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What Is Digital Strategy and Does It Really Matter?¹

Professor Feng Li

Bayes Business School (formerly Cass), City, University of London, UK

Feng.li.1@city.ac.uk

Abstract

This chapter discusses the evolving notion of digital strategy and its underpinning digital technologies, outlines an overarching framework for understanding the fundamental reasons why every organization needs a digital strategy, and explores the implications for incumbents and digital native firms alike competing in the digital age. It draws on a comprehensive literature review and over three decades of experience leading research and consultancy projects at the forefront of digital transformation. The framework is based on two fundamental changes in the business environment: the changing nature of the economy and the continuous rapid development of digital technologies. These changes together redefine the “rules of the game”, forcing all organizations to evaluate and re-invent their strategies and business models by exploiting rapidly expanding digital capabilities. In particular, as the digital and physical worlds are increasingly meshed into one, a new cyber-physical environment is emerging, which has profound implication for how digital strategy is developed, executed and evaluated. The rapid development of synthetic virtual worlds and metaverse (including those based on VR/AR, blockchain, crypto currencies and web 3.0) may add a significant new dimension to the evolving business environment. For business leaders, the main challenge is often not in generating more new ideas, but rather in effectively managing the transition to new technologies, new strategies and business models, and new organizational designs. Three emerging approaches for managing the transition in some world leading organizations are discussed. Finally, the theoretical contributions are summarised and three new areas for future research are highlighted.

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Introduction

The notion of digital strategy has evolved considerably over the past 30 years, from the strategy for the IT department (i.e. the IT strategy), the digitization, digitalization and digital transformation strategy for different functions (e.g. accounting, operations, marketing) and business processes, to more recently, the business strategy for the organization facilitated, supported, or enabled by growing digital capabilities (Bharadwaj, *et al*, 2013; Westerman, 2017). The underpinning digital technologies, infrastructures and services have also evolved, from the centralised private corporate networks based on mainframe computers; distributed computing based on the client-server architecture; to ubiquitous computing based on affordable mobile devices, pervasive mobile networks, accessible cloud services, and extensive internet of things (IoT) [or Internet in Everything (IET), including wearable technologies, autonomous vehicles, smart homes, and Industry 4.0]. Other emerging technologies and applications are constantly bringing additional digital capabilities to the mix, from multi-cloud environment, edging computing, big data analytics, machine learning and artificial intelligence (AI), robotics, to a range of other emerging technologies including VR/AR/XR (virtual reality/augmented reality/mixed reality), blockchain, additive manufacturing and 3D printing, and quantum computing, to name a few.

However, such rapid developments have added considerable confusion to our understanding of what digital strategy is, why it is necessary for most (if not all) organizations, and how it manifests in different types of organizations. The literature often fails to specify explicitly the type of digital strategy and the underpinning digital technologies in question, which is particularly problematic given the rapid pace of change both in the notion of digital strategy itself and the underpinning digital technologies. The slow and prolonged academic publication cycles typical of most leading peer reviewed journals in business management have further exacerbated the problem, as the same terminologies are often used to illustrate rapidly evolving phenomena at different levels of analysis, from different perspective, during different stages of technological and business evolution, to mean subtly or significantly different things – a form of unconscious or even deliberate “concept creeping”. This raises both theoretical challenges to understanding the phenomena, and practical challenges in using past experience and insight to inform strategic planning and future actions.

In this chapter, the evolving notion of digital strategy and the underpinning digital technologies are discussed. Then an overarching framework is outlined to explain the fundamental reasons why every organization needs a digital strategy. The framework is based on two fundamental changes in the

business environment – the changing nature of the economy (the knowledge or information economy) and the continuous rapid development of digital technologies, infrastructure, and services; the latter is often referred to as the IT Revolution, the ICTs Revolution, the Digital Technology Revolution, or the Fourth Industrial Revolution/Industrial 4.0. These changes together are redefining the “rules of the game”, forcing all organizations to evaluate and re-invent their strategies and business models by innovatively exploiting the rapidly expanding digital capabilities. Following this, the business implications for incumbents and digital native firms are explored, and three emerging approaches that some leading organizations have successfully deployed to manage the transition to new technologies, new strategies and business models, and new organizational designs in their digital transformation journeys are discussed. Finally, the theoretical implications are summarized, and three new areas for future research – particularly the need for new theoretical framing and new methodological approaches - are highlighted.

What Is a Digital Strategy?

The notion of digital strategy has been evolving rapidly. It has been used as an umbrella concept to refer to the IT strategy for an organization, the digitization, digitalization and digital transformation strategy for different functions and business processes, the digital transformation strategy for an organization as a whole, and more recently, the business strategy facilitated, supported or enabled by digital technologies. Today, digital strategy is increasingly used to refer to the strategic plan formulated in an organization to achieve long-term business objectives by exploiting existing and emerging digital capabilities. In other words, digital strategy refers to the business strategy for an organization underpinned by digital technologies in the digital economy (Westerman, 2017).

However, in many organizations, and in the literature studying such organizations, the concept of digital strategy has been used “flexibly” to illustrate a range of phenomena, often with different starting points, from different perspectives and at different levels of analysis to serve many different objectives. As an analytical concept, it lacks clarity and rigour, which has been made worse by the erratic pace of change and the growing number of studies and publications. Today, digital strategy has been approached from many different perspectives, in disciplines ranging from information systems, innovation management to strategic management, to serve a variety of objectives at multiple levels of the organization. This often causes confusion for academics and business leaders alike, undermines cumulative learning efforts, and diminishes our ability to draw effectively on the work of one another.

Over the past decade, significant progress has been made in our understanding of the “how” - and to a less extent, the “why” - of digital strategy, including the scope, process, and perspective for digital strategy making and execution, and the associated theoretical and practical developments around digitization, digitalization and digital transformation at different levels and functions of organizations. Importantly, several conceptual frameworks have emerged in different disciplines, including both cognitive tools for understanding digital strategy and digital transformation efforts, and planning tools to guide practice and actions. In this section, some of the most influential perspectives are reviewed briefly (Table 1).

Insert Table 1 here

The information systems (IS) perspective

Much of the early work on digital strategy was from the information systems perspective, as digital strategy was initially used to refer to the IT strategy in organizations and how it can be aligned with, and support, the business strategy. A significant number of studies have been published since the 1980s. Before the turn of the century, most studies focused on how proprietary IT systems can (and should) be developed and used in organizations and its various functions and processes, with a particularly focus on using IT assets to support business strategy and improve business performance (e.g. Bakos & Treacy, 1986); and understanding the implications of changes in IT for corporate strategy (Scott-Morton & Rockart, 1983).

Since the mid-1990s, the commercialisation of the internet and the rapid development of eCommerce and eBusiness have given rise to a new approach to corporate IT, when big providers of IT hardware, software and services actively promoted “IT as a Service” via the internet – from SaaS, PaaS to IaaS - rather than supporting organizations owning and maintaining their own hardware and software (Hagel & Seely Brown, 2001). Organizations are increasingly nudged to shift their focuses from ensuring service availability at minimum costs, to improving business performance through IT, by reducing costs and improving efficiency, enabling corporate restructuring and business process reengineering, and aligning corporate IT development with business strategy. This trend accelerated considerably since the early 2000s – especially after the dot com crash - when major technology

providers invested heavily in the digital infrastructure and services to operationalize the new approach to corporate IT. The trend in IT outsourcing and offshoring, together with the increasing consumerization of IT, also served to accelerate this process (Li, 2007, 2020).

Most studies of digital strategy in information systems focused on the IT strategy for the organization and its various business functions, which is primarily viewed as a functional-level strategy that must be aligned with the firm's chosen business strategy. Under the alignment view, business strategy directed IT strategy. Over the last decade, as the business infrastructure is digitized with increased interconnections among products, processes, and services, the critical role of digital technologies in transforming strategies, business processes, capabilities, products and services, and interfirm relationships is increasingly recognized. As a result, it has been argued that the role of IT strategy should be shifted from that of a functional-level strategy aligned but subordinate to business strategy to one that reflects a fusion between IT strategy and business strategy (Bharadwaj *et al*, 2013).

Today, as digital technologies continue to evolve rapidly, advanced digital services have become increasingly affordable and accessible to a growing range of business functions and professions with different levels of technical skills and competences. The consumerization of IT has further undermined the role and credibility of the corporate IT departments in many organizations, and some business functions increasingly hired their own IT staff, or brought in external consultants, to assist them with their IT requirements in response to rapidly changing business environment. In addition, the high cost, and the high failure rate of large corporate IT projects have served to erode the credibility of IT functions – and CIOs or CTOs- amongst senior business leaders. As a consequence, the role of the IT function in many organizations, and the information system perspective that studies such practice, has lost considerable influence. Researchers from other disciplines, from innovation, marketing, operations to strategy, are increasingly exploring innovation and business transformation enabled by digital capabilities, which served to further undermine the influence of IS research in corporate strategic thinking.

Despite such problems, however, some frameworks have emerged which can be used to explain the fundamental changes that IT is enabling. Yoo, Henfridsson & Lyytinen (2010) argue that pervasive digitization has given birth to a new product architecture in organizations, which extends the modular architecture of physical products by incorporating four loosely coupled layers of devices, networks, services, and contents created by digital technologies. The new architecture transforms the way firms

organize for innovation in the digital age. The framework provides a useful tool to systematically understand the impacts of digital technology on firms' strategies, structures, and processes, particularly the role of digital technology in creating business values and building sustainable competitive advantages. Using the examples of Amazon's Kindle and Apple's iPhone, they highlighted the transformative impact of digital technologies on industrial age products, and how the digitization of well-established products (such as books and telephones) sparks profound changes in the industrial structure and competitive landscape, blurring industry boundaries and creating new threats and opportunities.

Similarly, Bharadwaj *et al* (2013) argue that the time is right to rethink the role of IT strategy, from that of a functional-level strategy to one that reflects a fusion between IT strategy and business strategy. They outline a framework to call for new research to explore how external digital trends and key organizational shifts will influence the scope, scale and speed of digital business strategy and the sources of business value creation and capture, and how such changes affect performance.

Going forward, new effort is needed to revitalize the influence of information systems research in corporate strategic thinking. Leading digital transformation requires a broad and unique mix of capabilities and knowledge. Successful leaders are expected to establish a continuous programme of transformation, improve their organization's digital maturity and find innovative ways to extract business value from their data. This requires technological expertise, business acumen, and the ability to manage a complex network of stakeholders both within and outside the organization. The chief information officer (CIO) is ideally positioned to take on such a role, but unfortunately, as a recent study of UK job adverts suggests that employers are not looking to CIOs to lead their digital strategy and business transformation (Harding, 2021). A fundamental rethink of digital strategy research from the information system perspective is still needed.

The innovation perspective

From the innovation perspective, many studies have examined how digital technologies are adopted in different types of organizations, and how digitization is leading to innovations in products, processes and business models. Indeed, the continuous rapid development of digital technologies is leading to changes in the dominant technological and economic paradigms, resulting in systemic failures of a growing number of companies across different sectors. The failure of many iconic companies – from JC Penney, Kodak to GE – are not because these companies are not innovative,

but rather many such companies “*could not ultimately innovate how they should innovate as dictated by the emerging digital innovation regime ... and they are innovating in wrong places, at wrong time, and in a wrong way*” (Lyytinen, 2021). New research is needed to explore how to frame, understand and explain the new context of innovation that has been brought about by pervasive digitalization, which permeates all industries and their business models.

Many previous studies examined the proliferation of digital technologies from the perspectives of technology adoption and the diffusion of technological innovations across different industries and countries; and a large number of critical success factors (CSFs) have been identified and validated as contributing to or inhibiting technological adoption and their effective use in different contexts. More recently, Lyytinen (2021) examined how digital innovation differs from earlier forms of industrial innovation by identifying the foundations of digital innovation logics. He argued that the difference is more significant than replacing analogue information with digital information across industrial organizations. By reviewing the specific ontological status of digital material in industrial operations and related conditions for innovation, he went on to argue that digital innovation advances through three processes of embedding – which is defined as “*a process of interlacing elements of one innovation domain to that of another*”. The three types of embedding necessary for digital innovation are operational embedding (code-computer), virtual embedding (real world phenomena-code) and contextual embedding (use of code-social setting). Each embedding operates relatively autonomously and its conditions for success and goals are separate; and each embedding constitutes a unique leverage point for further expansion of digital innovation; and the phases and processes that underlie innovation in the two regimes differ and follow differential logics. However, more research is needed to understand the mechanisms and nuances of such processes; and in particular, how such processes can be incorporated into innovation strategies and new business strategies for organizations in the digital age.

The information economics perspective

Research on information economics examines whether and how digital technology changes economic activity. A large number of studies have been published over the last half a century. Back in 1962, it was argued that the American economy had become a knowledge or information economy, because nearly half of the American workforce could be regarded as information workers; and nearly half of the value added in all products and production processes were made up of informational content (Machlup, 1962). This was followed by a series of comprehensive studies of

the post-industrial, knowledge or information economy around the world during the 1970s, 1980s and 1990s (Bell, 1973; Porat, 1980; OECD, 1986; Hepworth, 1990; Li, 1995).

In the 1990s, a “Revolution in Interaction” was predicted in the context of the information economy, as the rapid development of information and communications technologies (ICTs) would fundamentally redefine transaction costs, which from the institutional economics perspective, would radically alter the boundaries between firms and markets, leading to significant changes in organizational forms, inter-organizational relations, and consumer behaviour (Butler *et al*, 1997; Li, 1995; 2007; Johnson, *et al*, 2005). More recently, Goldfarb & Tucker (2019) argue that digital technology has reduced the cost of storage, computation, and transmission of data, which translates into reduction in five distinct economic costs associated with digital economic activity - search costs, replication costs, transportation costs, tracking costs, and verification cost. These reductions in economic costs are leading to fundamental changes in economic activity at different levels. These themes inform our understanding of the nature of digital economic activity, and the interaction between digital and non-digital settings.

The information economics perspective is particularly useful in shifting the focus of researchers and business leaders from identifying which player might emerge to disrupt a particular industry, to the nature of the change and disruption that can be expected in an industry and in the economy as a whole (Dawson, Hirt & Scanlan, 2016). In other words, it is particularly helpful in understanding the “why” of digital strategy.

The strategic management perspective

Strategic management has traditionally treated digital technologies as one of many – however important - inputs to an organization’s strategy; and digital strategy is seen as a functional strategy for the IT department that supports the business strategy. However, more recently, a radical change has occurred as the fundamental role of digital technologies in underpinning and enabling new strategy and business model are increasingly emphasized.

Adner, Puranam & Zhu (2019) argued the recent attention paid to the challenge of digital transformation signals an inflection point in the impact of digital technology on the competitive landscape. This transition can be understood as a shift from the *quantitative* advances that have historically characterized digital progress (e.g., Moore’s law, Metcalf’s law) to *qualitative* changes

embodied in three core processes underlying modern digital transformation: representation, connectivity, and aggregation, with profound implications for firm strategy. In other words, from the strategic management perspective, the nature of digital transformation - and the strategic and organizational impact of digital technologies - is shifting from a change in *degree* to a change in *kind*.

Today, an increasing number of companies – both incumbents and digital native firms from different industries – are (re-)positioning themselves as (digital) technology-driven organizations, built on the rapidly growing digital capabilities to capture and analyse vast lakes of data from external and internal sources. Such growing capabilities have been deployed by different organizations to support new business models based on new ways of value creation and capture. In particular, as digital technologies become more pervasive, and companies move further up the maturity stages in their digital transformation journey, digital strategy and business strategy have increasingly meshed into one. This raises fundamental questions about the continued validity and effectiveness of the established strategy literature that has largely emerged during the industrial age – be it the industry-based view (Porter, 1980), the resource-based view (Barney, 1991; Teece, Pisano & Shuen, 1997), or the institution-based view (Peng, 2002); and it calls for the development of robust new tools and frameworks to help senior business leaders develop and implement new strategies and business models in the digital age (Li, 2021).

Other perspectives

Many other studies have also investigated new approaches for developing digital strategies and executing digital transformation from different perspectives (e.g. Ross, Sebastian & Beath, 2017; Sebastian, et al, 2017; Ross, Beath & Mocker, 2019; Siebel, 2019; Saldanha, 2019; Li, 2020). However, despite significant progress, an overarching framework that coherently integrates different perspectives and explains the *fundamental* reasons why every organization needs a digital strategy is still lacking. When asked, management scholars, organizational leaders and business consultants alike invariably give varied, eclectic, and often idiosyncratic answers. An overarching framework incorporating different perspectives and levels of analysis will improve consistency and provide a solid foundation for systematically developing, executing, and evaluating digital strategy in the rapidly evolving digital economy.

Does It Really Matter?

The question is, therefore, not so much “does it matter” as “why it matters and how”. Despite significant theoretical progress and practical development over the past 30 years, the fundamental reasons why a digital strategy is necessary for most organizations remain poorly articulated. From the contingency perspective, strategy must evolve in response to changes in the business environment, and a major focus of strategic decision-making is how best to ensure strong alignment, or fit, between an organization’s strategy (and structure) and its environment (Sarta, Durand & Vergn, 2021). Since digital strategy for the information age represents a fundamental departure from the traditional business strategy for the industrial age, what fundamental changes have happened in the business environment that call for a radical change in the business strategy to become digitally-driven?

A wide range of incremental and radical changes can be identified in the business environment, from the changing global geopolitical and economic order, the growing environmental challenges and unsustainable development, to social exclusion and the increasingly ageing population in a significant number of countries. However, two intertwined, irreversible changes have emerged and become firmly established (not just in developed countries but also in many developing countries), which fundamentally transform the global business environment. These two fundamental changes are calling for new digital strategies in all organizations.

The Digital Technology Revolution

Digital technologies have been developing rapidly and exponentially for well over half a century. This has been illustrated as the IT Revolution, ICTs Revolution, Digital (Technology) Revolution, or the 4th Industrial Revolution (or Industrial 4.0), amongst others. The revolution is not just about the rapid development of digital technologies *per se*, but also the infrastructure and services that made new digital capabilities based on such technologies increasingly affordable, accessible and ubiquitous to a growing proportion of organizations and individuals (workers and consumers). As Adner, Puranam & Zhu (2019) argued, the nature of the change has shifted from a change in *degree* to a change in *kind*.

The Digital Technology Revolution is based on the technological convergence between computing and telecommunications, which began to develop rapidly at large scale since the 1980s, enabling computing resources to be remotely accessible at low costs (Li, 1995). This growing capability enables organizations from different sectors to radically reorganize what is located where, how people and activities are administered, relationships coordinated and controlled, products and

services produced, delivered and consumed, particularly in terms of “who does what, with whom, where, when, how and how much” (Li, 1995). Such new flexibility is increasingly incorporated into emerging strategies and business models for organizations, and more recently, has become fundamental to the new strategies in nearly all organizations. The rapid development of AI and data analytics (including data mining and machine learning) is further expanding our digital capabilities from data capture, transmission and storage to complex data manipulation and analysis, generating new intelligence and supporting decision making in ways that was inconceivable only a few years ago.

The Technological Revolution has evolved over multiple stages, and every time when the development seemed to have stagnated, a plethora of new technologies, infrastructure and services emerged to further accelerate the development, expanding the digital capabilities for organizations and individuals. The current explosive growth in a range of emerging technologies, from mobile communications based on 5G, cloud and edge computing, big data analytics and machine learning, artificial intelligence, IOTs and its application across different sectors and domains, to augmented reality, virtual reality, 3D printing, blockchain and quantum computing, as well as advanced infrastructure and services to make such emerging technologies affordable and accessible to all, are further accelerating the technological developments. The Digital Technology Revolution is still continuing and accelerating, often exponentially.

The digital economy

The Digital Technology Revolution would not have been so significant if the nature of the economy has not changed in tandem. Different from the industrial economy, the information (intangible) content in all products and production processes represents a significant and steadily growing proportion of economic activities in all sectors (including primary and secondary industries); and information labour represents an increasingly larger proportion of the workforce, well over 50% since the 1980s in all OECD countries. “Information”, and the associated data, knowledge, insight, and intelligence, has become the most significant resource - and commodity - in the world (Hepworth, 1990; Li, 1995, 2007).

The concept of the digital economy has gained popularity in recent years. It is different from the information economy, as the digital economy focuses primarily on the part of the information economy that can be digitally captured, manipulated, and represented. Since a significant amount of

information is still locked up in people's heads; and a large proportion of information in our economic activities and everyday lives remains in non-digital form or still not digitally captured, it indicates that there is still significant scope for the further development of the digital economy. The rapid proliferation of IOTs and wearable technologies, smart homes, autonomous vehicles, and industry 4.0 systems are capturing and converting vast amount of previously analogue information into digital forms. This will open up significant new opportunity for a new round of innovations in strategies and business models, as well as products and services and business processes.

Today, digital native organizations are competing simultaneously in multiple sectors and geographies, disrupting a host of industries via their rapidly expanding ecosystems, particularly via the platform strategy and business model (Cennamo, 2019; Ozalp, Cennamo & Gawer, 2018). Incumbents are using new digital capabilities to transform strategies and business models to address the existential threats posed by digital natives (Li, 2018a; 2020). Despite the ubiquity and profound impact of digitization, however, industries are on average less than 40% digitised (Bughin, LaBerge & Mellbye, 2017). As digitization continues to gather pace and deepens across different sectors and domains, more pervasive and radical disruptions are inevitable. There will be big winners - and many losers.

The emerging cyber-physical environment

With the rapid development of digital infrastructure and digital economy since the 1990s, a new digital space has emerged which coexists, and often intertwines, with the physical space and place of our world. This has greatly increased the complexity and flexibility of the new space economy for organizations and individuals (Li, 1995; Li, Whalley & Williams, 2001). The rapid development of synthetic, virtual spaces and metaverse, including those based on massively multiplayer online role-playing games (MMORPGs), virtual realities (VR) and augmented realities (AR), are creating new virtual worlds that significantly extend our socio-economic environment (Papagiannidis, Bourlakis & Li, 2008; Bourlakis, Papagiannidis & Li, 2009). Organizations and individuals increasingly live in multiple spaces incorporating the physical, digital, and virtual spaces, which are creating new business and social opportunities and challenges (Li, Papagiannidis & Bourlakis, 2010).

Furthermore, with the rapid proliferation of IoTs, the internet is increasingly transformed from a communication network between people to a control network directly embedded in the physical world, which is seen as even more consequential than the shift from the industrial to a digital

information economy (Denardis, 2020). Today the internet has become *“a control system connecting vehicles, wearable devices, home appliances, drones, medical equipment, currency, and every conceivable industrial sector. Cyberspace now completely and often imperceptibly permeates offline spaces, blurring boundaries between material and virtual worlds”* (Denardis, 2020: p1). The renewed enthusiasm for the metaverse (perhaps symbolized by Facebook’s name change to Meta in 2021) underpinned by AR/VR, blockchain, cryptocurrencies, DeFi, NFTs (non-fungible tokens) and decentralised web 3.0 environment more generally, is stimulating a new round of rapid expansion of the virtual spaces for organizations and individuals. These developments have significant implications for economic growth, business models, individual rights and governance – and the digital strategies for organizations.

Platform ecosystems

One of the most significant manifestation of the Digital Technology Revolution and the digital economy thus far is perhaps the rapid rise of digital platforms and their wider ecosystems. Platforms are firms *“that facilitate transactions and govern interactions between two or more distinct user groups who are connected via an indirect network”* (Rietveld & Schilling, 2020). Their wider ecosystems have been conceptualized as meta-organizations *“with less formal and less hierarchical structures than firms, but more closely coupled than traditional markets”* (Kretschmer, et al, 2021). The emergence of platform ecosystems is redefining the rules of competition in a growing number of sectors and domains, and indeed, platforms have already become the dominant business models in a number of industries.

A plethora of digital platforms have emerged around the world using data-driven business models, disrupting a growing number of industries (Shi, Li & Chumnumpan, 2021). The power of platforms is reflected in the fact that seven of the world’s top eight companies by market capitalization use platform-based business models. The emergence of digital platforms has been viewed as a paradigm shift in the way businesses are organized, as the traditional model of the integrated firm with its hierarchical supply chain is increasingly replaced by dynamic groups of largely independent partners working together to deliver integrated products and services (Kapoor, 2018; Shipilov & Gawer, 2020). These features raise complex strategic challenges and opportunities on how firms compete and collaborate with one another within a platform ecosystem, and how digital platforms disrupt incumbents and compete with other digital platforms (Cusumano, et al, 2019; Jacobides, et al, 2018; Li, 2021).

Different from traditional organizations, most digital platforms do not take ownership of products and production processes but rather depend primarily on resources and activities provided by independent firms in their ecosystems. Compared to traditional firms and non-digital intermediaries, digital platforms can introduce new transaction mechanisms more rapidly and at much lower cost; quickly provide access to capabilities that may be too expensive or time-consuming to build within a firm; scale much faster than an individual business; and enable both high variety and a high capacity to evolve (Zhao, *et al*, 2020; Kretschmer, *et al*, 2020; Kapoor, 2018; Li, 2021).

However, digital platforms are unevenly distributed around the world. Of the 70 largest digital platforms, 90% originated from the USA and China (UNCTAD, 2019). Surprisingly, Europe's share is only 4%, and less than 1% originated from Africa and Latin America combined. The Seven "super platforms" – Microsoft, Apple, Amazon, Google, Facebook, Tencent and Alibaba - account for two thirds of the total market value. The substantial lead held by the USA and China in a range of promising emerging technologies (e.g. cloud, AI, IoTs and blockchain) will have significant implications for the future development of the digital economy (UNCTAD, 2019; Li, 2021). It will be interesting to see how the geography of the global platform economy evolves in the next phase of the digital economy.

A new framework: The reasons why every organization needs a digital strategy

The nature of our economy has changed from that of an industrial economy to an information economy in which data (information) has become the most crucial and valuable resource and commodity for all organizations. At the same time, digital technologies, infrastructure and services continue to develop rapidly and exponentially, giving all organizations and individuals growing digital capabilities at affordable prices. The combination of these two intertwined developments have given rise to a new digital business environment that is fundamentally different from the business environment of the industrial economy, with its own "new rules of the game". The new rules of the digital economy require all organizations to develop and execute strategies by innovatively exploiting our growing digital capabilities.

The new business environment has given rise to the emergence of a series of digital platforms and ecosystems, which fundamentally redefine how firms compete within platform ecosystems; and how digital platforms disrupt incumbents and compete with other platforms in a growing number of

industries. It is also facilitating the emergence of a complex, rapidly evolving cyber-physical environment for all organizations and individuals; and the rapid expansion of the metaverse and virtual spaces is adding an important new dimension to our space economy. Within such a radically different, and rapidly evolving, business environment, all organizations need to evaluate and re-invent the way their business is organized and conducted. In other words, all organizations need a new digitally-driven strategy to guide their development and survival in the new business environment (Figure 1).

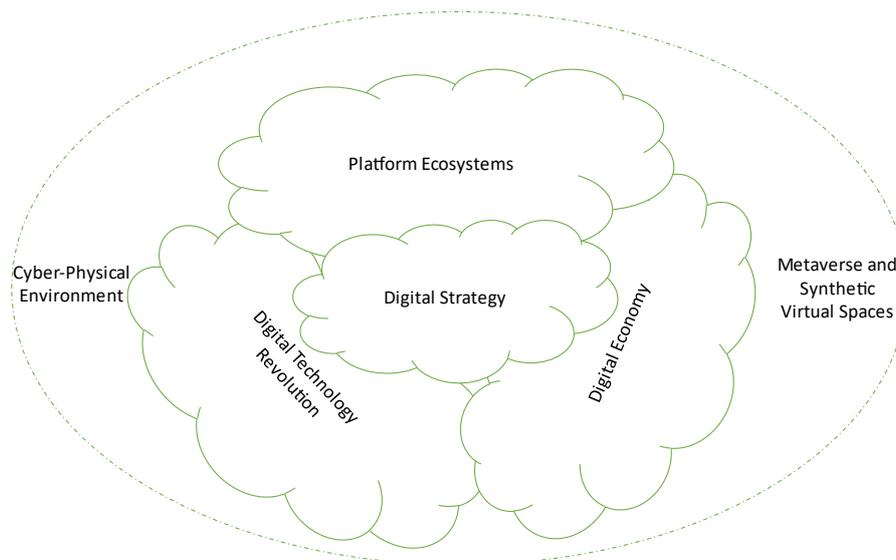


Figure 1: The reasons why a digital strategy is necessary

Managing the Transition: Three Emerging Approaches

Ever since Marc Andreessen’s opinion piece in *The Wall Street Journal* on [Why Software Is Eating The World](#) in 2011, numerous commentators have argued that every business is a tech business or digital business. By extension, every business strategy needs to be a digital strategy. Examples such as Kodak, Walmart, Amazon and Alibaba are often used to illustrate the existential threat and fundamental changes facing all organizations.

Indeed, as the digital and the analogue worlds are increasingly meshing into one cyber-physical space (Denardis, 2020), the digital infrastructure is transforming the way all organizations operate and compete (Iansiti & Lakhani, 2020). The focus today is not just about new technologies, deployed by new digital native companies, disrupting incumbents across different industries. The transformation is more fundamental, which redefines how every organization in the economy

senses, creates, delivers, and captures value, across all sectors, in both developed and developing countries (Zeng, 2018; Li, 2020).

As Iansiti & Lakhani (2020) argued, the failure of Kodak, for example, was not the result of increasing competition from its arch-rival Fuji or from new digital photography start-ups. Instead, the rapid proliferation of smartphones, together with the rise of a range of social media companies from Facebook to Instagram created a set of value propositions for consumers that Kodak found impossible to compete with. Despite its various efforts, Kodak simply became a collateral damage from the meteoric rise of social media companies.

Similarly, Amazon and Alibaba are often touted as the posterchildren that embody the way digital business transforms traditional industries. One consequence is that numerous retailers have failed to survive the relentless onslaught. Even the mighty Walmart, one of the most efficient and innovative retailers built on a data-rich supply chain, struggled to protect its core markets. Without radical transformation of its strategy to fully capitalize on current and emerging digital capabilities, Walmart will continue to struggle in the face of the onslaught from Amazon and a number of other eCommerce companies. Similar trends have been observed in China and Europe, as well as several other emerging economies (e.g. India, Brazil, African, Middle Eastern and ASEAN countries).

Further, some disruptions from digital native firms may come from radical changes in consumer behaviours and new market creation nudged by digital firms. For example, Deliveroo, the food delivery platform for restaurants and takeaways, and Gopuff, the ultrafast grocery delivery company, are more than just local delivery service providers. Their business models are not only dependent on the network effect of the platform business model and data driven operations, but also on nudging gradual changes in consumer behaviour so as to create new markets. Since the Covid-19 lockdown in March 2020, investors have ploughed billions of dollars into ultrafast on-demand grocery delivery services such as Instacart, Glovo, Getir and GoPuff. Some of these Apps use “dark stores” — little local warehouses designed to serve people within a small radius — to stock a few thousand popular items which can then be delivered via electric bike in as little as 10 minutes. This trend initially started in some large cities in China, but they are now proliferating rapidly in cities from London and New York to Istanbul, and such ultrafast delivery services could potentially revolutionise everyday shopping around the world. In the US, at least a dozen such start-ups — with names such as Buyk and 1520 — promise to deliver everything from a single pint of milk to a full grocery basket to your door in 15 minutes or less without extra fees. Different from grocery

shopping based on the online supermarket business models, which are usually build around one large weekly shopping, ultrafast delivery enables *on-demand* grocery shopping, which competes directly with corner shops and convenient stores. Developments such as these are increasingly making every business a digital business or data-driven business, and every business strategy a digital strategy. All organizations need to step back to evaluate and re-conceive the way their business is organized and conducted, from internal systems, supplier relations to consumer interactions.

However, my research shows that the leadership challenge is often not in coming up with more new ideas to develop new strategies and business models enabled by digital technologies (most senior business leaders I worked with have more new ideas than they could deploy), but rather in successfully managing the transition from where the organization is toward a desired future state in the rapidly evolving business environment. This can only be achieved by frequently evaluating and re-calibrating both the path and the destination for the organization in the rapidly evolving new business environment, informed by emerging intelligence from internal and external sources. This perhaps explains why digital strategies and digital transformation initiatives are notoriously difficult to get right (Reeves *et al.*, 2018). My research with some leading global digital firms (e.g. Amazon, Alibaba, Baidu, Google, VMWare and Slack) has found that at least three new approaches are emerging, which enable them to effectively manage the transition while mitigating the huge risks involved (for more details please see Li, 2020 and 2021). It should be emphasized that the list is not exhaustive, and other new approaches are also being developed in these and other organizations.

Innovating by experimenting

Despite the growing uncertainty in the business environment, the traditional annual or multiyear cycles of strategy making and execution have persisted in many organizations. There is nothing wrong with periodic strategic retreat by senior business leaders to take stock and envision the future, but traditional linear approaches of strategy making and execution are no longer fit for purpose. It is rooted in a level of certainty and predefined path and outcome for the organization that no longer exist. When the future is uncertain and the destination and path are frequently shifting, it is essential for business leaders to use emerging intelligence to inform, evaluate and update – and recalibrate - strategic plans on a regular or even continuous basis. This calls for an iterative, learning process where strategy is increasingly made, refined and recalibrated through execution.

One popular approach is innovating by experimenting, which enables businesses to try out many new ideas inexpensively (Li, 2018a). Emerging intelligence from internal and external sources can be used to evaluate them. As a Senior Executive from Alibaba remarked: *“If an idea works, then scale it up rapidly; if not, move on to other ideas and you have not lost much”*. This approach gives business leaders the opportunities to test and learn, which has been proven far more effective than traditional linear approaches. The bottom line is that in today’s unpredictable digital environment, it is no longer viable to develop a new strategy and then execute it over many years. Instead, strategy is increasingly defined as an overall direction, and the broad path and final destination are frequently re-evaluated and recalibrated through execution and informed by emerging intelligence.

Furthermore, innovating by experimenting is not just about being tolerant of failures, but more importantly, about developing the capacity for error recognition and correction, a point that has been repeatedly emphasised in companies from Alibaba to Amazon. This approach significantly increases the odd of delivering great results through new strategies and business models enabled by digital technologies.

Radical transformation through incremental approaches

In many ways, the digital economy is fundamentally different from the industrial or the service economies. The rules (economics) of the game and the key players in the market are changing, so the mismatch between traditional business models and the digital future is often too great to bridge in many organizations. However, a radical transformation does not have to be planned and implemented in one big step. Rather, radical changes can be achieved through a series of incremental steps (Li, 2021).

For example, some leading businesses use an outcome-driven approach to ensure digital transformation initiatives are delivering the expected results at each stage. By breaking up large-scale, radical digital transformation into smaller, more manageable strategic investments, organizations are able to experiment with many new ideas based on rapid piloting and scaling (Li, 2019). This approach enables organizations to nurture and test an evolving portfolio of innovations and constantly move forward while avoid the high risks of one big bet. Ineffective ideas can be killed off before they cause real, irreversible damages. Different from the “big bang” approach, this approach asks business leaders to decide whether the initial up-front investment is worth making in

the light of potential returns, and if the balance changes, they can stop investing. In doing so, radical transformation is achieved through a series of incremental steps, while the high risks associated with radical transformation are effectively mitigated and managed.

Dynamic sustainable advantages through an evolving portfolio of temporary advantages

One of the main objectives of a digital strategy – indeed, any strategy - is to deliver sustainable competitive advantages (SCAs), but in the digital economy, few competitive advantages are genuinely sustainable for a prolonged period. Most competitive advantages are temporary, or transient, in nature, which can be eroded rapidly or suddenly, often as a result of innovation or imitation by competitors (D’Aveni *et al.*, 2010; Li, 2021). However, one key new feature of the digital economy is the network effect and the “winner-takes-all” market dynamic, where only one or two key players can eventually thrive and become dominant in each market niche. When sustainable advantages are rare and difficult to come by, successive temporary advantages can snowball with the increasing return to scale dynamic and network effect. It follows that instead of obsessing with the elusive SCAs, some senior business leaders are increasingly pursuing temporary advantages successively by experimenting with an evolving portfolio of incremental – and sometimes radical, innovations. The gains from each temporary advantage are often small or even trivial, but the cumulative effect can be significant over time, and any one such temporary advantage can become “*the last straw*” to tip the balance of competition. In so doing, SCAs are achieved dynamically through an evolving portfolio of temporary advantages, when successive new temporary advantages are introduced before the old ones are eroded by competitors. This is clearly reflected in the competition between American and Chinese digital firms in China – for example, Alibaba vs Amazon and Uber vs Didi Chuxing.

A further benefit of this approach is that instead of treating strategy as a predefined plan, it allows companies to treat strategy as a direction for action. It encourages business leaders to focus on short-term decisions and execution, but with the long-term strategy and destination in mind. It also enables business leaders to explore alternative routes frequently rather than presuming there is only one path or one best way. In some cases, it even allows business leaders to change destination as market changes and as new intelligence emerges. In so doing, strategy and execution are intertwined, and emerging intelligence from execution and other sources is used to inform the evaluation and recalibration of the strategic direction. As Rosabeth Moss Kanter argued: “*A strategy is never excellent in and of itself; it is shaped, enhanced, or limited by implementation. Top leaders*

can provide the framework and tools for a team, but the game is won on the playing field” (Kanter, 2017). The power of this approach cannot be over-emphasized in today’s volatile business environment. The result is that (digital) strategy is increasingly made and recalibrated through execution.

Contributions and Future Research

This chapter discussed the evolving notion of digital strategy and the underpinning digital technologies, developed an overarching framework for the fundamental reasons why every organization needs a digital strategy, and explored the management implications for digital native firms and incumbents alike operating and competing in the digital age. The framework is based on two fundamental changes in the business environment: the changing nature of the economy and the continuous rapid development of digital technologies. These changes together redefine the “rules of the game” and enable the emergence of new platform ecosystems across industries, forcing all organizations to re-invent their business strategy by exploiting the rapidly expanding digital capabilities. As the digital and physical worlds are increasingly meshed into one, a new cyber-physical environment is emerging which has profound implication for how digital strategy is developed, executed and evaluated in the next phase of the digital economy. The rapid development of synthetic virtual worlds and metaverse (based on VR/AR, blockchain, cryptocurrencies and web3.0 technologies) may add a significant new dimension to the new business environment. Effectively managing the transition to new technologies, new strategies and business models, and new organizational designs has become a significant challenge for researchers, business leaders, consultants and policy makers. Three emerging approaches that have been successfully deployed in some of the most successful organizations in the world are discussed.

More systematic research is clearly needed to define key concepts, conceptualize emerging approaches, and develop robust theoretical frameworks to facilitate understanding, guide practice and maximize impact. Three types of new research are particularly needed.

Firstly, qualitative research based on (longitudinal) case studies and ethnographic approaches is needed to identify and illustrate emerging international best practice in both developed and emerging economies. We need to explore the complex new relations between strategy and execution and conceptualize effective approaches to manage the transition to new strategies, new business models and new organizational designs. In particular, our research context needs to expand

well beyond traditional centres of innovations in North America, Europe and Japan, as exciting new approaches are emerging in newly industrialized economies such as South Korea and Singapore, and in emerging economies such as China, India, the Middle East, the ASEAN economies, Brazil and Africa.

Secondly, through large-scale quantitative research, new studies are needed to identify, measure, validate and compare the complex relations between the key factors, triggers, drivers, processes, mechanisms and contexts for digital strategy and digital transformation. New insights from such studies can inform the development and validation of new theories and be used to guide practice and policy making.

Thirdly, the rapid pace of change calls for the development of new research methods, as our existing methods, perspectives and approaches are often too slow, too rigid and take too long to make sense of emerging phenomena and offer practical guidance in a robust and timely fashion. Technologies continue to develop extremely rapidly and exponentially, and when published studies in mainstream academic journals are often based on data that are 5–10 years old, the “new insights” are essentially derived from technologies and management thinking that are two or even three generations old. New research methods are urgently needed to identify, conceptualize and validate emerging phenomena as and when they emerge, long before they become quantitatively significant in the real world. In particular, emerging approaches that take advantage of new digital tools – such as topic modelling, sentiment analysis and bibliometric analysis – allow us to make sense of vast quantity of structured and unstructured data in ways that was inconceivable in the past.

Author Biography

Professor Feng Li (PhD, FBAM, FacSS) is Chair of Information Management and Head of Technology and Innovation Management at Bayes Business School (formerly Cass), City, University of London (UK). He studies how digital technologies can be used to facilitate strategic innovation and organizational transformation across different sectors and domains. He advises senior business leaders and policy makers on how to manage the transition to new technologies, new business models and new organizational designs. His research has attracted over £40 Million (€50m) in external research funding from the UK Research Councils, the EU and leading global businesses. Some of key findings have been published in Journal of Management, Academy of Management Discoveries, International Journal of Production and Operations Management, and Harvard Business Review. Feng also contributes frequently as an expert commentator on TV and Radio and in Newspapers. He is an elected Fellow at both the British Academy of Management (FBAM) and the Academy of Social Sciences (FACSS).

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Table 1: Different Perspectives on Digital Strategy

<i>Perspectives</i>	<i>Focuses</i>	<i>Challenges and opportunities</i>	<i>Exemplary studies</i>
The information systems perspective	IT strategy for business functions IT strategy for the organization as a whole	How to align IT and Business Strategy at the functional and organizational levels How to use digital capabilities for value creation and sustainable competitive advantages	Bakos & Treacy, 1986; Scott-Morton & Rockart, 1983; Hagel & Seely Brown, 2001; Yoo, Henfridsson & Lyytinen 2010; Bharadwaj <i>et al</i> , 2013
The innovation perspective	Adoption of digital technologies in different types of organizations Products, processes and business models innovations through digitization	How to frame, understand and explain the new context of innovation brought about by pervasive digitalization	Yoo, Henfridsson & Lyytinen 2010; Lyytinen, 2021; Lanzolla, Pesce & Tucci, 2021
The information economics perspective	The transition from the industrial to the information economy The changing costs of economic activities in relation to digitization (e.g. search, replication cost, transportation, tracking, and verification)	How the rapid reduction in the cost of storage, computation, and transmission of data translates into reduction in economic costs associated with digital economic activity How the reduction in economic costs lead to fundamental changes in economic activity at different levels.	Bell, 1973; Porat, 1980; OECD, 1986; Hepworth, 1990; Li, 1995; Dawson, Hirt & Scanlan, 2016; Goldfarb & Tucker, 2019
The strategic management perspective	Functional strategy for the IT department Using digital capabilities to underpin and enable new strategy and business model for the organization	How to frame the shift of digital capabilities from <i>quantitative</i> advances to <i>qualitative</i> changes How to use emerging digital capabilities to reshape the functional and corporate strategies	Adner, Puranam & Zhu, 2019; Jacobides, Cennamo & Gawer, 2018; Cennamo, Dagnino, Di Minin & Lanzolla, 2020; Iansiti & Lakhani, 2020; Li, 2021
Other perspectives	Effective new approaches for developing digital strategies and executing digital transformation	How to develop effective approaches to ensure successful digital transformation	Ross, Sebastian & Beath, 2017; Sebastian, et al, 2017; Ross, Beath & Mocker, 2019; Siebel, 2019; Saldanha, 2019; Li, 2020