exercises (Research Instrument VI). The latter of which included a total of 6 law students. This combined cohort provided a fair representation of the U.K. law student body.

Research Question 1: How do law students use mobile devices?

With a fair representation of the UK HEI cohort of academic law librarians and law students, the 6 research instruments have managed to make effective use of the tools and techniques which have provided a greater understanding of how law students use mobile devices. Although this question covers both social and academic information seeking, the research instruments were used effectively to ascertain responses as such to deliver the response to this question. We now knew that law students use mobile devices, mostly smartphones, for both personal and academic information seeking and that they tended to use smartphones for their studies for brief periods of time and as the duration of use increases so does the requirement for a larger screen. The opposite occured when law students use smartphones for personal/social information seeking with smartphones providing the intimacy that social information seeking, and exchange can often require. And that the use of smartphones and mobile devices was transitive with law students confidently switching between the several types of technologies available depending on their contextual circumstances. Effective use was made of mobile technologies in terms of using the mobile Web Browser and Social Media tools to supplement if not enhance their information seeking capability and law students showed strong favour towards using mobile devices more often for academic purposes, but the lack of well-designed interfaces and functionality limitations was a hindrance. Law librarians had observed increased use of the library catalogue through smartphones and this had aided in the searching for paper-based resources where law students could seamlessly articulate the details of what they were looking for. With this in mind, law librarians saw mobile devices as an opportunity for the law library to provide more flexible access to its resources, maintain a greater link of communication via Social Media and manage a stronger connection between itself and its patrons. Law librarians viewed smartphones as potentially distracting and expressed concerns of the over-use of the technologies and the immersive aspects which appeared to have impacted a small number of law students' social interaction skills. Research objective 1 has been partially fulfilled

as we have managed to investigate the existing legal information resources that law students use for their academic information seeking needs. We have also found out more about the variety of electronic resources law students use not only from the output of Research Instruments I, II and III but also from the literature review (See Chapter 2). We also examined the drivers behind the use of electronic resources through both non-mobile and mobile technologies. Output from Research Instruments I, II, III, IV and V informed us that law students will utilise their mobile devices for short periods of academic information seeking only, this behaviour tended to change when these same technologies were used for casual/social purposes. This feedback agreed with that of law librarians who observed law students' use of their smartphones and occasionally, tablet devices for interacting with the law library catalogue for locating resources or for ascertaining information, at a prominent level, to questions posed or arising during lectures or tutorials. Further detailed study would mostly be done on devices with larger screens.

Law librarians have faced many challenges because of the growing use of mobile devices within their space. Primarily the expectations of law students that their technology be supported so that they can use it to interact with the numerous legal resources available. Law students have made assumptions on several occasions that all legal information should be available electronically and this has posed a problem for law librarians who attempt to not only re-assert the fact that there is still a significant amount of legal data maintained in paper-based format but also, by very nature, legal content remains contained through both electronic and non-electronic formats. Being able to confidently navigate through these channels is essential for anyone who seeks to work the legal profession and until a complete transition into electronic format is made – if this will eventually happen, it will remain a key requirement. Also, we found that vendors of legal products were causing some disruption through their marketing strategies by promoting electronic products as well as paper-based ones but at times making changes to the former which could result in loss of access.

This led to the law libraries being directly impacted and losing access to information which they had already subscribed to. The reality of the lack of tangibility of electronic resources was made clear and consequently, law librarians sought to insure themselves against these practices through maintaining their purchases of paper-based resources whilst trying to meet the demands of the law student body by also investing in electronic resources – given the benefits these products brought. What was surprising was that the concerns of tangibility and ownership vs. access of resources was not a concern to law students – who were more occupied with being able to use products that conducted most of the research for them so that they could be able to focus more on the content itself and its interpretation and mean to the specific case at hand. Hence, we conclude that this research question has been answered and that research objectives 1, 2 and 3 have also been partially addressed.

Research Question 2: Which information resources do they access via mobile devices?

We set out to find out what information resources law students accessed via their mobile devices. Our findings informed us that law students used the Web Browser function as a primary source of information seeking for academic study via their mobile device and that usage was driven by the fact that Web Browsers were compatible with law library catalogues thus enabling law students to quickly browse for and locate resources in a compressed screen format. We also found smartphones were fast at processing information and especially that which was less text heavy and retrieved data quickly.

Tablet devices were also used but smartphones prevailed and maintained their dominance in the mobile technology space. Flexibility, portability, accessibility were powerful drivers for smartphone usage and where possible, other legal information resources were accessed via these platforms, although these efforts were impinged due to poor interface design of the product itself. Mobile devices were popularly used for short periods for academic information seeking, mostly due to legal content being text-heavy and the challenge of reading on small screens however the opposite was true when using these technologies for social information seeking.

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So, in summary, we do have a stronger understanding of the types of information resources law students accessed from their mobile devices and we also now understand the drivers and barriers for this behaviour. Therefore, we have answered this research question. Research objectives 1, 2, 3 and 4 have also been partially met. Feedback from research instrument I, II, III, IV and VI provided most of the background for us to ascertain the drivers for the use of electronic resources through the variety of technologies law students possessed. Our information seeking model elaborated on these aspects more to provide a better-informed illustration of how law students' choice of technology evolved with the drivers that would related to a specific user-context. The Library catalogue was a popular resource used via a mobile device as were other web-based information resources which were accessed for brief periods of time only. We also found out that social media interaction had increased given the capability of mobile devices to deliver communications of this type, well-suited and formatted for the smaller screen. This in-turn enhanced the capabilities of the law library to maintain a regular correspondence channel with the law student cohort. We can conclude that the research question has been answered as we now know a greater amount of information on the types of resources law students used from mobile technology platforms. We have also delivered a list of drivers which can outline why law students would use electronic resources in both mobile and non-mobile contexts.

Research Question 3: How has the use of mobile devices changed the information behaviour of law students?

Mobile devices had fuelled the use of digital resources and this in turn had made significant impacts on the way law students conducted their legal information search. It also led to expectations that most if not all legal information would be available digitally and the growing dependence on materials in this format left law students somewhat disconnected from paper-based resources.

Law librarians were concerned at this and they feared that as electronic resources developed and matured, their usage would only increase and risk students not looking further for information, thus denying them the potential to locate more content.

This was a key risk in that it left a lot of power in the hands of the more successful legal information providers whose products were well-regarded, well-stocked with content and possessed user-friendly interfaces.

Also, there was a clear dependency on mobile technologies being the sole conduit for information and law students voiced many times that they sought for these technologies to become more intelligent and conduct a fair amount of the legal research for them. Students saw these technologies to provide the relevant information for them and save them time which could then be allocated to actual legal study as opposed to research as well. Electronic resources had removed the tangible relationship that paper-based resources had, law librarians noted that law students had little understanding of the specialist legal resources as well as the actual voluminous content that often-encompassed legal information. Ultimately, mobile devices were used for personal information seeking, however there was growing concern backed up with evidence that these technologies were making headway into the learning environment and the impacts this had were being made apparent. The type of activities conducted on mobile platforms coupled with the specific products used had a considerable influence in the opinions as to the suitability of these technologies for this contextual use.

Herein we successfully assessed the challenges law libraries faced when trying to meet law students' expectations in relation to mobile device supported information resources. Many law librarians were pro-actively engaged in working with vendors to ensure that electronic products were compatible in all the major technology formats so to accommodate for this demand. Law librarians noted the positive aspects of mobile technologies being used to access legal information resources, however more products on a growing variety of mobile technologies had led law students to develop an expectation that their device would also be supported in somewhat to ensure that it could be used to access legal material obtained from the law library.

Law librarians pointed out that this was essentially an IT requirement, but their staff had to often help and support to law students. There were calls for the IT department of many HEI to become a more active player in this landscape and provide support and guidance to ensure that the law student user-experience was maintained to a high standard. Law librarians had produced user guides, worked with vendors or independently to provide user-training for using electronic resources, provide emails and other communication-based activities so that law students were aware that their mobile device could be used to access resources. This provided a long-term investment in the end-user capability to access materials that were fast becoming popular and costly.

Research Question 4: What implications does this have for academic library and information services for law students?

Legal information service providers and law libraries can now see the preferential attitudes law students have towards electronic resources and mobile technologies. Both items, however must not be grouped in the same category as there was a clear distinction that had emerged. Electronic resources were very popular in that they provided a vast amount of data to students relatively quickly and in a location independent context, allowing students to study around their own work schedules and not be tied down to the opening hours of the law library.

We expected to find that the usage of the law library would be decreasing because of this, however we found that law students were more attached to the law library as ever mostly driven by the fact that these facilities still provided a well-rounded level of expertise and research support that electronic resources could not compete with. Furthermore, the use of paper-based resources still prevailed, and libraries were constantly working to pro-actively account for the emerging legal information products and the habits of law students when using them. We also found that law students were becoming increasingly focussed on examining legal content instead of the journey of researching for it.

Their standpoint was to utilise modern technologies to conduct the search of the content and thus allowing for more time to be allocated to studying the content discovered. This perspective conflicted with that of law librarians who saw that being able to conduct effective research of legal content between both paper-based and electronic resources was an essential part of the legal profession, largely due to the reasons that not all legal content was available electronically, thus dependence on products in these formats would inadvertently prevent the retrieval of legal content that would be in paper-based format. Also, the lack of understanding in using paper-based resources – which there continued to be a plentiful amount of – would risk law students not being able to conduct effective research. It was feared that electronic resources enabled vendors to be in control of the content provided therein, thus corporate strategies and marketing would effectively dictate the knowledge and understanding of future legal training. Law librarians had actively worked with resource providers to ensure that their products could work in a multitude of formats where possible, enabling law students to be free to use a variety of technologies at their disposal to access the content. Some law libraries provided training classes to help on-board students in the electronic resource environment whist some went further and distributed mobile technologies with legal content pre-loaded to further drive adoption. Also, we noted that law students, despite their preference for electronic resources, still wanted paper-based material as well. The driver for this was the need to take notes and make annotations to text, electronic resources were not as well designed to enable this type of functionality in the digital landscape. However, students wanted to be able to select the specific pages that they could print and not be compelled to carry large volumes of books, where most of the content would not be required. More relevant to mobile technologies was the use of social media that law libraries were actively using to keep their patrons informed of news and developments as well as continue an engaging dialogue which could be constantly updated with live data feeds. The "App" versions of social media tools had fuelled their use and law students saw this as an integrated part of interacting with the law library as opposed to an independent information service provision.

Clearly there was an opportunity here for both sides to work together and account for the disruption that electronic resources had brought to the landscape.

Our research showed that a change in the approach to how law students were using legal information resources was required, opportunities to leverage modern technology to help fulfil many of the basic research tasks could be leveraged to allow students to provide more focus on their learning of the content itself and conduct greater levels of research given the flexibility and power of electronic resources. Our research also revealed that the law library's landscape was changing in that the environment was fast becoming an electronic and digitally versed one with library staff having to engage with law students on increasingly technical subjects and being exposed to a growing variety of diverse mobile technologies and platforms. There was a need to address the shift that law libraries were facing towards information technology in general and the necessity for law librarians to be prepared for this.

## 11.6  Meeting the Research Objectives

The research objectives were outcomes of activities that were performed to address the research questions. The objectives and how they were addressed are summarised and outlined as follows;

Research Objective 1: Investigate the current legal information resources law students use for their academic information needs, focussing on the electronic resources used for the same purpose – in the context in which these are utilized.

A detailed and thorough investigation was carried out to discover the current legal information resources law students used for the academic information needs. This also included the use of electronic resources. A mixed method of interviews of law librarians, questionnaires to law students and a focus group study was carried out.

This extensive approach provided a significant amount of feedback which gave this research the confidence in summarising its findings and utilising these to engineer more research approaches to revisit the cohorts and seek more refined responses. The outcome provided a lot of detail on the types of resources that were available, the resources that were used and the drivers and barriers for each. In total, 6 research instruments were utilised and over 90 law students and 26 law librarians participating. These collective responses often included the technology from which these resources were accessed, and this provided a greater holistic picture of the landscape, giving a more contextual illustration.

Research Objective 2: Examine the drivers of behind the use of these electronic (both mobile and non-mobile centric) resources by law students by obtaining background on the different kinds of technologies law students use and in what context.

The same research instruments were used to examine the drivers behind the use of electronic resources, this included those accessed in a mobile or non-mobile technology context. The results found several synergies between what law librarians were observing and what law students were experiencing, thus illustrating a connected user experience understanding. These drivers initially identified from the output of earlier research instruments were then used to help develop further thematic-based questions to provide more focus on the investigation.

Research Objective 3: Assess the challenges law libraries may have faced on their existing work practices to meet students' use and expectations of mobile devices for study-related information retrieval.

Law librarians included several challenges in their feedback both in terms of providing resources to law students as well as managing through the growing variety of products and their respective access formats.

Law librarians' challenges did vary from one institution to another, those with access to less funding found it more challenging as they felt compelled to adopt resources mostly promoted by legal information vendors, often citing the potential cost savings as a business driver. However, those institutions with access to more funding managed to source resources in as many formats as possible so that they would retain their resilience and continuity of operation if electronic resources became inaccessible for a variety of reasons.

Research Objective 4: Outline any strategies law libraries may have adopted to incorporate mobile device technologies within their domain and future proof their space through this approach.

We managed to find out several different strategies that law librarians had considered and embarked upon in their attempts to work with mobile technologies that were increasingly becoming prevalent within the law library. The most popular activity included providing user guides to assist students access legal resources via mobile devices as well as elect to distribute mobile devices that were pre-loaded with legal applications for students to use and provide training classes to them. This pro-active measure put more control over how law students accessed legal information from mobile technologies and thus empowered law librarians to have more control over law student information seeking behaviour as well as provide law students with a more structured and guided approach to academic information seeking in this relatively new manner.

Research Objective 5: Propose, develop and test a new model which will outline the information seeking behaviours of law students in the context of mobile devices using the research outputs from the law librarians, law students and literature review.

As outlined in section 5.8.1.3, where the LSISB model was first proposed following extracted data from research instruments I, II and III together with the literature review in chapter 2.

This model was refined using the outcome from the focus group study in research instrument VI and then updated with additional attributes as recommended by the participating law students and outlined in section 6.4.6.4.1.

This model provides a holistic view of the use of mobile technologies as well as non-mobile such as desktop computers and paper-based resources with the law student in mind and maps out their information seeking behaviour in relation to these tools. The attributes outlined can be used to provide insight into law student usage behaviour for a variety of reasons such as further research, general knowledge and understanding of this cohort; potentially of use to both law schools and law libraries alike and even for those who wish to develop resources for law students.

Research Objective 6: Use the model to deliver a set of recommendations to help law libraries be better informed on the information seeking behaviours of law students.

The model together with the outcome from all the research instruments has been used to deliver a set of recommendations in the form of highlights and summaries in Chapters 8 and 9. These recommendations can not only help law librarians and law students but also members of the law faculty and legal information resource vendors.

## 11.7 Contribution to Knowledge

Understanding law students' information behaviour

Law students' information behaviour casts a very wide net in the world of knowledge in this area. With the rich variety of information sources, materials, tools, technologies and methods, it was essential to provide a focus so to ensure that our examination remained geared towards the use of mobile technologies for academic information seeking. Law students were found to be taking the use of electronic resources relatively confidently with the mindset that these products operated the same as those found outside their academic lives, i.e. the use of Web-based browser resources, search engines and other electronic information sources.

Their use of electronic resources primarily for social means fuelled their ability to access a multitude of legal resources and search for vast amounts of information at a much faster pace and with less physical effort than that of interrogating paper-based resources.

This enabled law students to obtain information quicker and allowed them to focus on the content and the context in which to use the output obtained. One could see this as law students becoming perceivably "lazy" as the electronification of legal material not only made the research of information far quicker and relatively easier but empowered law students to be able to access the information from a variety of locations through numerous technologies if there was a connection to the actual source of the content itself – normally a Web browser. Our research study was concerned with the use of mobile technologies in this context and it was clear that whilst law students could access legal content from these devices, they were facing limitations presented through the restrictions that were, now, part-and-parcel of mobile technologies. Yet despite these perceived barriers, law students managed to do their best to overcome them and utilise the other technologies at their disposal, their maturity in using these devices alongside other technologies in a relatively transitive manner demonstrated this and was evidenced by students using mobile devices for short periods of information seeking and then moving onto technologies with lager screens, greater multi-functional capabilities and better designed interfaces for greater analysis of the legal content.

Electronic resources

Legal resources in electronic format have firmly set foot in the law library with no sign of diminishing or being succeeded by an alternative product type. We now know the extent of which these types of resources have embedded themselves into the learning of law students. Whilst attracted to the speed at which information can be retrieved, the "virtual" space in which these products are contained, near-ubiquitous nature from which they can be accessed and the relative ease in which they can be kept updated.

Electronic resources are yet to mature in their usability and functionality areas which have been questioned throughout this research by law librarians and law students.

The restrictions applied by vendors such as printing be limited to a certain number of pages or access to specific legal resources can only be possible for a certain number of students at any given time are not pressed through technological limitations but more through product-based, copyright and other requirements that could, to a certain degree, be overcome to address the level of satisfaction that law students could achieve when accessing legal content in this manner. During discussions with law librarians, we noted that there was an express concern that law students perceived view of electronic resources stemmed from the assumption that these products were like those used in their social settings. Law librarians were concerned at this naivety and voiced that this risked the misuse of electronic resource – which essentially were far more complex than any non-legal electronic resource that law students would normally be used to interacting with. It was observed that law students' lack of experience in using specialised legal resources was becoming increasingly visible and significant enough to lead to law librarians in voicing this throughout the engagement. We also found law students' becoming over-dependent on electronic resources and expecting most if not all their study material to be available in this format. An alienation between law students and non-electronic resources was beginning to emerge and this was of great concern to law librarians who repeatedly outlined that not all legal content was readily available in electronic format.

Focus group discussions revealed law students openly asking for electronic content specific to their course to be made readily available, thus eliminating their requirement to research for the content but allow them to spend more time on understanding the topic itself. This was a clear break from the message that law librarians were sending as their perspective dictated that legal research was an integral part of law students' training,

This was in opposition to law students views and given that electronic resources somewhat enabled students to retrieve legal content relatively quickly, the importance of legal research became relegated to be a task that should be automated.

However, in the immediate situation, the lack of legal research skills when using paper-based resources led many law librarians to attempt to tackle this by providing training classes and other forms of guidance. This empowered law students to view electronic resources as inherently different to electronic resources that they would have normally interacted with outside the law library and for non-legal information retrieval purposes. We asked law librarians to ascertain what the differences were in legal resources and non-legal/general electronic resources which provided text-based information. They responded that even the smallest incremental differences in the content would make a world of a difference to the understanding and eventual outcome of the legal information being examined. Research for this content needed to be precise and subject to the avoidance of information overload using careful and intelligent application of search functions. Law students were often found to be lacking in this area and would tend to research with the general term use, which often provided them with plenty of information – much of it not relevant to their need.

Non-Electronic resources

We have a stronger understanding of both law librarians and law students' perspectives of using non-electronic resources for legal information seeking. This included the use of books, pamphlets, journals, monographs and other non-electronic literature which was provided by the law libraries we examined. Our research found a hesitance by law students towards using these types of materials over electronic alternatives largely due to the usability of the former and the time it took to research through these formats.

We noted law students' attitude towards non-electronic resources to be more positive as their experience in legal studies progressed, this was largely driven by the fact that still, some subject specific legal content is only accessible in paper-based formats.

There were also a few limitations that non-electronic resources presented which often led to law students being detracted from using them further, such as the lack of accessibility of legal resources often caused by limited number of physical items available on the bookshelves, inability to locate the resources required or the products not being accessible due to library operating times. Also, law students' limited knowledge of manual legal research leading to resistance towards using non-electronic resources. Finally, physical limitations of non-electronic resources restricting the portability of this information collective thus students not wanting to have to work with a large text-based book and prefer to utilise a lighter electronic version through a mobile device. Our proposed model highlighted these aspects with the aim to help better inform on the design of legal information resources and overcome the barriers included within.

<u>Understanding academic law librarians' views</u>

The key concern for the law librarians was that electronic resources were challenging the traditional approach to law library information resource provision thorough greater use of automation and intelligent applications. Students could now access materials without having to go to the library and, in many cases, not have to interact with and use the resources directly. In some instances, this was good as it enabled students to become more independent and conduct their research without relying on law librarians for help. However, there were several risks with this approach, primarily in that law students would often become dependent on a small subset of electronic resources and avoid using a wider range of the information sources available to them. Furthermore, students would often approach electronic legal information resources with the same mindset as that of using electronic information sources in general.

Law librarians pointed out that this was a very immature approach in that legal content was very complex in nature, thus searching for a case or other legislation was not the same as general information research.

Law librarians cited many examples where students would often retrieve not the most relevant information for their academic needs and at worst, totally irrelevant information just because they could not navigate around the complex user interfaces that some electronic resources had. Despite these challenges, law students were starting to build an attitude of "avoidance" of paper-based resources given the time it would take to find information when using them, the relative inflexibility of resources in terms of portability and availability.

Law librarians noted that law libraries to be in a transitional phase where electronic resources were still to reach maturity and the use of paper-based resources was starting to be impacted due to the growing provision of their electronic equivalents and the prevalence of technologies that would enable this type of access. Law students seemed to be unconcerned at this change and took the use of resources in the law library in their stride, this was expected since they were only expressing their first-hand experiences and what they were used to. Many law students in the cohort was from the age-group which grew up using the internet and web-based information sources for schooling and social uses, electronic resources for legal information was not such a novel thing but more of an expectation and this too was translated in their demand for a greater provision of more legal content in digital formats.

## 11.8  Complementing Existing Models of Information Behaviour

Information models that were reviewed in the literature provided a wealth of insight into the different information seeking behaviours of individuals covering a range of contextual purposes, situations and professional practices. We affirmed the qualities of existing models by leveraging some of their aspects into our own model that we have proposed as part of this study.

A model built from feedback from law librarians and law students as well as underpinned by attributes and influences of the many well-regarded information seeking models available and then refined by law students themselves has been delivered.

This completes the model and leaves it open for others to use to build a better understanding of the information seeking behaviours of this particular cohort and how it interacts with the various technologies at its disposal. The model maps the information seeking journey that law students may take in their effort to increase their understanding of the topic of law. With the various influences, drivers and barriers outlined to give an enhanced context to their usage behaviour.

Support for the design of resources

Law students consistently complained about poorly designed legal resources for mobile platforms. This feedback was evidenced in all the research instruments and was also in agreement with comments provided by law librarians who noted that many resources did not display correctly on smaller screens or appeared to lose key functionalities that would be quite popular when accessed on larger screens. There was no clear winner in this area, in that there was no dominant application or product which was used on mobile platforms. There were instances where both law librarians and law students noted that "App" versions of legal information products were used; however, these were very isolated and didn't provide any tangible evidence of a wider consensus. What was interesting was the widespread use of mobile devices to access the law library catalogue which tended to work reasonably well on a smaller screen and provide a neat-fit for helping locate resources in a relatively short time-frame. We have widely observed that mobile technologies have played a significant role in the driving of adopting electronic resources, albeit mainly for the law library catalogue, nonetheless, this "seeding" of access method has initiative law students desire to be able to use electronic resources in this context for as many products as possible.

Using "Apps" which containerise the legal information product into a specific area within their mobile device, law students can look up legal content relatively quickly and from a variety of locations and times, provided that they have the relevant pre-requisites that would enable such a facilitation (network access, battery power on their device etc.).

## 11.9  Justification of Thesis

This thesis has provided a greater understanding of law students' information seeking behaviours in relation to their use of mobile technologies and electronic resources in general. We now have more insight into how law students use and perceive legal resources and what they expect in terms of functionality, capability and availability of them. The literature review found a very informative picture of the use of mobile technologies and its associated landscape together with the numerous information seeking and information behaviour models that were examined. Our engagement with law librarians has enabled us to develop a counter-balance of views and opinions that at times have provided agreement on both sides and at times, disagreement. In this specific case, whilst law students see electronic resources as a quicker means to locating legal information for their studies, law librarians insist that this "new information seeking behaviour" is leading to law students' neglect of non-electronic resources – which still hold a significant amount of information amongst the legal data collection. Law students counter this case by expressing their wish to see more quantities of legal material in electronic format and this expectation has become firmly embedded within their mindset to the extent that it is a definite assumption that all legal content will be available electronically. Adding to this change is the use of mobile technologies, which have fuelled the use of electronic resources, albeit not specifically dedicated to legal information retrieval due to these products having yet to mature in this portable format, but for routine use of the mobile internet which has become a key source of brief information seeking.

The growing variety of technologies that are enabling law students to access legal resources has led to a lot of disruption in the landscape and consequently, law librarians find themselves trying to bring this usability under some control.

Law librarians have made a lot of efforts into stabilising and adding structure to this usage behaviour through the provision of training classes which cover the use of resources both electronic and non-electronic.

Some HEI have also developed exercises where law students are made to use resources across the spectrum to ensure that their knowledge and understanding of how to navigate through this vast corpus of data is embedded in their mindset and they have the confidence in working in this way, preparing them for their professional lives. We mapped the usage of technology use against the time spent seeking academic information and found some further in testing usage patterns which aligned with the feedback provided by the law librarians. Academic law librarians across the HEI in the UK were facing the same challenges and were taking their own approaches to address them, we see tremendous opportunities where these institutions can work together and pool their strengths and experiences in relation to the changes the development and evolvement of electronic resources and mobile technologies brings. This report, it is hoped, will help provide a grounding for that type of interaction to be commenced and given thoughtful consideration for implementation into practice of some form or another. The significant amount of participation together with the literature that was reviewed gave us the confidence to propose an information seeking behaviour model dedicated to law students which would incorporate our learnings and illustrate the various interactions, barriers, drivers, motivators and utilities of the technologies law students had at their disposal to access legal information. This model was them incorporated into a focus group study where it was validated and refined. Finally, it was proposed within this report. To add to this, our discussions with both law librarians and law students provided qualitative data which was interpreted in the form of recommendations made after key observations were noted surrounding the topic at hand.

The strengths and weaknesses of both sides were accounted for and carefully articulated to provide a balanced overview which could be used to better inform on the use of legal information resources, the design of information resources as well as assist in the strategic approach of legal information provision for law libraries.

## 11.10 Limitations of Research & Reflection

<u>Learning</u>

When I embarked upon this research I was challenged by my own naivety in assuming that we would discover that law students would be simply referring to general web-based resources such as google for their legal information. My assumption was that law librarians' main challenge was to motivate law students into using more non-electronic resources as well as electronic and that this was a relatively straight forward and simplistic task. I was wrong and can look back over the past few years to appreciate what a thought-provoking landscape lies before us. I can appreciate the amount of new skills in research, literature review, statistical analysis and deep-thought I have acquired. I can also take pride in the plentiful new relationships I have built with people who played a key role in helping with this research and without their input this work would simply not have been possible. Academic law librarians face a challenging future of momentous change and despite their own constraints of funding, resourcing and sporadic legal information product provision, law librarians have continued to prevail and deliver a priceless service to the law students within the U.K.'s HEI. I am proud to have worked with such great professionals. Being people-focussed I have come to realise the need for a more cohesive and centrally unified approach towards the handling of electronic resources for law librarians, my discussions with so many institutions throughout the U.K. found nearly all facing the same challenges and asking the same questions and, in many cases, doing the same tasks to address them.

Law students, with their willingness to provide feedback to the research questionnaires have also played a key part in helping us understand the field in greater depth, their inputs and openness to query has revealed the emergence of a digitally focused legal profession that is emerging through the vast forest of technological variety and has managed to naturally adopt electronic resources relatively quickly and near seamlessly. The first of many generations who will be at the receiving end of an increasingly digital legal information service provision. My praise and sincere thanks to them also.

Limitations

This research was primarily limited by the time-frame posed for part-time doctoral study. This topic clearly is one that merits considerable time and effort on a national scale to build a complete picture of the landscape within the U.K. However, despite the time and resource constraints, we have managed to build an as sufficient representation of the country's HEI cohort for both law librarians and law students as possible. Participation in the research questions was a challenge and incentives had to be provided to obtain law student engagement. These incentives were also self-funded and therefore limited by this, hence only 100 law students took part on the study, with a greater funding source it is certain that more would have been able to engage and that from a greater collection of HEI in the U.K. Also, with most of the raw data comprising of text-based content, we were restricted to enclose this all into the appendices thus we have made the work available for inspection in electronic format.

Future Research Opportunities

This research project outlines the topic with the scope of the U.K. HEI. However, there is no doubt that overseas law students and their respective institutions may face similar challenges but have different outcomes in addressing them as well as realisations of the fast-paced technological environment that surrounds us.

There is significant potential in using the lessons learnt from this study to compare with other overseas HEI, especially those where the English Common Law is prevalent so to provide as much baseline alignment in resource provision as possible. Questions that will arise first and foremost would include how these overseas institutions are addressing the rise of mobile technologies in their law libraries in relation to their provision of electronic resources and what challenges they face? Are there any synergies between these overseas HEI and those already examined in the U.K.? Can a detailed comparative study be used to provide a strategic roadmap that will help all parties to navigate this digital transformation of their domain? A high-level proposal for future research could include HEI from the English-speaking countries and the E.U., this would require inputs from law librarians as well as law students from these institutions and ask them to respond to the same question set as that included in this study. Feedback from law librarians of 8 overseas institutions can be found in (Appendix C). And although these institutions may differ in their resource provision, teaching style and approach, there is no doubt nonetheless that the challenge they face with mobile technologies and the migration of text from paper to digital will be like that we have found in the U.K. And whilst we may not have found the answers to how best deal with such an unprecedented change in the makeup of the library domain and the changing attitudes of law students towards legal resources, we have most certainly started to break ground on this topic and hope that this will lead the way for greater knowledge expansion and research in this area.

Overseas academic law librarian participation

During the exploratory study, we approached many overseas academic law librarians to see if they would be willing to participate in this type of study. We found a very positive response and as such, 8 law librarians from a selection of international HEI took part in research instrument I (3 American, 2 Dutch, 2 Danish and 1 Finnish). Unfortunately, due to time constraints their valued input was not included in this study, but the interview notes can be found in Appendix C in electronic format.