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**Electronic Communication and Manager's Media Choice: A Structural Equation Modelling
from rational and social perspectives.**

By

Tanasak Krabuanrat

**A thesis submitted to City University
For the degree of Doctor of Philosophy**

**Management Information System Department
Business School
City University**

October 2000

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Abstract

This exploratory study examines the communication media choice of managers. Despite a substantial body of theories on media choice, inadequacies are apparent in the literature particularly in relation to modern communication technologies. A field study approach was adopted to explore some of these inadequacies and to study the media choice of subject from a manager background. Overall, within the limitations and confines of this exploratory study, this thesis has made the following contributions.

First, this thesis identifies and has demonstrated that the unduly narrow focus on task equivocality in prior media choice studies has undermined the study's ability to explain the observed media choice. There is a need to consider the full range of task characteristics in explaining the communication media choice process.

Second, Information Richness Theory (IRT) has enjoyed acceptance by information systems researchers throughout the last decade, but recent unfavourable empirical evidence has precipitated a shift away from it and a search for a new theory. The application of

social interaction theories responded to the problem of media richness/social presence by postulating that media selection, like most tasks in organisations, is influenced by a combination of social forces. This means that , while the media richness/social presence scale matching tasks with media would apply in most cases, it is perfectly predictable that some groups or individuals will define either tasks or media traits differently, thus explaining the problems with media richness/social presence theories.

Third, drawing together ideas in the literature a broad overview of the media choice process is developed into a comprehensive framework model. A novel aspect of this framework is, to find whether Information richness and Social interaction theories directly influence media choice; or the Social interaction theories influence media choice indirectly through the Information richness theory.

CHAPTER 1:

INTRODUCTION

1.1 Background

Communication is at the heart of organisation communication. It has been acknowledged time and again as the primary mode to disseminate information and to enable mutual understanding.

Communication activities account for a significant portion of the working time of managers. Previous research found that 75% of managers' time was spent in communication related activities (Mintzberg 1973). A meta-analysis of media use studies was performed and found that managers spend 50% of the day communicating orally and 23% of the day communicating using text (Rice and Shook 1990). These findings are consistent with other studies of managerial use of time (Ives and Olson 1981; Kotter 1982; Poppel 1982). In fact, some authors have gone so far as to consider organisations as solely communication phenomena, that is, entities developed and maintained only through continuous communication activity among their participants (Farace 1977; Weick 1979).

With the rapid introduction of information technologies in organisations, more media choices are available. The question that arises is whether this changes the communication process in organisations. This thesis will go some way towards suggesting that these modern communication media have greatly liberated and enhanced the communication process in organisations. This submission is explored through the perspective of communication media choice. More specifically, the research agenda is to examine the non engineering or non computer related business managers choice of communication media under different task situations and social influences. This is illustrated on figure 1.1, 1.2

Figure 1.1: Research Agenda 1

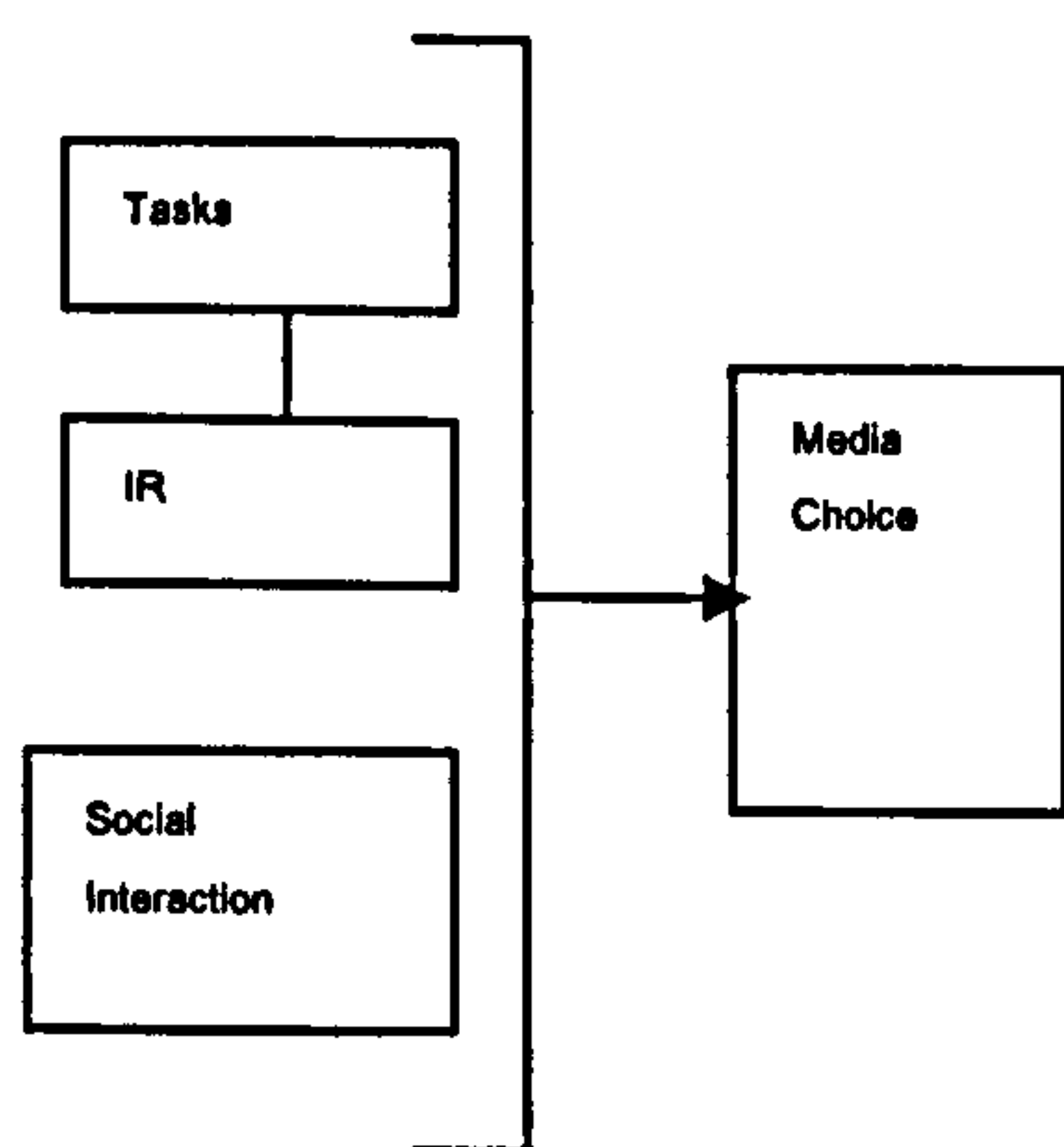
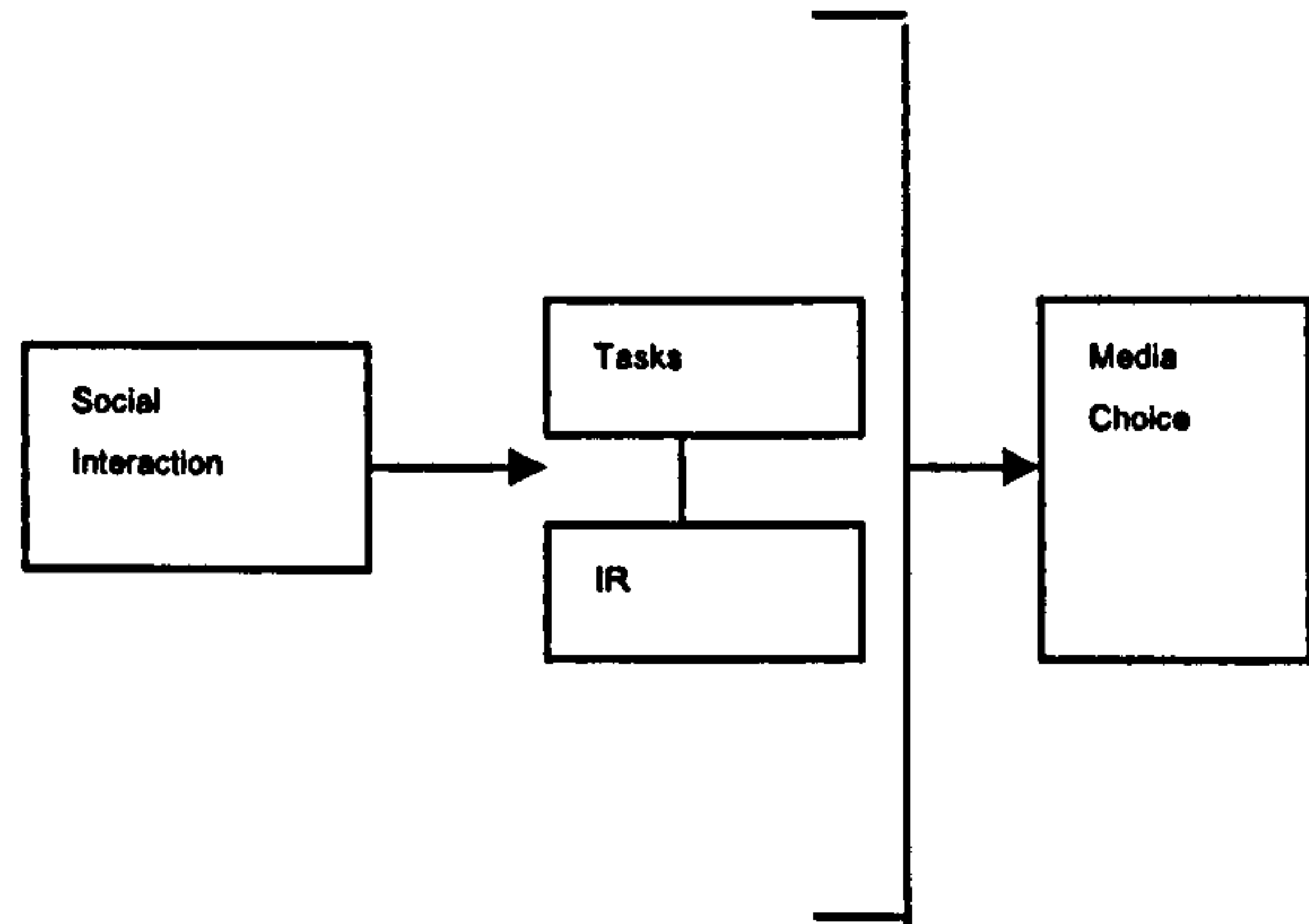


Figure 1.2: Research Agenda 2



Media, or channel, in this thesis is defined as any means that enable communication or transfer of information between two or more persons. Examples of communication media are outlined in table 1.3

Table 1.3: Examples of Communication Media or Channel	
Traditional Communication Media	Modern Communication Media
*Face-to-face or meeting	*Electronic Mail
*Note/Memo	*Fax
*Special Purpose Report	*Groupware
*Single Purpose Report	*Video Conference
*Standard Report	*Voice Conference
*Telephone	*Voice Mail

Communication media are further divided into two categories in this thesis: traditional communication media and modern communication media (or technologies). As the name suggests, modern communication media have a more recent origin and they tend to be based on some electronic or computer technologies.

1.2 Motivations of the research

1.2.1 The Rising Importance of Information Technology (IT)

In the 1990s the business environment was highly turbulent and complex, where competitive pressure was increasing with globalisation. Topping this off is the dramatic, pervasive and quickly felt implications of the information revolution. In this climate new paradigms are created and with it new opportunities. To capitalise on these opportunities and to handle the complex environment, an organisation requires timely and relevant information more than ever before. Information has always been the life blood of the organisation; it enables an organisation to make sense of the World, to resolve ambiguity and to facilitate decision making and co-ordination. Information is an important source of competitive advantage.

Information technology(IT) refers to the means that facilitate the handling of information. It provides the mechanisms to store, retrieve, sort, analyse the information(data) and to ensure that the information is available to those who need it. IT is, in fact, central to the provision of competitive advantage. Increasingly, IT is recognised as an enabler of fundamental organisation change, from work practices, human inter-relationships to structural change. Nowadays, an organisation needs to be flexible and

responsive to external needs and to make effective use of all assets, have employees that behave as owners and actively contribute to the goals of the organisation, and a management system that provides feedback to promote fast organisational learning. IT enables such qualities of modern organisation. Thus it is not surprising that billions of pounds are spent on IT and improvements. Yet our understanding of the impact of IT on organisations is sparse. This provides the general motivation for this study.

1.2.2 Organisation Information Processing

Information processing is required for the co-ordination of the interdependent activities of the subgroups in organisations. The greater the task uncertainty the greater the amount of information that has to be processed in decision making during task execution in order to achieve a given level of performance (Galbraith 1973).

1.2.2.1 Impact of IT on Information Processing

The problem that arises is that as the amount of information processing increases, it will eventually overload the capacity of the organisation. Galbraith (1973) advocated strategies that decrease the need for information processing and increase the information processing capacity. In this era, information technology needs to be considered and integrated as part of such strategies. Two points about these strategies can be made.

First, with the adoption of new management philosophy, like JIT, the creation of slack resources would no longer be a viable option. Indeed, to reduce slack an online-system is required. Even Galbraith(1971) recognised that this approach is "perfect in theory" because it ensures consistency of action, timely response to situation; but he identified two significant problems: (i) expense, and (ii) structure and cultural inhibition. But this was 20 years ago. Now, IT is relatively cheap and arguably with years of assimilation the cultural and structural constraint is eroding away.

Second, with IT triggering flatter organisation structure, investment in vertical information systems may be less important compared to the creation of lateral relations. Galbraith recognised this, and he even identified 10 points to facilitate the creation of lateral relation. However, a point that has been alluded to, but not drawn out explicitly is the important role of IT. IT ensures the availability of information that is central to the creation of lateral relations and information processing in a flatter, customer-focused and dynamic organisation (Galbraith and Lawler, 1993). Hence, it would aid organisation design to understand the implications of IT in the creation of lateral relations. And integral to this is the informal communication process in the organisation.

1.2.2.2 Informal Communication Process

Numerous studies have identified managers' tendency to rely on informal communication because the formal system is regarded as not timely and grossly inadequate to capture the information needs or processes of managers (Mintberg, 1972; Preston, 1986; Bruns and McKinnon, 1993). "Much of the detail necessary to run a company has characteristics that make informal oral transmission more efficient than entering it into a formal system." (McKinnon 1993). Indeed, the modern organisation paradigm suggests a movement away from a hierarchical structure to an "adhocracy". The net effect is that informal communication is likely to become more prevalent. Thus, the need to better understand this process arises.

1.2.3 Choice of Communication Media

The study of communication choice in this thesis is achieved through the perspective of media choice theories. These theories address how and why people choose particular communication media to transmit information. Literature on media choice has yielded significant insight into this media choice process. Yet some inadequacies persist. In particular, findings that involve modern communication media are mixed.

1.2.3.1 Inadequacy 1: Ignoring Choices Presented by Modern Media.

Prior media choice research did not address the consequence of information technologies. Arguably for research before the 1990s, IT and related communication media was not a big issue. Now with the convergence of telecommunications and computers, the distributed processing of modern IT and the development of the 'information superhighway', information of all varieties can readily be moved throughout the World on a massive scale. Managers are no longer confined by the physical location of the organisation database; they can now access information anywhere, anytime. Nor do they have to rely on someone who knows how to access the information required because of 'user friendly' technology. At the same time, the raw power of modern computers increases the managers' ability to process information.

An implication is that there are more communication media to choose from. The question that arises is whether informal sources of information are necessarily restricted to oral or face-to-face communication. Previous research such as Mintzberg's 1972 study focused on oral communication as a source of informal information. Today there are many other informal sources as well. Email, for example, is a rather common informal mode of communication these days. And increasingly internet, intranet and groupware technologies have opened additional powerful and versatile avenues of informal communication. These technologies provide an especially interesting source of research because little is known about how these modern communication media are chosen and used in practice.

1.2.3.2 Inadequacy 2 : Fragmented Approach

Managers dedicate a substantial amount of time to communication because they are making sense of their environments, co-ordinating and controlling internal activities, and making decisions (O'Reilly and Pondy 1979). While many activities are involved in communication, one that is of particular importance is media selection. High performing managers have been shown to match media with task (Daft 1987), so individual performance is linked to judicious media choices. In addition, knowing where and how to obtain high quality information may allow managers to perform their jobs more effectively since evidence exists that the quality of information affects the quality of decisions (Porat and Haas 1969; Streufert 1973) and having relevant information available favours the process of innovation (Zmud 1983). The importance of new media such as electronic mail

are currently being explored. It is known that new media have the capability to improve and modify information gathering and dissemination strategies (Straub and Karahanna 1990) as well as to affect social interaction (Walther 1995) and to allow communication partners to express information that would not otherwise have been communicated (Sproull and Kiesler 1986).

Given the importance of both communication and media selection in organisation, it is not surprising that researchers have been increasingly interested in these phenomena. In spite of this interest, however, researchers have tried to move from information richness theory to more complex social interaction theories over a period of 50 years without being able to substantially improve our ability to understand and predict media selection. Even among researchers who attribute significant explanatory and predictive power to information richness theory, considerable differences in the interpretations of the theory exist. One of the important difference concerns whether the appropriate focus is individuals' behaviour or their perceptions. This ambiguity about whether information richness theory addresses media choices or perceptions makes sense when the theory is understood as an individual level rational choice theory. In theories of this type, people are believed to act on the basis of their perceptions , and thus perceptions and behaviours are expected to correspond. By contrast, in an alternative theory that assumes external forces (e.g., situational factors or pressures from powerful individuals) drive behaviour, behaviour might differ from perceptions, or perceptions might adapt to behaviour through a process of retrospective rationality. Therefore , although the assumption that perceptions cause, and

thus correspond with, behaviour is implicit in most investigations of information richness theory, this study explicitly examines both.

Prior studies addressed media choice in a piece-meal fashion. Some adopted a rational perspective and some social. And the focus is often on a small aspect of each. Little attempt is made to provide a comprehensive model integrating these diverse elements. A contribution of this study is to investigate reasons for confusion in media selection, by integrating two contrasting but influential theories in two hypotheses models and suggests a multi-methodology that is useful in these circumstances. It then applies this multi-methodology through the analysis of empirical data.

The research proceeds as follows; first it explores the background of both the media selection literature. Second, it identifies the research problems and gaps in the field of study. Then makes a contribution by proposing research models and hypotheses to eliminate confusion in the structure of media selection. Third, appropriate methodologies are discussed and selected to deal with multi-theories, together with data collection and analysis techniques.

1.2.3.3 Inadequacy 3: Lack of Study on general managers in a broader range of industries.

The lack of generalisability in this field from the past research is a concern. Prior research only took into account small sample sizes and examined managers from engineering or computer firms, which can lead to a bias in the findings ((Zack 1994), Daft, Lengel and Trevino (1987), Russ, Daft and Lengel (1990)) . To address the issue, this research will test the generalisability by;

- (a) Performing a full scale questionnaire study; and
- (b) Extending the target organisation beyond one single industry sector. Of course, in increasing the sample size and examining a broader range of industries care will be taken to measure and take into consideration the varying background conditions possessed by these parties.

1.2.4 Summary of Motivations

In summary, the motivations for this study are:

1. Consistent with the features of the modern organisation, informal means of communication are likely to become more prevalent. Coupled with the advent of IT that has the potential to facilitate such informal means of communication, our understanding of this area is inadequate.
2. While media choice literature in the information system literature offers a substantial body of theories that shed light on this area, these theories are themselves fragmented.
3. Managers is a little understood group. Due to the lack of generalisability of different level of managers, previous research either examined media choice using fictitious managerial sample that are not real managers working in real organisations or too small sample a size to generalise. Plus their changing roles in a modern and competitive business environment, invites study.

1.3 An Overview of the thesis

The essence of this thesis is to examine how Managers choose between different communication media available when faced with different communication tasks. Intuitively, there is little doubt that the choice varies in response to different tasks. So far the literature has focused on only one task characteristic: the equivocality of the task. Whilst this task characteristic explained the choice within the confines of information richness theory and in relation to the more traditional (older) communication media like face-to-face and telephone, it represents a rather narrow perspective. The media choice literature are reviewed in Chapter 2. In addition, it does not explain the research findings in studies of modern communication media such as E-mail. In response to this narrow focus, an important aim of this thesis is to examine the media choice process with a broader and more realistic range of task characteristics as well as other social influence that might affect the choice of media. To this end, models based on the framework are developed to test for media influences in Chapter 3.

Chapter 4 outlines the research methodology adopted. This involved a Semi-structured interview and a questionnaire instrument. The findings canvassed in Chapter 5,6,7 reveal a substantial consistency with the proposed framework and establish that task characteristics do have an impact on media choice.

Within the limitation of this study, Chapter 8,9 concludes on the note that (1) communication task characteristics do influence media choice and (2) informal communication processes in organizations have been augmented by modern communication technologies.

CHAPTER 2:

A Review Of The Literature

" The future is likely to belong to those organisations that never stop asking, How can we better organisation and manage ourselves?". (Galbraith and Lawler, 1993)

2.1. Introduction

What determines managers' choice of communication media? Why do managers prefer to use one communication media over another?. Within the domain of information system and communication research there exists a substantial body of theories that explain manager's media choice. The purpose of this chapter is to review the theories on media choice and to identify the deficiencies of these theories.

2.2. Early Rational Theories

The early theories on media choice tend to be from the rational and individual school of thought. One of the early predominant theories in this field is the social presence theory of Short, William and Christie (1976). This theory emphasises the psychological aspect of using communication media: media choice hinges upon the ability of the media to convey the nature of the relationship between the communicators. In this regard, communication media can be described as warm, personal, sensitive or sociable.

A few years later, Daft and Winton (1979) proposed a language variety theory to explain media choice. It evolved from the idea that certain media, such as painting or music, are capable of conveying a broader range of ideas, meanings emotions compared to mathematics. Such media have a higher language variety. This led to the suggestion that language variety needs to be matched with the communication task. Equivocal and complex social tasks are said to require a medium with high language variety. Obviously, this is not directly applicable to manager's choice as they do not use painting or music as a means of communication, but this notion lays the foundation for media richness theory. This is where the discussion will turn to next.

2.3. Media Richness Theory

The previous two theories were the initial starting point of the search to explain and formulate media choice. Like the starting point of any original theory, these two theories are some what fragmented and vague. With media richness theory a much fuller picture of media choice emerged. Daft and Lengel (1984,1986) were the first to propose the media richness theory. The media richness theory is a general theory that explains managerial behaviours as well as organisational design. It became one of the most popular and widely studied models of media choice because of its well structured and intuitive framework.

2.3.1. Original Formulation

Media richness theory establishes a framework that ranks communication media along a continuum in terms of their "richness". In this context, "richness" denotes the

capacity of the media to: (i) carry large volume of data, and (ii) convey meaning. More specifically media richness refers to the ability of the media to change human understanding, overcome different conceptual frames of reference, or clarify ambiguous issues in a timely manner (Daft and Lengel 1984, 1986).

Thus, where the mode of communication provides new substantial understanding it is considered "rich"; otherwise, it is "lean". Four criteria (the original criteria) were used by Daft and Lengel (1984) to classify communication media along the continuum. These are summed up in Table 1.4

These four criteria are summed up in table 1.4

<i>Table 1: Original Classification Criteria of Media Richness</i>	
<u>The Criteria</u>	<u>Descriptions</u>
<i>Immediacy</i>	<i>The opportunity to provide timely feedback</i>
<i>Multiple cues</i>	<i>The capability to convey meanings through cues like body language, voice, tones.</i>
<i>Languages variety</i>	<i>The capability to tailor the message by using different words to increase understanding.</i>
<i>Personal source</i>	<i>The extent that a person can convey their feelings (i.e. Personal or impersonal).</i>

These criteria denote the qualities of rich media; their attributes impact upon human understanding and frame of reference (Daft and Lengel 1984, 1986). Consequently, communication media possessing more features of the criteria would rank higher on the

richness scale compared to one possessing less. For example, using these criteria, oral media (e.g. Face-to-face and telephone) are believed to be richer than written media because they provide opportunities for immediate feedback and can have multiple cues in a natural language tailored to the circumstances. Typically, synchronous media (i.e. Involve delay in the communication process). So telephone was ranked lower than face-to-face because it can transmit fewer cues (i.e. can not see the other person). An example of the ranking is illustrated in Table 1.5.

<i>Table 1.5: An Example of Media Ranking</i>	
<i>Communication Channel</i>	<i>Score</i>
<i>Face-to-Face</i>	<i>1.00</i>
<i>Telephone</i>	<i>.94</i>
<i>Tours and visits</i>	<i>.82</i>
<i>Voice conferencing</i>	<i>.79</i>
<i>Formal group meeting</i>	<i>.65</i>
<i>Task forces and teams</i>	<i>.65</i>
<i>On-line database</i>	<i>.65</i>
<i>Decision support systems</i>	<i>.55</i>
<i>Computer-generated reports</i>	<i>.47</i>
<i>Memos and documents</i>	<i>.27</i>
<i>Electronic mail</i>	<i>.13</i>
<i>Facsimile</i>	<i>.11</i>

Source: Zmud 1990

2.3.1.1 Information Tasks and Media Choice

Daft and Lengel (1984) presented a contingency framework that matches two concepts: (i) the nature of the information task, and (ii) the characteristics of communication media as represented by the media richness scale. Drawing from the work of Weick (1979) and Galbraith (1973), Daft and Lengel distinguished two information tasks carried out by organisations: (a) interpretation of external environment, and (b) co-ordination of internal organisational activities. Recognising the complexity of the social system that constitutes an organisation, both aspects are argued to be required in an information processing structure to handle the transfer of vast volumes of information and to significantly reduce ambiguity.

Despite the importance of both aspects the media choice literature has somehow gravitated towards the latter. Ambiguity reduction is seen as the defining characteristic of a rich media. It is relevant to both information tasks. To successfully interpret the external environment, for example in formulating a strategic plan, organisation members need to establish a shared view of events, because external data are often unstructured, ambiguous and sometimes downright confusing.

So Daft and Lengel (1984) argued that an organisation information processing system needs to reduce ambiguity, or more precisely, equivocality. Formally, "equivocality" is defined as:

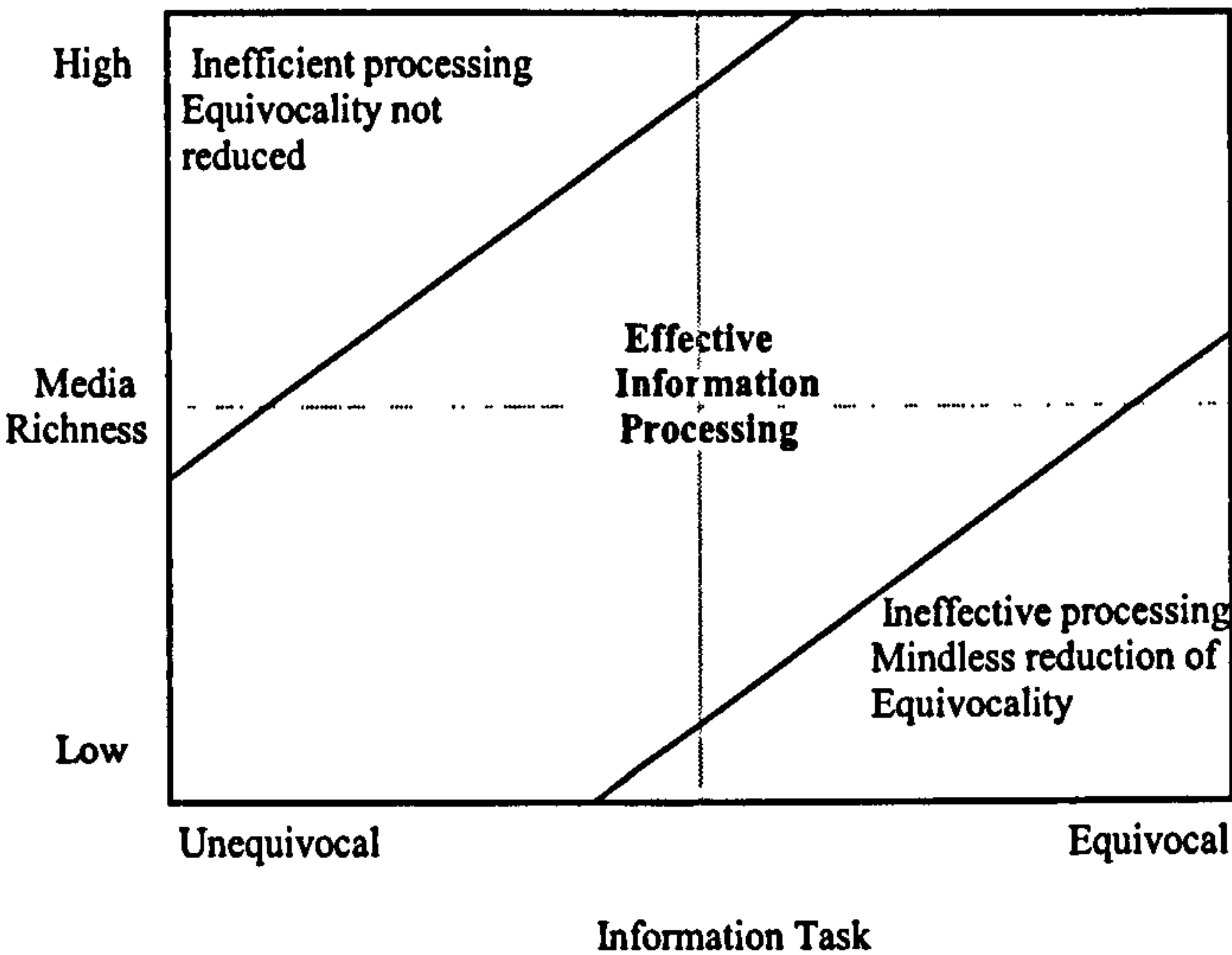
" The extent to which data are unclear and suggest multiple interpretations about the environment. Such that it is reduced through shared observation and discussion until a common grammar and course of action can be agreed on" (Daft and Weick, 1984, at p291).

In other words, where a matter is equivocal managers would be confused and disagree with one another; they would not know how to address the matter. This is because they lack mutual understanding about the matter, and until they can come to an understanding they would not be able to proceed any further. In this regard, equivocal is very different to "uncertainty", which is caused by an insufficiency of information to perform the task. This can be easily cured by any additional information regardless of the medium of communication used. Equivocality, by contrast, requires that a shared meaning or understanding be reached between the parties.

Given that rich media are supposed to facilitate understanding it is argued by Daft and Lengel as the ideal media to handle equivocal tasks. Thus the greater the equivocality in a communication task, the richer the media that is required. This is akin to a contingency type logic claiming effectively that a particular communication task needs to be matched with a particular communication media to enable efficient information processing within the organisation. This approach is summed up neatly by this definition of the richness theory;

" a process by which individual managers rationally attempt to match the characteristics of the communication media at their disposal to the requirements of their communication tasks in order to achieve personal and organisational effectiveness" This relationship is illustrated in Figure 1.6.

Figure 1.6: Relation between media richness and task equivocality



This logic is generally consistent with managers' usage pattern of communication media in practice: managers do seem to choose media by matching it to the richness of the media. Research such as that of Mintzberg (1972) did find that managers preferred to use face-to-face means of communication rather than the more formal written reports because such formal reports were said to be untimely and inadequate for the non-routine and ambiguous tasks of managers. Under the richness scale, face-to-face communication is the richest medium.

In sum, as a theory media richness can be regarded as both prescriptive and descriptive. Media richness theory is a prescriptive model in that it posits that organisational effectiveness requires a match between information processing requirement (e.g. Ambiguity reduction) and communication media (e.g. Face-to-face, writing, etc): Daft and Lengel (1984,1986). It is descriptive insofar that it explains and provides reasons for the choice of media in different circumstances (Daft et al, 1987; Daft and Lengel, 1990; Trevino et al, 1990).

2.3.2. Modern Communication Technologies: Expanded Formulation.

The original criteria are based on the traditional mode of intra-organisational communication. In particular, it emphasises the strength of face-to-face communication. By using face-to-face communication as a benchmark for comparison (Culnan and Markus, 1987), the presumption is that face-to-face is the optimal means of communication. The fact that managers generally preferred to communicate face-to-face provides some support for this presumption.

Relying on this presumption, a persistent view in the literature is that an electronic mode of communication is not a rich medium because it lacks the qualities that are deemed to be high in richness. Email, for example, is very low down the scale, Table 1.5, because as a text based medium it has no social presence and has claim that where managers perform equivocal tasks they would rely much less on modern communication media (e.g. Trevino 1987, Daft 1990).

However, the original Daft and Lengel criteria were not designed with modern communication media in mind. Indeed, in a study of interactive media, such as email, the notion of richness has been shown not to be an inherent property of the medium (Lee 1994). Consequently, it is highly questionable that the notion of 'richness', at least as based on the original criteria, can provide a fair basis of comparison between traditional and modern communication media. In seeing face-to-face as a de facto standard or optimum media, the results are naturally biased against modern communication media.

Modern communication technologies have qualities not found in traditional communication media. This leads some to argue that modern communication medium, such as email, is in fact much richer than was the case using the original criteria (Markus, 1994; Sproull, 1991). Sproull (1991) was the first to provide an updated definition of richness by incorporating the value-added features of modern communication technologies, especially email and GroupWare. Subsequently, Valacich (1993) identified another related quality. The four additional criteria are outlined in Table 1.7.

Table 1.7: Additional Classification Criteria of Media Richness

The Criteria	Descriptions
• <i>Multiple addressability</i>	The ability to reach many people simultaneously. For example, with email, the press of one button could send a message to hundreds and thousands of people anywhere in the World at any time. On this characteristic, email, is more like, if not superior to face-to-face communication, whereas normal telephony would be inferior.
• <i>Externally recordable</i>	Provides the ability to document and modify communication flow.
• <i>Computer processable memory</i>	This permits searches of messages electronically, resulting in “message-based manageability”. This allows quick searching of previous discussion threads, creating a database like a reservoir of previous discussions, ideas and knowledge.
• <i>Concurrency</i>	A notion similar to that of multiple addressability, though somewhat broader. It refers to the “capacity of the media to support distinct communication episodes, without detracting from any other episodes that may be occurring simultaneously between the same or different individuals”, ie. Apart from just reaching more persons at the same time, concurrency means that a media can allow more than one person to “speak” at any given time.

Source: Sproull, R. (1991), at p 183; and Valacich (1993), p264.

Anyhow, it can be argued that the focus of media richness theory is still on face-to-face. In fact, it is not to be doubted whether "richness" is an appropriate notion to assess modern communication technologies. The notion of richness just does not seem to cover the qualities possessed by modern communication technologies; these qualities go beyond "richness" and the notion of communication task equivocality.

2.4. Media Richness Theory: An Evaluation

The research papers studying media richness are summarised in (Table 1.8). There are numerous studies providing empirical support for media richness theory (Daft, Lengel and Trevino (1987), Russ, Daft and Lengel (1990), Trevino (1987), Trevino, Lengel, Bodensteiner, Gerloff and Muir (1990), Whitfield (1996), Zack (1994). The primary claim of the theory that managers will choose rich media (as defined under the original criteria) in situations where the communication task is high in ambiguity has been established in many studies (Daft 1987; Russ 1990; Trevino 1990; and Whitfield 1996).

Complementing such survey style studies is an investigation by Trevino 1987, in which the managers are interviewed as to the incidents and rationale for choosing particular communication media. The responses are overwhelmingly that face-to-face communication (a rich medium) is preferred in situations where the messages to be conveyed are ambiguous.

Table 1.8: Summaries of Studies on Media Richness.

Studies Supporting Media Richness Theory:

Papers	Main Research Question(s)	Research Methodology	Measure of Media Richness	Subjects	Findings Pertaining to Media Richness
Daft, Lengel and Trevino (1987)	To examine why managers often prefer face-to-face communications for problem solving and decision making.	Subjects were surveyed; They were asked to select communication medium (10) they would use for 60 incidents; But the medium did not include the modern CMCs technologies.	Model based, where the ranking is determined by the inherent characteristics.	95 managers in the petrochemical company (positions not specified)	* Majority of managers reported that they would choose face-to-face, a rich media, for incidents high in ambiguity
Russ, Daft and Lengel (1990)	To investigate three theoretical approaches (language variety, symbolic interactionism, media richness) to organizational communication patterns.	Subjects were surveyed; They were asked to select communication medium (10, same as above) they would prefer for 60 incidents.	Model based.	108 managers from three divisions of a petrochemical company (positions not specified)	* Managers tend to select face-to-face medium for highly equivocal communications and written media for clear, objective communication.
Trevino et al (1987)	To the process of media choice by using the theory of symbolic interactionism (in addition to message ambiguity and situational determinants).	Subjects participated in structured open-ended interviews; The purpose was to identify incidents (and the reasons) in which they use different medium (face-to-face, telephone, email, written media).	Not specifically asked; but indirectly inferred from the reasons supplied.	65 Upper level managers from 11 organizations	* Managers said that they are more likely to use face-to-face communication where the message to convey is ambiguous. * Media choice is found to be influenced by: ambiguity of message and richness of communication medium, symbolic cues provided by the medium, situational determinants (eg. time, distance).

Vino, Lengel, Densteiner, Loff and Muir (1990)	To explore the relationship between individual differences (characteristics) and media choice.	Subjects participated in an experimental style study over two sessions in which their media choice in relation to the two tasks (one high and one low) are measured. Media richness was measured through a separate survey of 40 professionals in a computer centre.	Directly measured; 40 management and professional personnel in a computer center of a large university were asked to rank email on the richness scale using the original criteria.	91 employed graduate business school students	<p>* The media was ranked in the order predicted by media richness theory.</p> <p>* When presented with the choice, students were found to choose rich media for more ambiguous message;</p> <p>* However, where communication task is low in equivocality individual difference is more likely to exert influence on the media choice.</p>
hitfield, et al (1996)	To examine the effect of divisionalization and centralization on the information processing behaviour of managers- the use and importance of rich media	A survey was sent to 293 firms listed on the 1991 Fortune 500. The instrument was designed to measure frequency and importance of each media for both product and country matter.	Use media richness scores from prior study (ie. Zmud et al (1990)).	86 CEO	<p>* The use of rich information depended on: (i) design parameters (centralisation and divisionalization; and (ii) type of strategic issues involved (eg. product or country). ie. rich media is required to supplement the more equivocal tasks.</p>
ack (1994)	To examine the use of electronic messaging vs traditional modes of communication in an on going work group performing a cooperative task	A multi-method field study that involves questionnaire, observation, email capture and interview.	N/A.	18 senior/ middle newsroom editors in a large daily newspaper	<p>* If the task has a low shared context (equivocal), then face-to-face is preferable and more effective; whereas if the shared context is high, or if the message is factual, then computer mediated communication like email can be effective.</p>

2.4.1.1. Adequacy Questioned by Modern Communication Technologies.

While there is a solid body of research supporting the position of the media richness theory, an equally large number of research studies provide confounding evidence, Table 1.9 (Cadwell (1995), D'Ambra (1995), Fulk and Ryu (1990), Lee (1994), Markus (1994), Rice and Shook (1990), Schmitz (1987), Steinfield and Fulk (1986), Schmitz and Fulk (1991). Indeed, empirical support for the media richness theory is particularly weak in relation to modern communication media like email (Markus 1994; Markus 1992; Rice and Shook 1990). It is no surprise that research giving conflicting evidence tends to be of more recent origin. With the incorporation of more modern communication technologies in the research design, studies are only recently in a position to expose the predisposition of the media richness theory towards traditional communication media. The increased prevalence of technology usage in organisations in general may provide another explanation.

Table 1.9 Studies Showing Conflicting Evidence:

Papers	Main Research Question(s)	Research Methodology	Measure of Media Richness	Subjects	Findings pertaining to media richness/ media usage
ell et al (1995)	To examine how media use in organizations is affected by situation requirements and media characteristics	15 government employees completing a survey in which they are asked to rank the appropriateness of using different media (12) under 8 hypothetical situations	N/A	N/A	* Situations (ie. urgency of message, amount of message content, distance between communicators) have a significant influence on perceived media appropriateness.
Ambra (1995)	To empirically measure equivocality and media richness constructs. To investigate the underlying assumptions and the applicability of media richness theory to individual media choice.	The media preference of an organization was investigated in 3 time periods through the survey. In these survey realistic tasks (16)- generated by content analysis- are used. Using these tasks the subjects are asked to rank the communication media in order of preference.	Directly measured using a self-develop scale based on the four original criteria.	42 managers in an insurance organization	* While managers do have a preference for rich media in relation to equivocal task, however this is not a linear relationship; * Investigation into the notion of equivocality has raise doubts about its reliability and hence unsettled somewhat the validity of the media richness theory; * Attributes of the original media richness criteria tend to be unable to capture the full dynamics of modern communication technologies.
ulk and Ryu (1990)t			Directly measured	65 petrochemical researchers	*The richness rating from 65 petrochemical researchers indicated that electronic mail is ranked much lower than formal written documents.

Lee (1994)	To examine the notion of richness in relation to email.	An interpretative (based on hermeneutics) approach is adopted to understand the user's media usage behaviour from their perspective.	N/A ie. not really a measure of richness as such; rather, this paper seek to provide an account of how "richness" occurs.	N/A	<p>* Richness is found not to be an inherent property of email;</p> <p>* Rather, it is an "emergent property" of the interaction between the medium and the organizational context- it emphasises the notion of distancing, autonomization, social construction, appropriation and enactment.</p>
Markus (1994)	To assess the power of information richness theory in relation to alternative social theories; To explain and predict manager's use of email.	A multi-method investigation is used: (i) Subjects surveyed in relation to media richness; (ii) For the social theories, archival data in the form of actual emails were collected, interview with 29 persons (from chairman to administrative assistants), and written comment to a survey.	Model based; (based on Trevino et al, 1987) But the interview approach provide a better understanding of manager's subjective perception and reasons.	504 managers covering positions such as supervisors, managers, directors and vice president in a risk management industry	<p>* The result of the survey suggest that managers did not find email to be particularly rich;</p> <p>* Manager's perception of media generally consistent with media richness, but they use email more than the theory predicted;</p> <p>* The social processes tend to better explain this choice.</p>
Ice and Shook (1990)	To investigate the relationship between individuals' job category, organizational level and pattern/ level of media usage from information processing theory angle.	A meta-analysis of prior quantitative studies of media use in organization was conducted. This is supplemented by individual-level statistical analysis of media use in four organizations.	Not measured; traditional ranking using the model is used as basis of comparison of the results	N/A	<p>* Media use patterns by job category and organization level were inconsistent with predictions from media richness theory</p>

schmitz (1987) ⁺					<p>* Found that supervisor's system use provided a better prediction of an individual media use than the traditional features like accessibility and perceived utility.</p>
einfield and Fulk (1986) ⁺					<p>* Found weak support for richness theory only;</p> <p>* Whereas the proportion of team members using electronic mail explained 31% of the variance in the usage of the medium.</p>
schmitz and Fulk (1991)	To investigate the effect of perceived media richness and social influences on the uses and assessments of email.	<p>Everyone who had an email account in the organization was sent a questionnaire that elicits information such as: actual email usage, perceived information richness of media, usefulness of email, experience with email, and whom (in the organization) they communicate with most using all media.</p> <p>Post-survey interviews are also conducted with 27 respondents.</p>	<p>Respondents asked to rank each media for their own work need on a 5-point likert scale (from not at all rich to extremely rich). The respondents are asked to base their perceived information richness on the four criteria of Daft and Lengel (1984).</p>	All members of the organization that have an email account	<p>* It was found that: (i) perceived email richness varied across individuals and covaried with relational social influences and with media experience; (ii) perceived email richness predicted individuals' electronic mail assessment and usage; (iii) social influences of colleagues and pervasive effects on others' media assessment.</p>

In a meta study by Rice and Shook (1990), the prediction of media richness theory was found not to hold. The inadequacy of the theory really became apparent in a study on email usage by Markus (1994). Markus (1994) conducted a fairly comprehensive study involving a survey of 504 managers and interviews with 29 personnel (whose position ranged from Chairman to administrative assistant), and collection of archival data. The study found that managers do not regard email to be particularly rich. This is consistent with the richness model under the original criteria, but is inconsistent with the updated criteria. Yet the most curious finding is that managers used email substantially more than the theory predicted. This study effectively weakens the media richness theory: the theory was not found to provide an adequate explanation and the updated criteria were also found to be incapable of capturing managers' perception of richness.

Why? Using evidence from the interviews, Markus concluded that social process provide a superior explanation of media choice. And this position is consistent with other studies: Schmitz and Fulk (1991), Schmitz (1987) and Steinfield and Fulk (1986). Likewise, D'Ambra (1995) demonstrated media richness theory failed to fully explain media choice in an Australian study focusing on the use of voice mail in organisations.

2.4.2. Reliability of Underlying Construct and Approach

The reliability and validity of two fundamental constructs of media richness theory are still not clear. While there are plenty of papers examining the predictive and explanatory power of the media richness theory, and there are solid empirical justifications for the link between equivocality and media richness (Daft 1987; Trevino 1987; and Russ 1990), the underlying construct of media richness and task equivocality have received limited attention in the literature. Only recently did a paper by D'Ambra (1995) investigate this issue.

In most studies media richness is not something that is explicitly measured. This can be seen in the summary in Table 1.8. Often, it is simply determined by its position on the continuum of richness derived from the set or original criteria noted above. In other words, media richness is treated as the "invariant objective features" of each communication media (Schmitz and Fulk, 1991). The central problem is that these original criteria are themselves outdated with no recognition of the very different qualities of modern communication technologies. After investigating the matter D'Ambra (1995) came to the conclusion that the reliability of the media richness scale is much weaker at the "lean" end of the scale. And at this lean end, of course, are found the modern communication technologies. D'Ambra claimed that this highlights the inability of the traditional media richness scale to capture the full range of attributes or qualities of these modern communication media.

Again, the verdict is very similar in relation to task equivocality. In most prior studies equivocality is either not explicitly measured, or if it is, it is determined by a panel of judges and not by the subjects of the media choice research. Moreover, although the scale used was found to be "adequate", D'Ambra (1995) noted that its operationalisation is "problematic". This is not surprising because a cursory examination of the literature on task equivocality and uncertainty reveals that although this construct has a long theoretical history and is well theorised conceptually, its operationalisation is through the imperfect proxy of task uncertainty.

2.4.3. Missing Task Characteristics

Under the media richness theory task characteristics refer primarily to the notion of equivocality. The question that arises is why just equivocality?. A communication task can possess many other task characteristics. For example, the task could involve different locations, or there may be a time limit, or it may involve more than one person, etc. These other task characteristics are further considered in chapter 3.

Failure to consider these task characteristics make prior studies of media choice highly artificial. While the narrow perspective seems to serve its purpose within the context of media richness theory, it is inadequate to provide an understanding of the overall media choice process. Indeed, as established subsequently in this thesis, equivocality alone is inadequate to explain the media choice process. This narrow focus also tends to be biased

against modern communication media. This could explain some of the curious and conflicting results in prior studies.

2.4.4 Additional Deficiencies of the Media Richness Approach

The rational logic in media richness theory may provide an intuitive foundation to explain and predict media choice, but the current approach in measuring media richness has a critical flaw: media richness is treated as an "invariant objective feature". It is assumed to be the same regardless of context or person; individual managers are assumed to be aware of all the inherent characteristics of each media, and make choice on the basis of these characteristics.

This is unrealistic, people have imperfect cognitive abilities; and the perception of one person is not necessarily the same as another. This is very different to the model assumption that people somehow perceive and act in the same objective manner. Such unrealistic assumptions represent the focal point of attack from the social oriented school of thought:

" There is no simple relationship between message and medium...

The rational model of media choice fails to suffice in its explanation of managerial communication behaviour when managers' preferences for media are taken into accounting and when one considers personal communication-related variables.."

In addition, attempts to somehow categorise modern communication technologies, such as "multi-media" technology, along a continuum of richness may be rather meaningless in that the new media technologies are very fluid such that they encompass the characteristics of more than one traditional mode of communication.

2.4.5. Alternative explanations of managerial media choice;

Predictions derived from information richness theory could form the entire agenda for an empirical investigation of how managers use electronic mail. If however, one were to design such a study without first considering the most plausible alternative explanations, then one would be vulnerable to the risk of not having enough information to redirect future inquiry in the event that empirical observations did not correspond with hypothesised behaviour, (Mackenzie and House 1978). In other words, the researcher can increase her “degrees of freedom”, (Campbell 1975, Lee 1989), and obtain more information from a single study, by simultaneously considering alternative explanations, (Mackenzie and House 1978).

Let us then consider possibilities in the event that managers’ use email more frequently or differently than IRT predicts. One plausible explanation is that, while the causal structure of the theory is correct, email is richer than most analysts have argued. If the IR scale is not an accurate yardstick of media differences, one would expect manager’s media perceptions to differ from the IR scale and (axiomatically in IRT) their behaviour to correspond to their perceptions. While such a finding would not disconfirm IRT, it would suggest the need to modify the IR scale.

Another explanation for behaviour that differs from predictions of IRT is that factors other than individuals media emerge as people interact, (Yates and Orlikowski 1992). One might find that media perceptions differ from media choices or that perceptions follow behaviour, rather than precede it, (Mantovini 1996, Ngwenyama 1997). Whether or not media perceptions are in line with IRT, such a finding would seriously challenge the theory, since it would mean that perceptions of media richness do not cause media choices.

The next two sections present theoretical arguments in support of the alternative explanations, (1) that the IR scale may be inaccurate, and (2) that the scale may be irrelevant. Because there are more important determinants of individual behaviour than personal perception of media appropriateness as defined by IRT.

2.4.5.1. Potential inaccuracies in the information richness scale;

The predictions derived from IRT depend critically on the assumption that email is relatively low in IR. If the medium were ranked higher on the richness scale, perhaps on a par with the telephone, a different set of predictions would follow. The new capability hypothesis challenges the ranking of email as low in richness by focusing on technological capabilities not captured in the IR scale.

As argued elsewhere, (Culnan and Markus 1987), the richness typology takes face to face communication as its standard and considers all mediated communication to be deficient relative to it, because media filter out various cues, such as those of physical presence, gestures, vocal tones, and so forth. However, several authors have claimed that email has capabilities not found in traditional media that give it great potential value in equivocal communication. Despite its clear lack of richness (i.e. email's lack of cues, its synchronicity, and its use of written language, (Ruby 1996). For example, (Sproull 1991, Straub 1997) compared various traditional and new media against a list of technology attributes.

While some of the attributes overlap with those in the richness framework asynchronicity. The ability to reach many people simultaneously, is an attribute that email shares with face to face communication; on this dimension, the telephone, an oral medium is noticeably inferior. Similarly, the combined attributes of externally recorded and computer- processable memory make email unique among the media Sproull compared.

These two attributes have been plausibly linked to significant potential positive impacts on participation in organisational decision making, commitment to the organisation, organisational memory, etc, (Huber 1990, Sproull and Kiesler 1991). These outcomes, in turn, are plausibly associated with changes in human understanding and frames of reference, in terms of which the concept of IR is defined, (Daft and Lengel 1984, 1986).

If multiple addressability and computer searchable memory were added to the concept of richness, email would clearly rival, and might even exceed, traditional communication media like the telephone. If managers perceive email as equalling or exceeding the telephone on this expanded scale of IR, they might substitute email for some, possibly much, of their telephone communication. To the extent that managers perceive email as higher in richness than IR theorists have suggested and act on the basis of these perceptions, IRT will underestimate managers' use of email.

2.4.5.2 Potential inadequacies in the theory's causal model;

Whether or not the IRT scale is accurate, managers' use of media may have little to do with their perceptions of media. Recent literature contains at least two distinct theories about managers' use of email that do not assign a casual role to individuals' media perceptions. Both theories emphasise social influences on individual behaviour. Whereas IR theorists implicitly assume that richness lies in the medium as perceived by individuals, these alternative perspectives conceptualise richness as an outcome of social behaviour, rather than its cause.

2.4.6 Summary

The questionable reliability and validity of the measures for media richness and task equivocality plus the mixed results in the literature, especially in relation to modern communication media do indicate that "media richness theory does not fully explain media choice in an organisation setting". This is consistent with the argument that the notion of media richness is not designed with modern communication media in mind. Even with the inclusion of the qualities of modern communication technologies, the notion still tends to favour the more traditional media.

The bias against modern communication media is amplified by the focus on only one task characteristic. There is little doubt that task equivocality is important and insightful in explaining managers' choice of communication media, but in reality there are many other variables that impact on the requirement of each communication task. It is submitted that the narrow focus of previous media choice research has deprived the studies of additional explanatory power in relation to the overall media choice process. This may even explain the mixed finding in previous literature.

2.5. Alternative Media Choice Theories

2.5.1 Social Construction Theories;

The inability of the richness theory to explain the confounding evidence mentioned above have given rise to another body of theories known as the "collective-level" theories that focus on the broader collective variables like structure, environment and politics. These theories are not based on rational choice alone but are a "collective behavioural response to a socially-constructed definition of the medium's appropriateness. Under these theories, "richness" is an outcome of social behaviour not the cause of social behaviour (in relation to media choice). In other words, the social context provides a framework to assess the different mediums by emphasising certain media characteristics and guiding the interpretation of them. The features of social and rational theories are compared in Table 2.

The most comprehensive theory in this regard is the social influence model of technology use (Fulk, 1987 and Fulk 1990). It posited that an individual media's perception is not just a function of objective (rational) choice, but is partly a social construction. Fulk, (1990) found support for two main limbs of this model.

TABLE 2: SOCIAL AND RATIONAL THEORIES COMPARED		
	Rational/Individual Theories	Social/Collective Theories
<i>Media Characteristics</i>	<ul style="list-style-type: none"> • Invariant; • All salient to the individual. 	<ul style="list-style-type: none"> • Still relevant; but importance declines relative to social forces; • Not all features are salient.
<i>Choice Making Process</i>	<ul style="list-style-type: none"> • People analyse the media features objectively; • An objectively rational process that is based on the salient and invariant media characteristics. 	<ul style="list-style-type: none"> • A subjectively rational process; • Individuals develop socially acceptable interpretations and behaviours that is justifiable with social norms or expectation; ie. influenced by others.
<i>Role of Social Context</i>	n/a	<ul style="list-style-type: none"> • Social context plays a significant role in media choice; • Social cues influence individual's interpretation of the objective requirement of the communication task; • Establish social norms that inhibit media use.
<i>Examples of Theories</i>	Media Richness; Social Presence.	Social Influence Model; Symbolic Interactionism; Critical Mass.

The application of social construction theories responded to the problems with media richness/social presence by postulating that media selection, like most tasks in an organisation, is influenced by a combination of social forces. This means that, while the media richness/social presence scale matching tasks with media would apply in most cases, it is perfectly predictable that some groups or individuals will define either tasks or media traits differently, thus explaining the problems with media richness/social presence theories. Social construction theories were thus introduced in order to explain the major problems with media richness/social presence theories. As described in the following paragraphs, these theories have introduced their own set of problems.

The social construction theories all approach the media selection area from a common point, but differ in their explanation of the mechanisms by which social influence happens. The fields of organisational communication and organisation behaviour have engaged in alternate explanations for behaviour influenced by subjectivity, socially constructed reality, and retrospective rationality (Fulk 1987; Miller and Minge 1985; Putnam and Pacanowsky 1983; Zalesny and Farace 1986). Many of these theories, referred to as the social construction theories, are based on symbolic interactionism. For organisation studies, symbolic interactionism is based on the premise that organisations are webs of interaction, and the basis for interaction among members is a shared system of meaning. Each of the theories ascribes the creation of shared meaning among situated actors to social construction, but their major contribution to the field of media selection is the description of different ways in which shared meaning is created. Three major theories

have been applied to the field of media selection: social influence, symbolic interactionism and institutional theory.

2.5.1.1. Social Influence;

First, properties like "richness" are posited to be subjective and influenced by attitudes, statements and behaviours of other people. So unlike classical richness theory, it recognises that people's perception does differ, that richness is not an objective function of some inherent characteristic of the media. This is based on the recognition that the social context can provide the norms and expectation that shape people's perception and behaviours. For example, in an office where everyone does not use email and makes negative comments in relation to it, any particular individual would be less likely to regard email as rich.

2.5.1.2. Symbolic interactionism;

Symbolic interactionism (Trevino 1987) emphasises social context as a source of influence in media selection. One framework based on symbolic interactionism is structural symbolic interactionism (Stryker and Statham 1985). According to structural symbolic interactionism, media selection behaviour is determined at times by external factors such as situational constraints, and at times by social interaction factors. This approach incorporates situational variables such as distance, time, pressure, accessibility and connection of communication partners to the medium (Trevino 1990) as constraints.

Related to this idea are papers that invoke situational variables as an influence of media choice: Markus (1986), Steinfield and Fulk (1986), and Trevino, (1987). There is the critical mass theory by Markus (1987). Steinfield and Fulk (1986) and Cadwell, (1995) found evidence suggesting that geographical distance, amount of message content and time pressure (i.e. urgency of message) provide a strong influence on managers' media choice. In addition, Trevino, (1987) found that communication media has symbolic meaning associated with it. Depending on the shared meaning evolved through time by the mutual interaction of people each media is implicitly understood to serve a particular purpose or to be used in particular situations. This shared social understanding dictates media choice behaviours.

2.5.1.3. Institutional theory

Also, this aspect of social construction theory is related to institutional theory. Loosely speaking, institutional theory claimed that the norms, values, standards, expectations engendered by the institutional environment shape also the norms, values, standards, expectations of the individual (Scott,1987). For example, where it is the accepted practice of the industry to use email for communication, a firm and the people working within it are likely to follow the same practice such as to give them a sense of legitimacy. On the basis of this theory, Markus (1987) concluded that "where as information richness theory predicts that the uses of new media will be relatively invariant across social units, institutional theory predicts that social definitions, and hence also uses, of new media will vary, perhaps dramatically across units."

2.5.1.4. Experience and Skills

The social influence model also incorporates the idea that expertise with a medium also influence media use. For example, lack of skill will inhibit uses, or that the medium may not be perceived to be as "rich" (as otherwise) if the user lacks the skill or training to use it properly. In relation to email, this is supported indirectly by Komsky (1991) which found that frequent users of email tend to be more tolerant of system problems and to perceive the medium as easy to use.

2.6. Background conditions

Media choice decision is made against a set of background conditions. These conditions that shape manager's perception of media characteristics and task characteristics will be discussed. For a valid comparability of this research, these conditions will hold constant (i.e. universal access of critical mass applied, IT maturity applied) through out the field work survey.

2.6.1. Critical Mass Theory

While the technological characteristics of media may contribute to the speed or slowness of particular communications, it is also the case that communication speed often depends more critically on social behaviour than on the medium itself. (Sproull 1991, Groper 1996) points out that, while conversation is instantaneous, the speed of

meetings and telephone calls depends on the availability of people. Speed also depends on these people's behaviour, scheduling and attending meetings and returning calls in a timely manner. If they repeatedly cancel scheduled meetings, if they do not pick up the phone when it rings or return calls quickly, their communication will be slow no matter how fast their media have the theoretical potential to be. Fast communication via a medium requires that communicators routinely respond quickly to the communications others initiate in that medium. Thus when it is claimed that rich communication is fast communication, it must be recognised that the pattern of responsiveness in the use of a medium is part of what makes a medium rich, (Anderson, Blombery, Galt 1998). This is a social, not a technological, phenomenon.

The argument that richness of mediated communication depends on social behaviour is derived from the public good and collective behaviour traditions in economics and sociology and applied to electronic communication media, (Groper 1996). According to critical mass theory, the use of many communication media, like the telephone and electronic mail, involves more than one person behaving interdependently; i.e. a caller or sender cannot successfully complete a communication via these media unless the intended recipients use them also, (Markus 1994). Consequently, in deciding which medium to choose, rational managers must take into account not only the appropriateness of the medium for a communication task, but also whether the intended recipients are likely to receive and respond to a message in that medium within the desired time frame. To take an extreme example, the telephone is not a good choice for an equivocal communication with someone who refuses to answer the phone.

Critical mass theory further points out that individuals' media choices must be considered in the context of their membership in communities such as the organisation. Maintaining the organisation requires communication, and as size and geographic dispersion increase, intra-organisational communication requires travel or media. For rational managers who are satisfying, rather than optimising, their media choices, it is beneficial to have a medium in which anyone in the organisation can be reached (a universal access medium).

Because this reduces overheads such as tracking the media through which partners can be reached or using multiple media to convey a single message to different parties, (Markus 1994, Groper 1996). Achieving universal access requires that nearly everyone in the organisation agree to use a medium on a regular basis, i.e. answer calls, open mail and the like.

Today, IR theorists and managers can take the telephone and interoffice mail for granted as a universal access media of intra-organisational communication. However, the same cannot be said for electronic mail. Although many organisations have adopted email, it is not yet the case that most employees of these organisations use email. Consequently, many managers may be unable to select email for a particular communication even if (1) they themselves use it, and (2) they believe it to be the most appropriate medium for the task. It follows that IRT is not likely to predict Managers' use of email accurately, unless email is universally used within their organisations. In the absence of universal access, IRT will systematically overestimate Managers' use of email. It is important to include critical

mass theory in the research to avoid overestimating the Managers' use of email. For the purpose of this study, the Manager surveyed in this research will have been selected on the basis of having universal access of media within their firms.

2.6.2. Information Technology Maturity

A further look at the literature reveals consistency with theories on IT maturity. This notion essentially conceptualised the extent that the organisation accepts IT. From the idea that IT maturity evolved in stages, it is arguable that the communication media choice is likely to vary along with it. It is reasonable to say that the extent that IT has permeated the organisation's infrastructure and culture would impact upon people's choice of communication media. The more that IT has permeated the organisation, the more that people are likely to use modern communication technologies . This intuitive argument is consistent with current media choice theories:

- (i) Social construction media choice theory suggests that social context can supply the norms and expectation that influence individual perception. Now, the higher the level of IT maturity, the more likely that usage of modern communication technologies would be the norm and hence reinforce the social acceptance of the medium. In other words, where there is high IT maturity, the usage of modern communication technologies could become an institutionalised phenomenon, thereby leading to a culture that values and encourages the use of modern communication technologies.

- (ii) Where there is high IT maturity, people's expertise about modern communication media would also expect to be high by definition. Thus, people are less likely to be inhibited from using the technology.
- (iii) With the advent of IT, there are more communication media offering benefits different to that of the traditional media. Thus, even judging from the inherent characteristic perspective alone media choice is likely to vary as a result.

2.6.3. Organisational Structure

The organisation structure forms part of the background condition. Structural characteristics like the size and organisation of sub-units, degree of bureaucratisation (centralisation and divisionalisation) could influence the choice of communication media (Zeffane and Cheek, 1994; Whitfield, 1996). Similarly, diversification, especially geographical diversification is an influential condition.

2.7. Chapter Summary

Literature on media choice has provided many explanations for media choice. Media richness theory, for instance, posits a match between the task equivocality and the characteristics of the communication channel. There are also many social theories that supplement this rational model. Yet inadequacies of these theories are apparent in the literature particularly in relation to modern communication technologies.

The once dominant rational approach seems to have been subsumed by the rise of social type theories. Yes, social theories do offer a fresh and softer perspective but another explanation may be that the traditional rational approach is too narrow. The failure to examine the effect of other task characteristics has greatly restricted the ability of these theories to explain the overall media choice process. It is submitted that a broader perspective needs to be adopted, one that consolidates the different theories on media choice, whether social or rational, and incorporates a fuller and more realistic range of communication task characteristics. To this end a comprehensive framework that elaborates the media choice process is developed in the next chapter.

CHAPTER 3

The Framework

" The new science gives us the vision of an entangled universe where everything is subtly connected to everything else....the way holism replaces reductionism and wholes are seen as greater than the sum of their parts. In the new science, organised simplicity gives way to self-organised complexity."

(Ian Marshall and Danah Zohar in Who's Afraid of Schrodinger's Cat, 1997)

Introduction

From the literature we derived a need for an integrated model. The earlier discussions in the literature review have greatly subsumed the adequacy of the rational approach, especially media richness theory. However, this thesis maintains a "loose" rational framework. But at the same time this thesis also values the validity of the social perspective. Rather than viewing the social perspective as an alternative, it is best seen as complementary. The social perspective never denies the relevance of the objective features of media, only that it emphasises that "richness" is more a function of social behaviours or construction. Although the fuzziness or chaotic feel associated with the social construction

approach seems totally inconsistent with a rational approach, the point to note is that the two perspectives are not mutually exclusive. This argument is consistent with modern chaos and self-organisation theory that claims there is order in chaos.

Until now the literature tends to focus either on the rational or the social perspective. While the rational approach is more systematic and provides a clearer structure of the media choice process, it lacks the richness of detail offered by the social theories. Yet, a rational approach is more practical in that it provides a framework that can facilitate the analysis and design of organisation information processing system. This accounts for the continuing popularity of the individual rational choice approach (Markus 1994).

Meanwhile, social relativistic theories may seem rather subjective but the process is not irrational. The social elements can themselves be rationalised. Take symbolic interactionism for instance, which claims that people use media to signify something through the socially agreed meaning of different communication media. For example, people may want to convey a sense of authority by communicating in writing. In this context, if managers are asked why they chose to communicate in writing, they would respond by saying that they want to show their authority. Is this not rational?

Consequently, this thesis presents a more comprehensive framework below, that integrates the rational and social elements in a "loose" rational framework. It is "loose" because the framework recognises that people are not perfectly rational. People do not

function in a mechanistic manner. The social basis of people means that their decision process is necessarily complex. Indeed, this lack of perfect rationality could provide another explanation for the deficiency in the traditional media richness theory.

This framework is constructed from the variables and relationships identified in the media choice literature, information technology literature. Hypotheses are then developed stating alternative ways in which the variables in the integrated framework may integrate.

3.2. Social Influence

Media choice can be regarded as a function of the manager's perception. By its very nature perception is a behavioural variable that is susceptible to ever present psychological, social and cultural influences. Managers do not function in a social vacuum. On a broad level, the culture of society is known to influence the selection of electronic communication media (Straub, 1994). Within the organisation, social norms or socially acceptable behaviours are established over time. These norms form part of the organisation culture.

The organisation culture influences, if not dictates, how things are done. They predetermine how people perceive modern communication and information technology. Hence they influence peoples' eventual media choice. The strength of social influence is evident in Markus (1994) where the departure of a CEO, who previously actively endorsed email usage, has resulted in a dramatic decline in email usage in the organisation. Similarly, the manager may wish to use the social or symbolic meaning attached to a media to achieve something, for instance, a show of authority (Trevino, Daft and Lengel, 1990).

3.3. Demographic

This includes the person's age, gender, job experience, educational background. For example, it has long been observed that the selection of a communication channel is dependent on age (Nelson, 1989).

3.4. The Media Choice

Choice involves judgement. In media choice, the judgement is fundamentally a function of a manager's perception of communication task requirement and their perception of communication media characteristics. That is, the process of media choice is to choose the media that the manager perceives to best suit the performance of the particular communication task at hand. The question that arises is what forms the basis of these perceptions.

3.4.1. Perception of Communication Media

Prima facie, the manager's perception of communication media is based on the inherent characteristics of each communication media. These characteristics partially determine the manager's perception or attitude towards each media. As noted earlier, because perception is a behavioural variable, the static media characteristic would not lead

to the same perception of media for different managers. Each manager is likely to have his or her own view regarding a particular media as influenced by the social influence conditions in the theory. In addition, the manager's personal experience and knowledge with each media would affect his or her perception.

3.4.2. Media Characteristics

Each media possess certain inherent characteristics. The eight characteristics enumerated in table 1.4 and 1.7 capture both the qualities of traditional media (the first four) and modern communication technologies (the latter four). For example, a media like face-to-face would have characteristics like immediate feedback, multiple cues (e.g. Tone of voice, body language) and from a personal source.

3.4.3. Perception of Communication Task Requirement

Similar to the perception of media, the perception of communication task requirement is based primarily on the different task characteristics present. It is also subjected to influences such as the manager's experience in relation to the communication task and , of course, the social influence conditions.

3.4.4. Communication Task Characteristics

An important task characteristic is that of equivocality. Consider a task that the manager may perceive as equivocal, say where the manager needs to prepare a budget for a

new project and he or she requires some inputs from the line managers. A media that the manager may choose for this task could be face-to-face meeting, because the media is capable of conveying immediate feedback and multiple cues.

Keep in mind that such a task may not be equivocal. If the manager, or the line managers, has much experience and knowledge about this particular project the task will appear less equivocal. In which case a simple telephone conversation or a fax transmission may suffice. Similarly, the managers may be influenced by his personal experience with different communication media. A manager that is barely computer literate will tend to think that a computer based channel is inferior, even though the information he requires may be readily available through this channel.

In addition, equivocality of the communication task is not the only consideration. The framework in Hypotheses 1 and 2 list four other characteristic in the Social Influence theory that impact on the task requirement: Urgency, geographic locality, group(i.e.number of people involved) and time zones. When these characteristics are considered, the choice chosen in the above budget preparation example is only one possibility. For example, if an urgent answer is required from the line managers, the manager may have no choice but to call the person directly, or walk to the manager's office and talk to him or her face-to-face. But where the manager is in London and the other person is in Bangkok, for instance, the latter option is clearly impossible. The phone would become the only option. And what if it is not during the office hours of the other manager(s). Then , email or voice mail would be the only choice.

In sum, the media choice involves the consideration of the eight media characteristics and matching it with the task characteristics. Many combinations are possible depending on how the manager and the other parties to the communication perceive the media and the task. It is a rational process, but one that occurs on a tacit level.

3.5 Complementary means to explain choice process;

3.5.1. Standard Operating Procedures

The above assumes implicitly that people do have a choice, but in practice standard operating procedures may determine the communication media to use. In this event, media choice is a simple function of these procedures. These procedures would form part of the organisation's formal communication process. The presence of such procedures is probably related to the organisation structure, because where there is a high degree of formalisation, internal policies tend to be more prevalent (Zeffane and Cheek, 1994)

3.5.2. Bounded Rationality

This concept captures the limited cognitive abilities of people. It incorporates two ideas: (I) that people have limited computational capacity such that they are unable to make sense of all available data; and (II) that it is impossible to identify all relevant information. This could provide an explanation of the anomalies in the traditional media richness theory. It is submitted that because of people's bounded rationality they are unable to evaluate the

characteristics of each media. The theory presumed a perfectly rational person, but in reality the person's rationality is constrained. Consequently, they do not necessarily make the most optimal media choice.

3.5.3. Opportunism

Opportunism is "self-interest seeking with guile" (Williamson, 1985). Here, opportunism could be the underlying motive for the media choice. For example, where the choice of media is to save themselves time, money, or that it is simply a more convenient option, the motive is one of self-interest. This notion also ties in well with existing theories. Take symbolic interactionism for instance. It posits that people may want to use a particular media to convey a particular meaning. The question that the symbolic theory did not ask is why. Simply, the answer is again self-interest: the person wants to achieve something that suits them.

3.5.4. Asset Specificity

Whereas the above are the human related factors, this one is an environmental factor. Asset specificity refers to the extent that the physical assets are locked into a particular activity such that it has no (or very limited) value in alternative activities. Arguably, this phenomenon may not be as striking as in large scale economic systems, but asset specificity

is still relevant in the context of communication media. The communication media can be regarded as the asset. They each possess characteristics that determine their suitability in relation to different tasks. Thus, it is submitted that there is a limit on the range of communication tasks that each media can be used for. For example, the phone would not be an option to a manager who wants to present a chart of budget Vs actual performance to his or her superior.

3.6. Summary

This chapter outlined a framework to analyse manager's choice of communication media. This is a comprehensive framework drawing together many separate streams in the literature.

In essence, the media choice is a function of managers' perceptions of communication media and their perceptions of communication task requirements. These are shaped by the media and the task characteristics respectively; and they are also shaped by the manager's experience amid social and demographic factors. And an introduction of various complementary means to explain the choice process.

3.7. Integrated Models and Hypotheses

3.7.1. Introduction

The main focus of this study is to examine the Manager's choice of communication media under different task situations. What media do they use for different tasks? How, or on what basis, do they make their choice? Why do they choose one media over another?.

3.7.2. Research Problem

The evidence has shown clearly from the critical review of the literature that the field still produces conflicting evidence and fall short of establishing a distinctive model of media choice. There is no single clear theory explaining how individuals make media choices or respond to information overload; there is no agreement on how email discussion differs from face-to-face discussion; and there is very little work on the effects of email at an organisational level. The quantitative studies that have been carried out generally explain use from individual to individual.

The field will remain conflicted and far from establishing a distinctive model of media choice, unless all the relevant theories and variables are accounted for in the same test. And the samples are sizeable and of genuine manager's working in the real organisational environment. When testing different influential theories like this case, to establish a distinctive model, the order in which these influential theories are structured in

the model is of paramount importance. It is the aim of this research to examine data covering all of these theoretical explanatory factors together, and to analyse it using structural models. The research will be directed at 3 main theories in particular ; IRT theory and Social interaction theory and symbolic interaction theory. The research will address the degree of relative importance of each in determining media choice under different task conditions.

The contribution of this research will be to provide evidence of media choice under the greater complexity and technological practice characterising today's businesses. Previous research focussed on relatively simple 'one cause' theories of media choice and explored them within assumed simple business conditions (eg worker co-location, no specified task urgencies). This research will look at the interaction between the previously proposed explanatory factors and study whether variation in factor effect occurs under more complex business conditions. The added complexity of business and the increasing use of communications in the 'knowledge work' age means that the answers to these research questions are more relevant today than ever before.

The research questions are:

- 1) Is e-mail perceived as a low IR medium in today's technological business conditions?**
- 2) What are the relative influences of IR, task equivocality, social interactions and media experience in determining media choice?**
- 3) Are these relative influences constant or do they vary with different task settings and characteristics?**
- 4) Are media choices made on the basis of perceptions of richness or are choices made independent of those perceptions?**

3.7.3. The proposed research models :

Figures 3.1 and 3.2 present models of media choice proposed by this study. The models are developed based on the model of technology use proposed by (Schmits and Fulk 1991). The literature review suggests that four groups of factors affect media choice directly and indirectly:

- 1: IRT/Task; this will involve rating communication channels from rich to lean and match it to appropriate task.
- 2: Social influence; the influence of co-worker, supervisor and institutional environment will determine which media you use.
- 3: Symbolic interaction (i.e. Practicality such as Urgency, Geographic locality/ Time zone, Group task messaging)
- 4: Experiences ; The more experience the users are with a particular medium, the higher the level of usage.

The following two models discuss their variables direct and indirect relation with media choice. The issue of media choice behaviour, the dependent variable, has received a lot of attention from many researchers including the previously reviewed ones. But the conclusion is often supported by the frequently cited inconsistency that independent variables used were the sole surrogate measures of media choice, (Ruby 1996).

The way of defining and measuring media choice has a strong influence on the relations detected subsequently between objective oriented (i.e., IR/ Task theory) and subjective oriented (i.e. social interaction theory). Thus any model trying to explain a behaviour such as media choice should start by including these two major contrasting theories in the same test together with other basic variables. When constructing media choices model, a problem occurs when trying to link different theories together in the order of influence. When testing each theory separately, this ambiguity about whether information richness theory addresses media choices or perceptions makes sense when the theory is understood as an individual level rational choice theory (Daft, Lengel and Trevino (1987), Russ, Daft and Lengel (1990), Trevino (1987), Trevino, Lengel Bodensteiner, Gerloff and Muir (1990), Whitfield (1996), Zack (1994), Cadwell 1995), D'Ambra (1995), Fulk and Ryu (1990), Lee (1994), Markus (1994), Rice and Shook (1990), Schmitz (1987), Steinfield (1986), Schmitz and Fulk (1991).

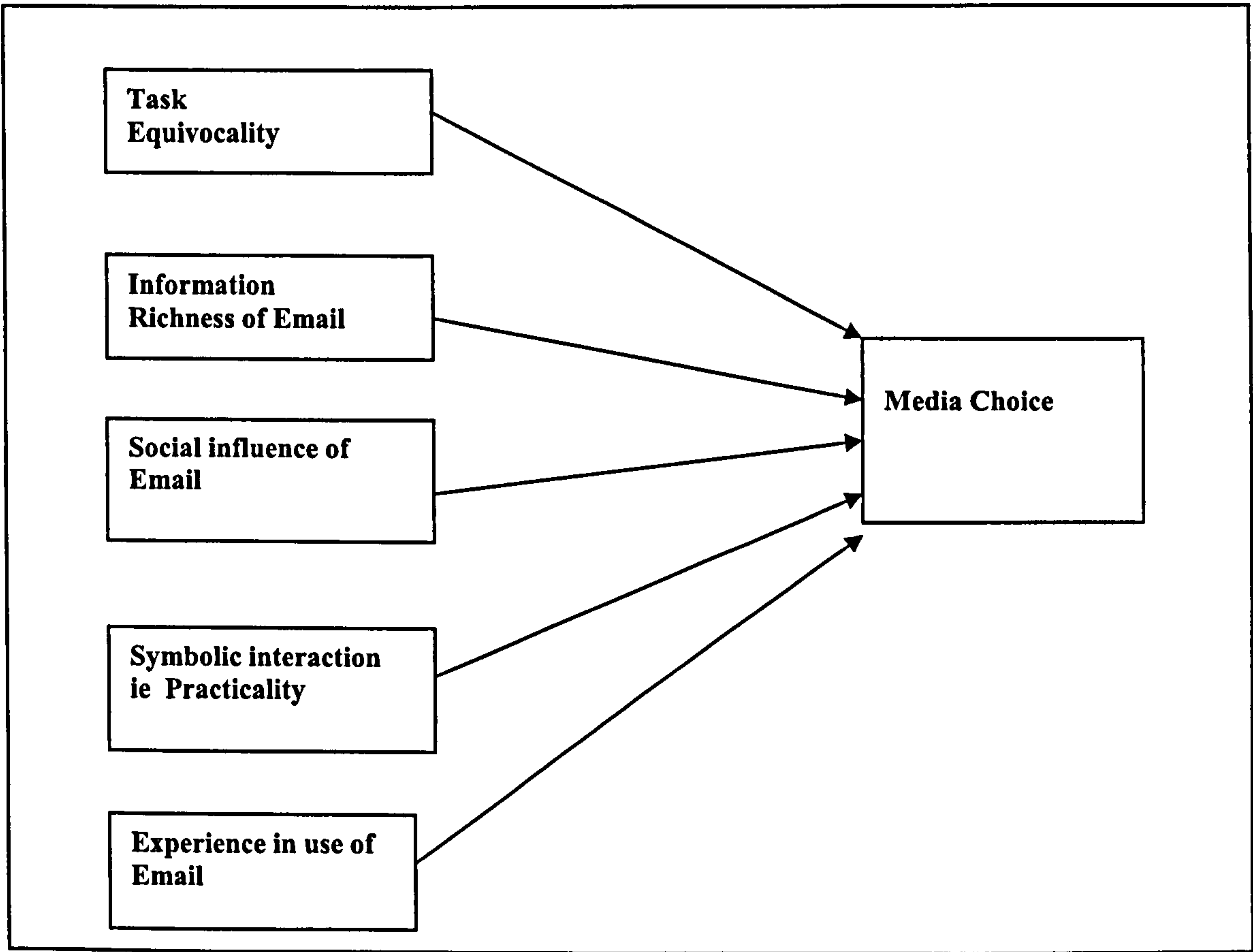
In a theory such as IR , people are believed to act on the basis of their perceptions and thus perceptions and behaviours are expected to correspond (Daft, Lengel and Trevino (1987), Russ, Daft and Lengel (1990). By contrast, in an alternative theory such as social interaction theory that assumes external forces (e.g., situational factors or pressures from powerful individuals) drive behaviour, behaviour might differ from perceptions or perception might adapt to behaviour through a process of retrospective rationality (Markus 1994, Schmitz and Fulk (1991). Therefore, although the assumption that perceptions of IR cause and thus correspond with, behaviour is implicit in most investigations of information richness theory . This study explicitly examines both possibilities, that IR perceptions are related to media choice (via match with task equivocality) and that IR perception is not

significant to media choice, either by itself or in conjunction with equivocality (although task equivocality may be significant).

Thus the expected possible relationships between the IRT/Task, Social interaction theory, Experience and Practicality factors will be structurally tested using the following two models;

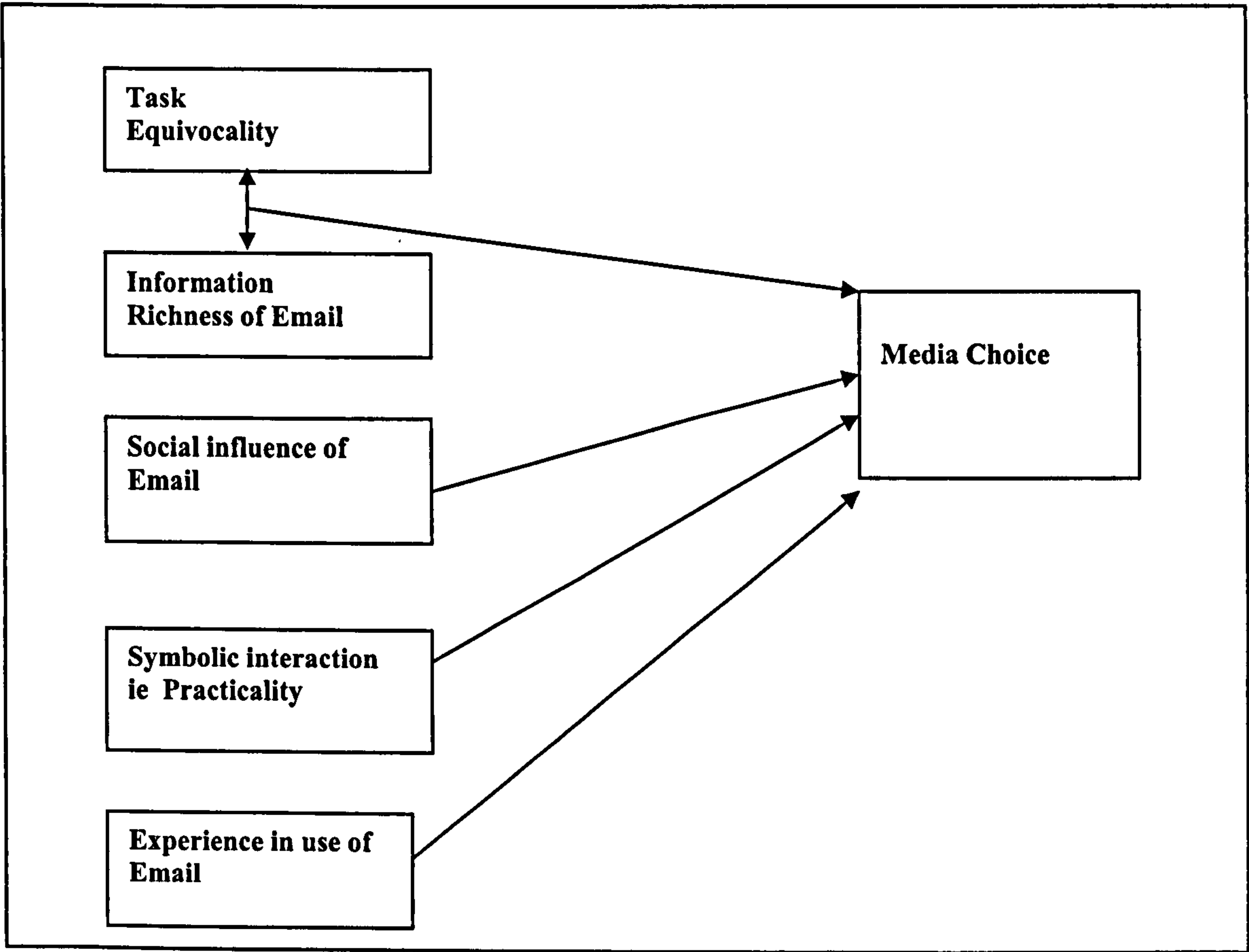
Model 1: Perceptions of IR are not mediated by task equivocality in any effect they have on media choice

Figure 3.1



Model 2: Perceptions of IR are mediated by task equivocality in any effect they have on media

Figure 3.2



3.7.5. Research significance

This study carries on the work of many researchers over the last 40 years by using multiple methods design that allowed behavioural results to be explained using questionnaire and interview data . The study will make two major contributions to the media selection literature.

First, it will review the previous work in media selection, organise and explain it. The literature review will illustrate that the basis for the major trait theories of media selection (media richness/social presence) are well founded. Media richness and social presence theories are built on using rich communication media to build relationships and interpret meaning. From these concepts underlying the “ self- oriented” variables, it becomes clear that the emphasis is on ease of use and accommodation to the exigencies of the sender. When the underlying concepts of the “ other- oriented” variables are examined, it becomes clear that the emphasis is on accommodating the communication partner.

Second, the study will illustrate, through the large number of variables that are important in the media selection process, demonstrating at least one of the reasons that the area of media selection is so complex. It will also show why consistent explanations were not found for media selection using the trait theory of media richness/social presence alone. Since about 25% of the reasons given for media selection are not in a major trait theory. But through a more complete set of variables and the use of multiple methods, they will produce results that would not have been obtained using a single method analysis.

Third, and perhaps most importantly, the study will propose two structural models of media selection decision making. The study will show how theories can be linked together differently in the order of influence according to the conflicting literatures. With the aids of the structural modelling tool called “Amos”, the analysis will compare models of Media choice. This body of knowledge should be invaluable to the theory building of Media choice in information systems and to improving the efforts of designing which will yield consistent results. These in turn will benefit implementing and managing globally based information systems.

To address these questions, interview and survey questionnaire methodologies were adopted for this study. The details of the research design and its limitations are outlined in the following sections.

CHAPTER 4

4.1. Considerations for data collection and representation methods for media choice;

General design issue

The general design issue considers the traditional strategies of experimentation, surveys and case studies in relation to the purposes of enquiry.

It also considers alternative hybrid and combined strategies.

It explores the implications of taking case study seriously, leading to a discussion of post-positivistic science.

Finally, this section addresses the issue of what it takes to produce trustworthy findings.

Design is concerned with turning research questions into projects. This is a crucial part of any enquiry, but it is often slid over quickly without any real consideration of the issues and possibilities. There is a strong tendency for both those carrying out projects, and those who want them carried out, to assume that there is no alternative to their favoured approach. Comments have already been made on the assumption by many psychologists that an experimental design is inevitably called for. For other social scientists, and for quite a few clients when commissioning studies, designs involving the statistical analysis of sample survey data are seen as the only possible approach.

Manstead and Semin (1988) make the obvious but often neglected point that the strategies and tactics you select in carrying out a piece of research depend very much on the type of research question you are trying to answer. They adopt a river-crossing analogy. The task of crossing the river corresponds to the general research focus. Specific research questions are analogous to asking how many people want to cross the river; the frequency with which they want to cross; the current of the river, etc. The choice of research strategy is akin to a choice between swimming, walking, flying, or sailing across. The research tactics (or methods of investigation) concern the particular type of boat, bridge, aircraft, etc.

The general principle is that the research strategy or strategies, and the methods or techniques employed, must be appropriate for the questions you want answer. Hakim (1987), in one of the few books which focuses on design issues across a range of social science disciplines, make a comparison between designers of research projects and architects, and then goes on to extend this to suggest that those who actually carry out projects are like builders. For her, design deals primarily with aims , purposes, intentions and plans within the practical constraints of location, time, money and availability of staff. It is also very much about style, the architect's own preferences and ideas (whether innovative or solidly traditional) and the stylistic preferences of those who pay for the work and have to live with the finished result.

In small-scale research the architect-designer and builder-enquirer are typically one and the same person. Hence the need for sensitivity to design issues, to avoid the research equivalent of the many awful houses put up by speculative builders without benefit of architectural expertise. Such muddling through should be distinguished from the

opportunity to develop and revise the original plan, which is easier in a small-scale project than in one requiring the co-ordination of many persons' efforts. Design modifications is more feasible with some research strategies than with others -it is in fact an integral part of the case study approach. However, that kind of flexibility calls for a concern for design throughout the project, rather than providing an excuse for not considering design at all.

Getting a Feel for Design Issues

After an overview of what is involved in choosing a research strategy, the immediately following part gives a short review of the traditional strategies of experimentation, surveys and case studies. This is followed by a separate section on each giving a more detailed discussion, concentrating on design issues specific to each strategy. The rationale for this presentation is that researchers need to have some understanding of these issues for each strategy before they are in a position to make an informed choice of strategy.

Any researchers should not feel straitjacketed into simply choosing one of these three approaches "off the shelf". It may well be appropriate to have a rather different style- perhaps a hybrid which combines aspects of two or three of the traditional strategies. Or a study might combine them, including, say, both a survey and one or more case studies.

Choosing a Research Strategy - Overview

This section seeks to sensitize you to the issues involved in choosing a research strategy.

Is one of the Traditional Strategies Appropriate?

The general approach taken in an enquiry is commonly referred to as the research strategy. Research strategies have been classified in many different ways. One simple approach which is widely used distinguishes between three main strategies; experiments, surveys and case studies. List A summarizes their characteristics.

List A: Three traditional research strategies

1. Experiment : measuring the effects of manipulating one variable on another variable.

Typical features : selection of samples of individuals from known populations; allocation of samples to different experimental conditions; introduction of planned change on one or more variables; measurement on small number of variables; control of other variables; usually involves hypothesis testing.

2. Survey : collection of information in standardized form from each individual; Usually employs questionnaire or structured interview.

3. Case study : development of detailed, intensive knowledge about a single "case", or of a small number of related "cases"

Typical features : selection of a single case (or a small number of related cases) of a situation, individual or group of interest or concerns; study of the case in its context; collection of information via a range of data collection techniques including observation, interview and documentary analysis.

Explanation on "field research"

Many researchers may come across the term Field studies, or Field research. This is sometimes used not simply to refer to location (i.e. outside the laboratory but also to signify a particular research approach. For social anthropologists, for example, Fieldwork is synonymous with this collection of data using observational methods. Some social scientists also use the term to refer to the collection of data using a social survey (Moser and Kalton, 1971), although for others it is much closer to case study.

“the term field research will be used... to incorporate different theoretical perspectives and to explore the relationship between a variety of different methods. It covers what is colloquially known as participant observation, unstructured interviews and documentary methods : although depending on the problem at hand other approaches can be used. (Burgess, 1984a, p.4)”

Don't Rule out other Possible Strategies at this Stage

It is important to note that the three traditional research strategies do not provide a logical partitioning covering all possible forms of enquiry. They are more of a recognition of the camps into which enquirers or researchers have tended to put themselves, signalling their preferences for certain ways of working. Such camps have the virtue of providing secure bases within which fledgling researchers can be inculcated in the ways of the tribe, and, more generally, high professional standards can be maintained. However, they carry

the danger of enquiry being "strategy driven" in the sense that someone skilled in, say, the ways of surveys assumes automatically that every problem has to be attacked through the survey strategy.

It may well be that some hybrid strategy falling somewhere between these "Ideal types" is appropriate for the study with which researchers are involved. For example, there is nothing to stop researcher collecting a substantial amount of largely standardized survey-type data from a relatively small number of cases. Or doing an experiment for which the data are obtained by a survey.

It can also make a lot of sense to combine strategies in an investigation. One or more case studies might be linked to a survey or an experiment. Alternatively, a small-scale survey might be incorporated actually within a case study.

Consider the Purpose (s) of your Enquiry

Enquiries can be classified in terms of their purpose as well as by the research strategy used. A tripartite classification is again commonly used, distinguishing between exploratory, descriptive and explanatory purposes. These are summarized in box 1 A "predictive" category is also sometimes (see Marshall and Rossman, 1989, p.78) but is regarded here as a variant of the explanatory purpose. A particular study may be concerned with more than one purpose, possibly all three, but often one will predominate. The purpose may also change as the study proceeds.

Box 1 Classification of the purposes of enquiry

1. *Exploratory*

- To find out what is happening
- To seek new insights
- To ask questions
- To assess phenomena in a new light
- Usually, but not necessarily, qualitative

2. *Descriptive*

- To portray an accurate profile of persons, events or situations
- Requires extensive previous knowledge of the situation etc. to be researched or described, so that you know appropriate aspects on which to gather information
- May be qualitative and/or quantitative

3. *Explanatory*

- Seeks an explanation of a situation or problem, usually in the form of casual relationships
- May be qualitative and/or quantitative

It is taken as given that all enquiry is concerned with contributing to knowledge. Real world enquiry also commonly seeks a potential usefulness in relation to policy and practice.

The Purpose(s) May Help in Selecting the Strategy

The three traditional strategies represent different ways of collecting and analyzing empirical evidence. Each has its particular strengths and weaknesses. It is also commonly suggested that there is a hierarchical relationship between the three strategies, related to the purpose of the research; that

- Case studies are appropriate for exploratory works
- Survey are appropriate for descriptive studies and
- Experiments are appropriate for explanatory studies

There is some truth in this assertion – certainly as a description of how the strategies have tended to be used in the past. There is a further sense in which the flexibility of the case study strategy lends itself particularly well to exploration; a sense in which certain kinds of description can be readily achieved using surveys; and a sense in which the experiment is a particularly appropriate tool for getting at cause and effect relationships. However this is not a necessary or immutable linkage. Each strategy can be used for any or all of the three purposes. For example, there can be, have been, exploratory, descriptive and explanatory case studies (Yin, 1981).

E. The Research Question Does Have a Strong Influence on the Strategy Chosen

While purpose is of some help in selecting the research strategy, the type of research questions you are asking is of greater assistance. There are other factors, for example

- The degree of control that the investigator has, or wishes to have, over events;
and
- Whether the focus is on current or past events

Box 2 Appropriate uses of different research strategies

Strategy	Type of research question	Requires control over events?	Focus on current Events?
experiment	how why	yes	yes
survey	who what where how many how much	no	yes
case study	how why	no	usually but not necessarily

F. Specific Methods of Investigation Need Not be Tied to Particular Research Strategies

The method or techniques used to collect information, what might be called the tactics of enquiry, such as questionnaires or various kinds of observation, are sometimes

regarded as necessarily linked to particular research strategies. Thus surveys may be seen as being carried out by structured questionnaire; case studies by less structured interview; and experiments through specialized forms of observation, often requiring the use of measuring instruments of some sophistication.

However, this is not a tight or necessary linkage. For example, case studies have already been presented as essentially multi-method . While interview a are likely to be involved, a range of observational techniques, analysis of the content of documents, and the application of various tests or scales, among other techniques, could also play a part. Similarly, there is no reason in principle for either experiments or surveys to be linked to specific data collection techniques. Surveys could well be carried out using observations; the effect of an experiment assessed through questionnaire responses.

Just as each research strategy can be used for any or all of descriptive, exploratory purposes, so any method or technique, or combination of methods, can be used with any of the three traditional research strategies.

You should now have some appreciation of what is involved in selecting an appropriate research strategy. Before plunging in and making a decision you need to know more about the issues involved in working within each of the traditional strategies (this is necessary even if you decide to "pick" and "mix" and depart from traditional - the same kind of issues will surface). The rest of this chapter reviews methodological issues central to each strategy. The following three chapters examine design issues raised in experiments, surveys and case studies respectively.

Experimental Methodology

The so-called "psycho-statistical" paradigm (Fienberg, 1977) dominates the mainstream view of how empirical studies in psychology should be carried out. Certainly this is the impression gained from the content and approach of the multitude of methodology texts on experimental psychology. The work of Sir Ronald Fisher, particularly his *The Design of Experiments* (1935) is usually cited as the major influence in this development. Fisher, working in agricultural research, saw that random sampling from known populations allows the use of probability theory to estimate error, and through this the development and use of statistical tests of significance. His approach provides a solution to two very important issues that permeate scientific enquiry. These are the problems of INTERNAL VALIDITY (concerned with the extent to which a study established that a factor or variable has actually caused the effect that is found) and EXTERNAL VALIDITY (the degree to which findings can be generalized from the specific sample in the study to some target population).

The elegance of Fisher's solution to these problems and, one suspects, the access which his approach gave to a satisfyingly complex application of mathematics, may well have played a part in its wholesale adoption. This is not with standing strong attacks made on the use of his central concept of statistical significance. It is also worth noting that there were earlier experimentalists, such as Pavlov, who made a strong contribution without the use of statistics; and that later highly influential figures in the development of psychology,

such as Skinner and Piaget, and their adherents and followers, appeared immune to these statistical blandishments.

In moving from the laboratory to the "real world" there is an immediate difficulty in using Fisherian methodology. Random sampling from known populations, although in principle still feasible, appears to present extremely difficult practical and ethical problems. Certainly, real world studies which play the game strictly according to Fisher's rules appear rarer than politicians applauding their opponents' actions or policies.

What to do? A common device, surely only defensible for the psychological comfort derived from conformity, is to pretend that all is well; to quote statical significance levels which have meaning only within the Fisherian model, without making it explicit that the required assumptions were not met. In fact, the extent to which one can stay within this paradigm and make sensible statements about populations from non-random samples is a complex and murky area (see Smith, 1983).

An alternative and more honest approach has been pioneered by Campbell and his colleagues, starting with the influential Campbell and Stanley (1963) monograph, which was further developed by Cook and Campbell (1979). They advocate "QUASI-EXPERIMENTATION" as a valuable approach to the development and analysis of studies in field settings. A wide range of designs is covered which are more easily realizable outside the laboratory than "true" experiments. This includes, for example, the comparison of "intact groups" (e.g. existing classes in schools) rather than samples randomly selected and allocated for the purposes of the study. The concern is to tease out the threats to valid

inference about causation present in a particular design, and to evaluate how far these threats can be discounted in a particular study, taking into account the specific features of the study and the pattern of results obtained.

The quasi-experimental approach attempts to liberalize the experiment to cope more realistically with conditions outside the laboratory. It shares the same notions about the nature of scientific activity as true experimentation. Hypotheses are tested; cause and effect are investigated; validity is assessed; and generalizations to the population and different settings and times is attempted. There are differences of course. The logic of the Fisherian "randomized assignment to conditions model" is that randomization attempts to control an infinite and unspecified number of "rival hypotheses". Strictly speaking, randomization can never totally control for these hypotheses, but renders them implausible to a specified probability. In quasi-experimentation each rival hypothesis must be specified and specifically controlled for.

This latter approach has strong similarity to an earlier tradition of experimental work, most clearly seen in physics, but also central to Pavlov's work in the laboratory. This might be termed the "experimental isolation" or "laboratory control" model. Pavlov made use of heavy sound insulation by means of thick walls. There was close control also of temperature and, generally, of all extraneous stimulation. In this tradition the control is for a relatively few, well specified, alternative hypotheses. The specific alternatives controlled for (never perfectly, but sufficiently well to render them implausible) depend on what seems to be important at the time-essentially, that is, on the current theories and models. Moving out of the laboratory does not negate this approach, but does make it much more

difficult to achieve the required degree of "plausibility - reduction" of specific hypotheses, simply because we cannot have comparable isolation or control (Campbell, 1989).

The next section covers the design of both true and quasi-experiments in field settings. The special case of single-subject experimental designs, deriving from Skinner's approach to the experimental analysis of behavior, is also covered.

Survey Methodology

The term "survey" is used in a variety of ways, but commonly refers to the collection of standardized information from a specific population, or some sample from one, usually but not necessarily by means of questionnaire or interview. Generally, a relatively small amount of information is collected from any one individual, contrasting with a case study, where a great deal of information might be obtained from a "key informant". There is normally no attempt to manipulate variables, or control conditions, as would be the case in experimentation. Surveys are well suited to descriptive studies where the interest is. Say, in how many people in a given population possess a particular attribute, opinion or whatever. However, survey data can also be used to explore aspects of a situation, or to seek explanation and provide data for testing hypotheses.

Samples tend to be large in surveys and the questions asked usually of a type that requires careful attention to how samples are drawn, typically on a representative and/or random basis. The interest is not normally on individuals per se, but on profiles and generalized statistics drawn from the total sample and generalized to the population.

Surveys are often CROSS-SECTIONAL STUDIES. That is, the focus is on the make-up of the sample, and the state of affairs in the population at just one point in time. The value of this kind of " snap-shot" approach depends crucially on choosing a representative, non-biased sample. This is usually large in size to ensure that, through statistical means, we have a high degree of confidence as to the state of affairs in the population. However, in a psychological rather than statistical sense, confidence in the overall picture is dependent on the quality of the individual responses and there is legitimate skepticism about whether or not the often perfunctory survey responses carry real meaning.

When the main interest is in describing or assessing change or development over time, some form of longitudinal research is the method of choice. The same set of people, and/or the same issue or situation, is studied over a period of time. This form of research tends to be difficult to carry out and is demanding on the time and resources of the investigator. " Mortality" within the sample can be a problem, not so much in terms of the actual death of people, but more their inaccessibility or non-availability through geographical moves or an unwillingness to continue co-operating with the study. A survey is often the main approach in this kinds of research, but there is no reason in principle why experiments or case studies could not be chosen.

Case study Methodology

In case study, the CASE is the situation, individual, group, organization or whatever it is that we are interested in. Case Study has been around for a long time and to some it will suggest the legal system, to others the medical one. Bromley (1986) points out that case study can be found in areas as disparate as administration, anatomy, anthropology, artificial intelligence, biochemistry, business studies, clinical medicine, counseling, criminology, education, gerontology, history, industrial relations, jurisprudence, management, military studies, personality, politics, psychiatry, social work and sociology. We will in fact that the strategies developed for dealing with cases in other disciplines have useful lessons for us, suggesting solutions to problems with case study methodology, including the thorny one of generalizing from the individual case. There is some danger in using a well worn term like case study. Paradoxically, all such terms carry "excess baggage" around with them; surplus meanings and resonances from these previous usages. Miles and Huberman (1984) prefer to use the term "site" rather than case, but this carries a strong geographical flavor rather than the desired human one. So let us stick with case study.

The intention is to provide guidance in carrying out rigorous case studies. This involves attention to matters of design, data collection, analysis, interpretation and reporting. Before getting on with this, however, let us be clear as to what we mean by case study.

Case study is a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence.

The important points are that it is :

- A strategy, i.e. a stance or approach, rather than a method, such as observation or interview;
- Concerned with research, taken in a broad sense and including, for example, evaluation;
- Empirical in the sense of relying on the collection of evidence about what is going on;
- About the particular; a study of that specific case (the issue of what kind of generalization is possible from the case, and of how this might be done, will concern us greatly) ;
- Focused on a phenomenon in context, typically in situations where the boundary between the phenomenon and its context is not clear ; and
- Using multiple methods of evidence or data collection

Research techniques are a bit like fishing flies: you choose the right one for the fish you want to catch. No fisherman would use the same kind of fly for twenty different varieties of fish, just because it was the first kind he had ever tried or even the one he felt more comfortable with (Kane, 1993). There are a number of different techniques available in use for research purposes. The reason for choosing the method depends very much on the objective of the research and what kinds of information researchers are expecting to get. However, the most common techniques used, especially within the management area, can be explained in four major types. These are participant observation, experimental case study, questionnaires, and interviews.

Participant observation

Observation as a research technique covers a variety of situations and approaches. It can be done in a 'natural' setting such as a shop or a bus, or it can be done in a formal situation, such as a laboratory. The observer can be a participant or at least, a visible presence; or his presence can be concealed. The observation can be 'free', that is the observer simply writes what happens; or it can be 'structured': a specific list of activities is looked for and checked off when they occur, while everything else is ignored (Kane 1993). Observation can be direct—looking at the actors and their actions as they occur or it can be indirect—looking at the results of action or events.

Participant observation is a technique used when you wish to learn from people's actions what they do, as opposed to what they say they do. Both are equally important. Participant observation will tell what people do, but only in situations where the researcher gets the opportunity to observe. And after the researcher observes, he/she still has to make sense of what he/she saw. Often, the researcher needs to know much more than observation tells. The researcher may also need to know how representative the observation is, how often this kind of thing occurs and what people say about it. The researcher may need to know if they would behave differently if the observers were not present.

Participant observation simply means observing and listing with as much attention to detail as possible. It is a good method when one is trying to learn from scratch, when superficial explanations and judgements will not work. In such cases, the researcher can

take nothing for granted. Taken together, these mean that you try to act like a tape recorder and a camera. The most obvious benefit from this method is that it can act as a 'scanner' or check on the researcher's other techniques. If people say on questionnaires and interviews that they do a certain thing, and records and documents show they did it in the past, yet, when an appropriate situation arises, the researcher may see people doing something else. However, the main drawback of this method is that it is very costly and time consuming. The research period could take years before any conclusion of the study can be drawn. Also, the process of interpreting the result and the process of observation involves lots of researcher's understanding and personal quality. The fact that the researcher is only human, bias could easily be a problem during the observation period and therefore, the result. Also, a number of details from the observation could easily be missed during the process and that could cause the wrong result or conclusion. This method requires a well-structured plan and well-trained observer. The arguments about the difficulty of observation method in this research is backed up when only one well known paper published used this for the field study (Zack 1994). With the constraints of not having infinite time and cost the researcher managed only to sample 18 senior to middle newsroom editors in one daily newspaper organisation. With the same constraints applied to this research coupled with the extensive need to sample very large number of population of 1000 Managers, the researcher decided against adopting this research method for this field work, based on suitability and practical reasons.

Experimental study

There are two main types of experimental methods, laboratory experiments and quasi-experiments.

(I) Laboratory experiments

This is the highly structured nature of experimental research designs, with their identification and manipulation of independent and dependent variables and assignation of subjects to control experimental groups. Being highly structured, it is comparatively easy to replicate many aspects of an experimental research design. Moreover, its utilisation of matched control and experimental groups enables observation of the effects of manipulating an independent variable while providing a high degree of confidence that the effects of any potential extraneous variable have been ruled out, or controlled, thus allowing the establishment of causal connections. However, this experiment, in gaining these strengths through its high degree of structure, loses or 'trades off' naturalism: experiments are low in ecological validity because of the artificial nature of the research process and context created by their very structure (Gill and Johnson, 1991). Such weaknesses arise in the issue of the extent to which any conclusions from ideal experiments are mere artefacts of the research process and context and thus inapplicable to social contexts outside those in which data has been collected. Another weakness is that it is often low in population validity since it may involve small numbers of subjects, who may often be volunteers. This method was adopted by a few researchers in this field in the past to explore the relationship between individual differences and media choice (Trevino, Lengel,

Bodensteiner, Gerloff and Muir (1990)). The sample consisted of 91 graduate business school student simulating the role of management and professional personnel in a computer centre of a large university, they were asked to rank electronic mail on the richness scale using the original criteria. But given that the aim of this study was to find out how and why Managers' choose their communication media in the real environment, the weakness of naturalism in experimental design was the key factor that convinced the researcher of its unsuitability for this particular field study.

(II) Quasi-experiments method

This methods attempts to take the research design of the ideal experiment out of the laboratory and into the field. By attempting to undertake research in relatively natural, non-artificial settings it is, therefore, relatively higher in ecological validity. But, through venturing into the field naturalism may be gained, but only at the expense of losing the ability to extraneous variables (Campbell, 1963). For this method, it is usually much more difficult for a researcher to manipulate the independent variable and assign subjects to matched and experimental groups. Indeed, to attempt to create such groups often disturbs the normal lives of subjects and so reduces naturalism. So, by increasing ecological validity quasi-experiments trade off internal validity when compared with the laboratory experiments. Another problem regarding these methods, both laboratory and quasi-experiment, is that it is quite difficult to gain access in the field. This could give rise to a problem regarding population validity. Although in theory this research method seems to be the answer for experimental method, in the real World it would be impractical for this research to follow, since the population sample consisted of a range, from high ranking Managers to low level Managers. This argument is also supported in the literature review

that none of the researchers, past and present had adopted this research path. Hence this research will also be inclined not to adopt this method, for the reason of ease of comparability.

Questionnaires

Most people have encountered survey research, in one form or another, as either participants in surveys or recipients of information from surveys. The most familiar are those carried out by market researchers with clipboards who stop passers-by in the High Street to ask about anything from what they drink to how they vote. Magazines and newspapers often carry out surveys, and most of us have received questionnaires through the post asking what we have purchased and what we might purchase in the future. All sorts of organisations from airlines to the Gas Board want to ask us questions. Commercial organisations use the results of surveys to make decisions about the development of products, their pricing, their market penetration and the profiles of their customers.

Sociologists also regard surveys as an invaluable source of data about attitudes, values, personal experiences and behaviour. Researchers use face-to-face or telephone interviews, or postal questionnaires. One of the most important parts of any research survey is the development of the questions. The success of a survey will depend on the questions that are asked, the ways in which they are phrased and the order in which they are placed.

The challenge for the researcher is how to select questions that will obtain the most valuable information. This is a skill to be learnt like any other in social research, and the following guidelines below will help with devising such questions. The researcher will also make distinction between questionnaires and interview schedules; discuss the use of open-ended and closed questions; show how to avoid ambiguous, leading, double-barrelled and hypothetical questions; describe the types of questions that can be asked and the order in which they should be placed; and finally, discuss the varieties of format for questionnaires and interview schedules.

Choosing a method of questioning

Social research involves detective work. You begin with a problem and then ask a number of questions about it such as, "what?", "Who?", "where?", "when?", how?" and "why?". In some research, the most important question may be "What are the consequences?". Consider Managers' media choice: What is media choice? It is necessary to determine what counts as media and what counts as media choice process. Who becomes the user of these media? It would be wise to limit your study to a particular group, say, Managers who become the prime user of these communication media. What types of Managers are they? Are they in the top management, middle management or lower management? Where does the media choice process take place? If you choose the real working environment, the location will be business organisations or Government institutions. When does the communication choice occur? How regularly? For what length of time? How does it occur? This question may cover several aspects of the communication scenario, from the communication tasks that they face to social influence that determine

their media choice. Why? The key question for the research: the main purpose of the study will be to seek an explanation for the Managers' media choice process.

Most research studies will include questions within these categories. Once the researcher has decided upon a research topic, the next important step is to choose an appropriate method. The researcher may decide on a quantitative method, carrying out a survey by means of a self-completion questionnaire. The researcher could also conduct a telephone survey, which although it involves interviews, can be carried out on a larger scale than face-to-face interviews.

For some studies, it may be sufficient to question a small sample; for instance, a small-scale study involving in-depth interviewing may provide ample data on what it is like to be married to an alcoholic. However, a study wishing to examine Thai Managers' attitudes towards electronic communication choice is likely to benefit from a larger-scale study to ensure that the views obtained are representative of the general population. In this case, a postal or telephone survey may be the best means of obtaining data. Which method the researcher chooses will be determined by topic and the time and the financial resources available.

Face-to-face interviews

Interviewers need to be provided with some form of document to guide questioning; this may consist of both pre-coded and open-ended questions. It is important here to note the distinction between an interview schedule and an interview guide. A schedule contains

set questions in a predetermined order adhered to in each interview. An interview guide, on the other hand, is used for a focused interview and will list areas to be covered while leaving the exact wording and order of the questions to the interviewer. In some cases, the interview guide will be quite sketchy to allow for the possibility of non-directive interviewing in which the interviewee's replies determine the course of the interview. Interviewers may record responses directly onto an interview schedule by pen or use a tape-recorder to record the interview for later transcription. Portable computers, programmed with interview schedules, are becoming increasingly popular.

Interviewing can have both advantages and disadvantages. Interviews can be more flexible and, in the hands of a skilled interviewer, extract more information from the individual than a postal survey. The disadvantage is that it is expensive to carry out interviews because of the cost of paying interviewers, travel, and analysis of the data. It is also possible for interviewer bias to occur. Often, interviews are used in preliminary research before a postal survey is carried out in order to develop ideas for questions and to determine what pre-coded answers should be offered in the postal questionnaire.

Telephone surveys

Interview schedules are also used for interviews conducted via the telephone. Telephone surveys have similar merits to those involving face-to-face interviews, but have the added benefit that it is possible to reach a wider population at less cost. Although telephone surveys are less popular with social scientists than they are with market research companies, they can be an effective way of conducting social research. Developments in

computer technology have now made telephone interviewing easier. A computer-assisted telephone interviewing (CATI) system is able to sample the specified population, provide guidance for the interviewer's introduction, display the interview schedule item with appropriate filter questions, and record the interviewees' responses. Telephone surveys do have disadvantages. The main problem is that certain groups such as the poor, the young, the sick and disabled, and those who are frequently away from a telephone (perhaps in the course of their work) may be under-represented. Sensitive questions are difficult to ask at a distance, and it is less easy to supply stimulus material, such as a prompt card to the interviewee.

Furthermore, telephone interviewing is very different from face-to-face interviewing and the training of interviewers in telephone technique must be thorough. Interviewers cannot interpret the reactions of the interviewee by observation so they must learn to present questions clearly and listen carefully for any signals that might indicate lack of understanding. A further problem concerns concentration; if the interview is not pre-arranged, the interviewer may not get the full attention of the interviewee.

Postal Surveys

Researchers are not in complete agreement about what should properly be called a questionnaire. Sometimes it is used to mean a document containing a set of questions for respondents to complete themselves ("a self-completion" questionnaire) and sometimes to mean the list of questions which an interviewer reads out to respondents. To avoid confusion, throughout this chapter it is the former that is meant: a questionnaire is given to

respondents for them to fill in. Questionnaires are generally used for postal surveys, although they can also be distributed by hand, for example, in a school or workplace. The questionnaires follow a standardised format in which most questions are pre-coded to provide a list of responses for selection by the respondent. The questions must be phrased so that they are immediately comprehensible because respondents will not be able to obtain help with anything they do not understand. A questionnaire, like participant observation, can be used before the researcher begins his/her research, to get enough preliminary information to decide to change the entire problem of what he/she discovers. It can also be used as one's research technique, or part of a group of techniques. This depends on what the research requires. The main advantage of self-completion questionnaires is that a large population can be surveyed relatively cheaply. Costs are lower because interviewers are not used, and pre-coding and computerisation speeds up analysis. It is also possible for respondents to fill in questionnaires at a time convenient to them.

The main arguments against using postal questionnaires have generally been that the response rate is low (many postal surveys do not achieve more than a 50 per cent rate of return) and that many are incomplete, illegible and incomprehensible. The researcher must also have information about the target population in advance of the study, as well as a very clear idea of what questions will elicit answers to the research problem. As many of the questions will list pre-coded answers, exploration to obtain these categories will have to be done before developing the self-completion questionnaire. It might be assumed that since all three of the above methods have significant deficiencies, the chances of obtaining valid and reliable data are very small. This is not so, argues Dillman (1978), who claims that many difficulties can be overcome by using a "total design method". By giving minute

attention to every aspect of the survey process, from the training of interviewers to the devising of questions, from the letters asking for participation to the paper on which questionnaires are printed, the quality of response for all types of surveys can be improved. This approach is to be thoroughly recommended: giving careful attention to the planning and execution of the research project will enhance the likelihood of producing useful results.

An overwhelming number of researchers past and present had adopted this survey questionnaire in their research methodology Daft, Lengel and Trevino (1987), Russ, Daft and Lengel (1990), Whitfield (1996), Zack (1994), Cadwell (1995), D'Ambra (1995), Rice and Shook (1990), Schmitz and Fulk (1991). For some the focus was solely on survey questionnaire, for others it was used as part of multiple methods. In which case the suitability of this method is arguably appropriate for this research. Hence the researcher will be inclined to adopt a questionnaire survey as the corner stone of this research.

Before embarking upon any research exercise, it is important to explore the previous work that has been carried out on the subject. This will not only provide a framework for developing questions for this research, but will also ensure that the project can build upon previous studies. Start, therefore, by obtaining academic papers, books and reports based on related research. Questionnaires and interview scheduled that have been used in a study are sometimes included in published work and can prove a useful foundation for this research. Begin with a research hypothesis, for instance, "the most popular Managers' media choice ", and use this hypothesis to choose which questions need to be asked.

A first draft of a questionnaire will be based largely on questions derived from previous studies and on brain-storming, that is, writing down all questions which may be useful for the study. It is not enough that questions should reveal interesting information; the data obtained must relate directly to the study. Often, it is quite difficult to decide which are the important issues, but preliminary background reading will usually help to elaborate a set of hypotheses that will help to sort the relevant from the irrelevant. A number of variables would therefore have to be considered in a research. Researcher may be able to think of several areas which have a bearing on the research topic, but each question must have a direct relevance to one of the variables of the hypothesis, care must be taken in weeding out questions that do not. It is advisable to keep the hypothesis and the objectives of the research very firmly in mind when developing questions.

When drafting questions, researchers also need to consider reliability and validity. A study can be said to be reliable if similar results would be obtained by others using the same questions and the same sampling criteria. In order to make it possible for repeat studies to be carried out, first, questions should be worded clearly and unambiguously so that they can be asked in the same way in follow-up studies. Second, instructions for both administration and completion should be the same for all questionnaires or interview schedules. Third, the same sample of the population under study should be well defined and the details provided in the research report. A study can be said to have validity if it actually measures what it sets out to measure. This is more difficult than it sounds. For example, what set of criteria could be used to measure happiness? Some researchers might use variables such as health, marital relationships or employment status, while others might choose spiritual or psychological factors.

Types of information

There are four main categories of information which can be obtained from a survey. They are listed below with examples of how questions might be phrased.

Attributes

Attributes include personal or socio-economic characteristics, such as sex, age, marital status, religion, and occupation. Obtaining valid and reliable information about occupation is more difficult than it might seem at first. Researcher could ask some simple questions, like " what is your occupation?". However, what constitutes paid employment? Would , for example, two hours' work per week in a bar put the respondent into the "employed" or "unemployed" category? A good example of the kind of careful and thorough questioning needed to get over these kinds of difficulties.

Behaviour

Behaviour constitutes what the individual has done, is doing, and may possibly do in the future. For example, questions to gain information relating to behaviour could be "Do you intend to use electronic mail as a media of communication in the organisation?" and the answer could be in the form of a 5 point "Likert scale", i.e. most likely, likely, neutral, unlikely, most unlikely. There may, of course, be difficulties in defining what is meant by communication in an organisation and it may be necessary for the researcher to make it

clear to the respondent what is meant by the term. For example, should informal communication in the organisation be counted toward formal communication in the organisation.

Attitudes

Attitudes imply evaluation and are concerned with how people feel about an issue. Questions about attitudes usually employ scales: a statement is made and individuals are asked to indicate their level of agreement in a positive or negative direction. For example, a question asked the respondent to indicate whether they think electronic mail was useful?, and the answer could be in the form of a 5 point "Likert scale", i.e. strongly agreed, agreed, neutral, disagreed, strongly disagreed.

Beliefs

Beliefs can usually be assessed by asking whether something is seen as true or false. For example a question could ask the respondent whether his/her company has a policy encouraging electronic mail use?, and the answer could be in the form of "yes" or "no".

Forms of question

In both interview schedules and questionnaires, there are two forms of question which can be asked: closed questions and open questions.

Closed questions

Closed questions are drafted in advance, complete with all the possible answers which could be given. Each respondent is asked to choose from one of the answers. For example, a closed question asking about highest level of educational attainment would ask respondents to choose from a list of categories such as basic education, degree, and professional qualifications. Other questions, such as "Are you married?" have the appearance of open questions, but are only answerable by "yes" or "no".

Closed questions have advantages because they can be pre-coded and the responses can easily be put on a computer, saving time and money. They also have particular advantages in studies using questionnaires as they are less time consuming for the respondent to complete. However, such structured questions also have the disadvantage that they force the respondent to choose between the answers provided. When faced with a question such as: "Do you have a good relationship with your Boss?" the respondent may wish to say "yes and no", "it all depends", or "it has improved since I have been promoted". This difficulty can be overcome to a certain extent by asking for more information. When the respondent is asked to indicate either "yes" or "no", this can be followed by a "why?" or "please provide further details" allowing for more elaboration. Where lists are given, a category of "other" should always be provided for those who cannot find an appropriate pre-coded response. Ranges can be given which make completion and coding easier. For example, when asking about experience at the current job, the responses could be given in a set of ranges in terms of years.

Ranking Scales

A ranking scale is a form of closed question which can be valuable when trying to ascertain the level of importance of a number of items. A list of choices is provided and the respondent or interviewee is asked to rank them. It is advisable to limit the range of alternatives as it may be difficult for the individual to rank a large number. This is particularly important when carrying out face-to-face and telephone interviews, where more than four or five items can be unmanageable. It is helpful in face-to-face interviews to allow the respondent to look at a prompt card showing the choices.

Open questions

Open questions are those that allow individuals to respond in any way they wish. For example, asking the open question "What do you think electronic mail will be used for, in an organisation?" will allow the respondent or interviewee to state any activity from informal communication between work colleagues to formal communication with Superior. Open-ended questions can be most usefully employed by skilled interviewers, who can allow interviewees to develop answers much more fully than they could if they were completing questionnaires.

It is also very useful to use open questions when beginning a new research project. If investigating the reasons why Managers' choose to use electronic mail in organisation communication, the researcher would do well to begin by asking open-ended questions of a

small sample of Managers' in such organisations. From this small-scale study, it would be likely that the most fundamental reasons would emerge; for example, Managers' use electronic mail because of time pressure, speed , geographic dispersion of other managers in their sister company around the World and the ability of reaching many people at a press of a button, and so on. If a larger study were to be carried out, answers to these open questions could then be used to devise pre-coded categories for closed questions.

Open questions do have their drawbacks. In questionnaires, it is relatively simple for respondents to tick pre-coded categories, whereas answers which are unrestricted require more thought and consideration. A further disadvantage of using open questions is that they produce responses which may be ambiguous, wide-ranging and difficult to categorise . Answers can be time-consuming to code and analyse and therefore expensive to deal with when conducting large-scale studies. The type of study will determine whether open or closed questions are best. But it is worth bearing in mind that;

"closed questions should be used where alternative replies are known, are limited in number, and are clear cut. Open-ended questions are used where the issue is complex, where relevant dimensions are not known, and where a process is being explored" (Stacey 1969).

4.2. Methodological issues

Situations like the one in the area of media selection, where conflicting results and confusion exist, are ideal for the practice of certain types of research methodologies. Appropriate methodologies combine the advantages of multiple methods to test theories (Jick 1979, Lee 1991). For the reasons discussed below, the methodology used in the present study conforms to this model.

Much attention has been paid recently in the IS literature to different approaches to research (Lee 1991, Robey 1995, Lee et al 1997). These approaches to research have traditionally been associated with specific data collection and analysis techniques. While a full discussion of the advantages and disadvantages of these methods have been covered earlier, the following discussion outlines how different data collection methods have affected results in the area of media selection.

The predominant data collection method used to investigate the media richness theory is self report, usually in the form of a questionnaire. The differences in results obtained using observation versus self-report have been documented. In a meta-analysis of 40 media studies (Rice and Shook, 1990), differences were noticed in media use based on the method of reporting the use: when participants were observed or asked to keep a diary, the total use of oral channels was significantly higher than when multiple methods or self-report was used. Similarly, managers reported perceptions of media characteristics that fit reasonably well in the media richness theory but their actual use of the media was different

from predictions that could reasonably be made based on the reported perception (Markus 1994).

The predominant method of data collection in the development of the theory of social presence was laboratory experiments. In the area of communication studies, lab experiments are often designed so the participants in the experiments do not know each other before communicating via the new medium. They are also not given any choice about using the medium, they have no alternative ways to communicate, and they are often unfamiliar with the technology (Dhulman and Steinman 1977). In addition, there are no differences among the participants in task or status. This means that the results from lab experiments are most likely indicative of organisations in which members have equal status and similar tasks, and are geographically remote from each other so they have never met, have few opportunities to meet, and few alternative communication media (Culnan and Markus 1987).

To carry out this research some of the traditional approaches used in email research need to be questioned. In particular, controlled, laboratory-like experiments may have some advantages, but they seldom reproduce the context in which managers use email in real organisations. In order to encounter in the study of real managers in real organisations, aiming to understand their motivations, tactics and strategies in using email, is therefore important.

4.3. Research Approach

4.3.1. Objective

While the study was intended to test the combined sets of influential theories that have been applied to explain media selection (media richness, social interaction theories, experience and practicality), given the complexity of the area the study was designed to collect data about topics that then seemed extraneous to the study. It has been confirmed that researchers can increase their degrees of freedom and “obtain more information from a single study” by simultaneously considering alternative explanations in the design of the studies (Markus 1994).

Another major study (Kaplan and Duchon 1988) illustrates this principle as the original research design included both quantitative and qualitative methods of data collection and analysis, and it was apparent that the two approaches were essential to understanding differences in the acceptance and use of computer systems. In order to fulfil this objective in the current study, an initial interview was done to gain the inside knowledge of Thai managers' media choice. This result will then act as the corner stone for the development of the questionnaire design. The data about communication incident were then collected via statistically-analysed surveyed from managers carefully sampled from cross sector of organisations in which they were “embedded”(Yin 1989). It is acknowledged that a questionnaire alone is unable to identify the reasons behind the choice of media selection. However, this limitation is mitigated by an additional feature of the

initial interview. This will permit the subjects to state their reasons and opinions in more detail before the questionnaire was developed. The former will give the relevancy to the development of the main questions and the latter adds substance to the data collected from the questionnaire and makes the result more concrete.

4.4. Sample Selection

4.4.1. Industry Sector and Description;

As discussed earlier, Critical Mass theory suggests that Information Richness theory: predictions about managers' use of E-mail are likely to hold only in settings where E-mail is a universal access medium. Thus, one criterion for selecting a research site for this study was that all managers in the organisation routinely use electronic mail for intra-organisational communication. While such organisation can increasingly be found, they are not abundant, because of many inhibiting factors, such as lack of convenient (i.e. desktop) access to computer terminals (Markus 1994).

Universal access to E-mail is most likely to be found in computer companies, and research development (R&D) laboratories, because of their large installed base of computers and the computer skills of their employees. However, employees of these companies may have an ideological bias in favour of computing that renders their E-mail use patterns unrepresentative in a way that might prevent a fair test of information richness theory's predictions. Therefore, for the purposes of this study, it is desirable to select firms operating in industries unrelated to computing products and services or R&D. Hence the following sectors in Thailand were chosen; Financial sector, Real estate, Consulting firm,

Manufacturing sector. The four main sectors chosen are the most prosperous streams in Thailand (before the financial crises). Hence these were appropriate sites in Thailand for the study of media selection which includes new technology since the early stage of IT adoption in organisations. In addition to the traditional means of communication, organisational members had access to electronic messaging.

4.4.2. Reasons for focusing on these four industries sectors in Thailand

Thailand was chosen as the destination for data collection for various reasons. In fact it could have been done in many other countries but because the author is a Thai with overwhelming resources at a minimal cost and personal contacts. This make it sensible and practical to choose Thailand for the targeted sample populations. As a result this will ensure the speedy process of data collection time and enhance the possibility of a high response rate.

The Financial market, Real estate, Consultant firm and Manufacturing sector were the targeted sample population. These industries and institutes have witnessed exponential growth in the last decade; and technologically (true at the point before the financial crisis). They are regarded as very important industries and institutions in Thailand. These sectors are sophisticated in the sense that they are able to handle the speed, diverse ranges of constant information transactions. Consequently, organisations in these sectors are expected to have a very high level of information technology maturity such that the acceptance of modern communication media is expected to pass critical mass. This avoids one of the problems that could have contributed towards the conflicting results in prior media choice

study. Where the critical mass has not been reached, the context would introduce a bias against modern communication technologies. Moreover, by focusing on three different sectors, the organisational culture and structure are more likely to be different. The net effect of this variation in the background conditions will maximise the generalisability of the media choice research.

4.4.3. Sample Description

4.4.3.1. Subjects

The subjects for this study all hold top managerial position within their company. They are either Managing Directors or Directors at divisional/functional levels. This study was limited to 77 companies which were selected on the basis of location, accessibility, personal contacts by the researcher, with the aim of embracing across-section of industry sectors. The site chosen were all large Multi-National or National firms. There were; 25 Financial companies, 32 Manufacturing companies, 12 Consulting firms and 8 Real Estates.

CHAPTER 5

Pre-Pilot test

This test was conducted by interviewing the managers both directly in person and by telephone. The intentions were to gain initial insight;

I) Methodological interview for this type of study. Before the survey methodology could be fully developed, it needed to be confirmed whether the survey would be a suitable means of getting information regarding manager's media choice. Also, if it was suitable like the researcher has anticipated, what would be the best technique to carry out the questionnaire design. Lastly, what would be the best way of drawing the manager's media choice model from the information given by the managers.

5.1. Sample

The Subjects for this study are all general managers within their company. Given the difficulties in getting senior managers to participate it was reasonable to leave out senior managers for the pilot and field work study. This study was limited to five companies which were selected on the basis of personal accessibility by the researcher, with the aim of embracing a cross-section of industry sectors. The companies chosen were all Thai National companies; a plastic manufacturer, two banks and two consulting firms.

5.2. Data Collection Methods

This study was conducted through face-to-face interviews and telephone interview sessions, whichever was more convenient for the Manager to conduct the interview. The interview lasted approximately thirty minutes and each session was recorded in field note books. The second telephone call was made if any, in order to fill in the missing information from the first interview. Following the approach of knowledge elicitation developed in the expert systems field, the telephone interviews were structured as:

- (1) First establish if Critical Mass theory applied within the company, then an initial exploration of Manager's media choice made by them in order to select and build up the data scenario policy.
- (2) Field note record of the manager's explanations of their media choice.
- (3) An elucidation of the gaps and inconsistencies by putting specific questions and hypothetical examples to the manager.
- (4) Interpretation on the interviewers' part of the data collected, with the intent to resolve the remaining gaps and inconsistencies.

On each separate occasion, at the beginning of each of the face-to-face interview or the telephone interview, the respondents were asked to confirm that E-mail is a universal access medium within their organisation. By achieving universal access requires that nearly everyone in the organisation agree to use a medium on a regular basis, i.e. answer calls, open mail and the like. When the universal access of E-mail has been established hence Critical Mass theory applied and the researcher can now try to extract information with regard to Manager's Media choice. It has been found that decision-makers of media choice, although experts in their field and able to perform to high performance criteria, in common have considerable difficulty in articulating the past scenario of Manager's Media choice accurately. Just as many skills are subconscious, so many decision making on Media choice scenarios appear to operate at a level below that of full consciousness. As a result, simply asking managers to give an account of their media choice scenario is often long winded and vague. This point of view was confirmed by comments such as the following from a Director and a Manager.

"I write letter, publish reports, newsletters, I go to meetings, I give speeches orally, I phone people, so we take advantages of anything that will work, I'm a total pragmatist on that point".

And:

"Okay, I often times I have minor items, I would like to discuss with Mr Apisit..... and since periodically I go over and get a cup of coffee, rather than do it earlier, I know, about the time Mr Apisit comes in, if he's coming in. So I will often times delay that times, That way I can check to see if Mr Apisit is in..... and then I can just discuss the topics which we should probably talk about."

Accordingly, knowledge such as elicitation, the process of figuring out the Manager's Media choice scenario has to rely on indirect methods. These include the researcher suggesting general Media Choice scenarios for the respondent to verify their choice and match the observed decisions with the Richness Theory Prediction. For this interview the Media choice reasons was devised to retain the logic of prior Media sensitivity instruments(Russ 1990, Daft 1987), while avoiding those procedures most likely to confound the results. The questions were based on hypothetical communication tasks constructed by (Trevino 1987). These researchers provide numerous examples of reasons for choosing media, along with the medium or media that Information Richness theory holds to be appropriate for each reason; the reasons represent the three categories in the extended theory of Information Richness:

- (1) content reasons, i.e. equivocality and uncertainty reduction.
- (2) Situational reason, i.e. time and space constraints.
- (3) Symbolic reasons, i.e. desire to convey authority.

The approach used in this study has been found to be necessary in the derivation of Media's choice decision because of the limitation in term of self analysis and articulation of partially subconscious processes involved in reporting Media choice scenario. Of course, not all aspects of the Manager's media choice process can be uncovered by this approach. However, for an exploratory study outside a controlled experimental situation, it does provide a good balance of surface level reporting and in depth probing of the decision base on media appropriateness for various tasks, descriptions of typical media use patterns and their meaning, and the history of and reasons given for media use. As this was a

preliminary study, all the media choice scenarios were selected as having clear aims to avoid unnecessary complications. This will enable us to focus on simple scenarios and thus reconstruct the media choice decision processes without having to follow multiple possible goal paths.

5.3. Data analysis method

The information collected from the subjects includes the Media choice scenarios they encountered when choosing media or medium to solve problems. The information collected was first decoded from field note book as a result of the face-to-face interview or telephone interview. The resulting table of media choice was then drawn, based on the information given by the subjects. The results in table 3.2.1 illustrates the respondents agreeing with Information Richness theory and selecting various media accordingly.

5.4. Table 3.2.1 show result from information analysis for Manager Media choice

Reasons	Richness Theory Prediction	Agree With Theory		Media	Selection	
Content Reasons			PERS	TELE	EMAIL	MEMO
1. To convey confidential,private, or delicate information	PERS & TELE	90%	70%	20%	10%	0%
2. To describe a complicated situation or proposal	PERS & TELE	60	40	20	20	20
3. To influence, persuade, or sell an idea	PERS & TELE	80	70	10	10	10
4. To express feelings or emotions	PERS & TELE	90	70	20	10	0
5. To keep someone informed	EMAIL & MEMO	100	0	0	90	10
6. To follow-up earlier communication	EMAIL & MEMO	90	0	10	90	0
Situational Reasons						
7. To respond to a straightforward telephone message	TELE & EMAIL	100	0	40	60	0
8. To respond to a complicated email message	TELE & EMAIL	80	10	40	40	10
9. To communicate something of little importance to someone close by	PERS	40	40	10	40	10
10. To communicate something complicated to someone far away	TELE	40	10	40	40	10
11. To use the communication medium you prefer best	PERS & TELE	50	30	20	40	10
12. To communicate the same thing to many people	EMAIL & MEMO	90	10	0	80	10
Symbolic Reasons						
13. When you want to be casual, informal	PERS	20	20	30	50	0
14. When you want to convey urgency	PERS & TELE	60	20	40	40	0
15. When you want to convey personal concern or interest	PER & TELE	70	40	30	20	10
16. When you want to obtain an immediate response, action	PERS & TELE	70	20	50	30	0
17. When you want to show authority, status, position	EMAIL & MEMO	70	20	10	30	40
18. When you want to show that your communication is official	EMAIL & MEMO	100	0	0	40	60

Summary finding of pre-pilot test.

5.5. Discussion and Recommendation for Pilot test

- The preliminary investigations reported here have provided us with the foundation which will enable us to develop initial models and hypotheses applicable to the Manager's Media choice. Analysis of Media Sensitivity protocols provides evidence that Manager's Media choice although agreeing with Information Richness theory, also extended to agreement with Social Influence theories.
- Relating to Manager's Media choice models, it is suggested that a complete correlation analysis between all three "Reasons Scenarios" should be tested for reliability and validity of the question. While not possible to carry this analysis out at this early stage due to limited sample size, this does suggest the process to be carried out after the pilot-test.
- This pre-pilot test also provides a useful guideline on questionnaire design. In addition, it gives an indication of the kind of answer to be expected in the pilot test. Some difficulties were experienced during the interview sessions. For example, it was difficult for the managers to describe media choice scenario accurately, and while trying to recall the situations, the answers were often long winded and vague. Therefore, care must be taken during the decoding of pre-pilot test field note, to pick out only the main content of reasoning for media choice. Hence future questionnaire construction for the pilot test can be carefully prepared in order to avoid any too direct or leading question which may make the managers think that some certain types of answers are expected from them.

- After examining the result of this pre-pilot test, the researcher found that a self-fill questionnaire will be a suitable approach for getting the information from the managers regarding their media choice decision making process. However, a great deal of improvement and modification must be made on the full construction of the questionnaire and result analysis for the pilot test and the field work research.
- It was also found that additional formal techniques are needed to measure the Manager Media choice effectively. The way media sensitivity was concluded for each manager was based purely on the researcher's subjective view. More formal methods are required to measure the attitude of managers, such as the Summated rating (or Likert Scale), Semantic differential scales and Electronic mail system experience measurement. It is also a good idea to use other methods as part of the 'Triangulation approach' to cross check with each finding.
- Other data analysis are also needed for the next test to capture the valid Manager's Media choice model. Simply using correlation technique to establish Manager's Media choice will not be enough to verify a valid model of Manager's Media choice for this research. For this purpose, factorial analysis, Alpha test and Amos software to test for structural modelling would be considered for the pilot test and fieldwork study.

CHAPTER 6

Pilot test

Introduction

The pilot-test built on the results of the pre-pilot test. The pilot test was designed based on the comments made earlier on Media Sensitivity scenario together with new additional techniques to cover a wider variety of variables. The whole process of the test was directed in Bangkok, Thailand. The test comprised of a set of questionnaires which contained eight separate sections, 1) Manager's position, 2) Task background, 3) Electronic mail experience, 4) Information Richness of media (attitude measurements), 5) Communication Task characteristics (Policy Scenario), 6) Media choice (in general), 7) Electronic mail usage, 8) Social influence (see appendix 1). The reason for using a structured questionnaire is because it has well formatted set questions especially developed to measure Manager's Media choice decision making. The questions are short closed ended which is suitable for top managers who have limited time. The questions are clearly formatted, easy to understand and only required a tick to answer. Scoring is also easily accomplished and does not involve subjective interpretations of the answer.

To ensure that the instrument was compatible with the uniqueness of Thai language and that bias artefacts were minimised (Mc Henry 1990). The instrument will be translated into Thai by a business school professor, a native speaker with significant experience in translating academic, business books in the information systems area. Another business school professor whose native tongue is English, but who speak, read and writes Thai fluently will also review the translation.

The objective of the pilot test was to prepare a valid methodology for the field work as follows:

- Determine the appropriate questions for the Manager's Media choice study.
- Establish the methods to analyse the answers from questionnaires.
- Identify the appropriate instrument to measure a variety of variables in Manager's Media choice model.
- Check reliability and validity of scales and questions in the questionnaires.

6.1. Sample

The sample consisted of forty Thai executive managers. Each one of these forty managers was asked personally to complete the questionnaires. All managers were asked to make comments on the actual questionnaire after having filled them in. As noted in the discussion on limitations of prior electronic mail research, few studies incorporate a wide range of job types and managerial levels. A goal then, of this research, was to enhance generalisability through inclusion of respondents representing the diverse range of Managerial positions. The sample of 40 managers were randomly selected from lists of Managers of different types of businesses on which electronic mail users has been highlighted, e.g. Financial company, Manufacturing company and Consulting firms. Users were identified from a variety of sources, including personal contacts, distribution lists of members of various organisations and several organisational telephone directories which also included electronic mail addresses of any users in that organisation. These companies were chosen with an intention of eliminating the prior research biases of high performing managers from computer related industry or research & development company. At this initial stage of the pilot test the aim was to test the validity and reliability of the questionnaire. In effect, therefore only a few specific criteria for selecting the subject samples was carried out, including that each sample had to occupy a management position, e.g. President of the company to Department Manager.

6.2. Data Collecting methods

The questionnaire was constructed using an iterative process, with each version the subject of pre-testing among selected users. These pre-test respondents commented on wording and appropriateness of items, as well as time required for instrument completion. Questionnaires were sent via conventional rather than electronic mail for several reasons. First, a companion study, which compared attitudes of users and non-users was conducted at the prior study (Steinfeld 1984) to this research effort, using the same user sample. Non-users could not receive questionnaires via electronic mail, and utilising a different method of distribution might bias response rates and possibly response content. Second, the questionnaire was fairly large, and might have caused problems for users with limited working space on their disks. Third, a hardcopy was deemed necessary so that respondents could bring the questionnaire home to fill it out during non-working hours. Although users could have had a copy printed, this represented an extra behavioural step which might have reduced the response rate.

Several steps were taken to ensure an adequate response rate. First, accompanying each questionnaire was a motivational letter from the companies managers helping with this research (Appendix A). Second, the questionnaire was designed and printed on good quality paper for ease of reading and completion. A self-stamped addressed envelope was included with each questionnaire, to encourage respondents to post the questionnaire back, thereby avoiding any mail charges. In addition, respondents were guaranteed total

anonymity. Finally, approximately two weeks after questionnaires had been sent out, a follow up letter encouraging response was mailed to all non-respondents.

6.2.1. Questionnaire

The questionnaire contained six sections. In the first section of the questionnaire figures the respondent's background information, in order to build up their demographic profile. The second and third sections involves attitude measurement, the Task characteristics that managers have to deal with at work and Electronic mail as media to communicate with partners. The fourth section uses Media Sensitivity (Policy Scenarios) to test for media choice decision making under Information Richness and Social Influence theories. Section five and six use frequency of email instrument to measure variety of self report items.

Background Information

Age, organizational tenure, and electronic mail experience were captured using ratio scales. Experience was the sum of the number of years using the system.

Task Characteristics

A series of 5 point scales were used to measure most items in this area, with subject rating the extent to which their job involved or was governed by specific characteristics. Measures of task characteristics, including items reflecting standardization, routineness,

and pressure were drawn from Ruchinskas (1982) and Svenning (1982). Environmental uncertainty items were derived from Tushman (1977). Task interdependence items were based on Thompson's (1967) conceptualization, and following Tushman and Nadler (1978), included both intra and inter-unit task interdependence. A cross boundary/locational communication need scale was constructed from one item asking the number of work group members located in another city, and a second yes/no question regarding membership on project teams outside the work group.

Electronic mail characteristics

Subject's perceptions of electronic mail attributes were measured by a series of 5 point semantic differential scales similar to those employed by Ruchinskas (1982) and Svenning (1982). Seventeen pairs of bipolar adjectives reflecting such attributes ease of use, utility, personalness, and confidentiality were rated by respondents.

Media Usage Sensitivity (Policy Scenarios)

For this study a new set of questionnaire instruments was developed based on equivocality/uncertainty task scenarios and test it against Managers' media choice. The Managers' communication choice consists of three traditional media ; (Face-to-face, telephone, memo), and one new medium ;(electronic mail). There are four combinations of task scenarios in all; ((1) high equivocality and high uncertainty, (2) high equivocality and low uncertainty, (3) low equivocality and high uncertainty, (4) low equivocality and low uncertainty). Managers' media choice under task scenarios will be captured by the ratio

scale. Manager who face high equivocality task scenario would in general pick rich media or medium to do their communication e.g. Face-to-face or telephone and Managers' who face high uncertainty task scenario would generally pick lean media or medium to do their communication.

Frequency of email use

Frequency of electronic mail used by the respondent of the questionnaire, their superior and co-worker were measured by several self-report items on the survey instrument, e.g. number of messages sent, received, forwarded.

Measure of Manager's Media choice;

Questionnaire (Attitude measurement; 1) Summated rating (or Likert scale), Semantic Differential Scales, Media sensitivity (Policy Scenario), Frequency of email use. These approaches are used here to collect the data regarding manager's media choice. The data collection methods consisted of self-fill questionnaire and subsequent telephone interviews to extract any additional information that were missed. These two techniques are used here as part of an approach to examine the Information Richness theory and Social influence theories.

Attitude Measurement;

The term "attitude" is some what slippery. It falls in the same kind of sphere as opinion, belief or value, but opinions vary as to how these different terms are interrelated. Lemon(1973) provides a clear analysis for those who wish to take this further, but also suggests that the term's widespread usage derives in part from this very fuzziness; each researcher has to be able to tailor it to suit their own purposes. Central to this is the belief that it is not possible to assess something like attitude by means of a single question or statement. Answers to a range of statements can help in teasing out such issues. Having a set of ten or twenty items is another form of triangulation; the response to each gives something of a marker on the respondent's attitude. Putting the responses together enables us to build up a much fuller picture.

The Summated rating (or Likert scale):

A five point Likert scale was used in this research to extract the respondent attitude towards their task equivocality/uncertainty by asking them questions about their Job characteristic and work group characteristic. Then match this with the respondents media usage pattern. The aim of this approach is to gain the knowledge of manager's job characteristics to their decision making in using each communication media or medium. This method seems to be the most suitable to get insight information of their Job characteristic to their media choice.

Semantic Differential Scales:

A widely used type of scale, the Semantic differential scale (Osgood 1957) takes a very different approach. It is concerned with assessing the subjective meaning of a concept to the respondent, instead of assessing how much they believe in a particular concept. The scale is designed to explore the ratings given along a series of bipolar rating scales (e.g. Slow/Fast; Simple/Complex). Factor analyses have shown that such ratings typically group together into three underlying dimensions-activity, evaluation, and potency. In this sense it provides a kind of attitude scale.

Activity; refers to the extent to which the concept is associated with action (dimensions might be 'fast', 'active', 'exciting', etc).

Evaluation; refers to the overall positive meaning associated with it ('positive', 'honest', 'dependable', etc).

Potency; refers to it's overall strength or importance ('Strong', 'Valuable', 'Useful', etc).

A list of appropriate adjective pairs is generated for this particular concept in order to measure the respondent's belief that the adjectives describe E-mail Richness, E-mail usefulness and E-mail ease of use. The scale is administered to the chosen sample of respondents in a standard fashion. It is scored simply by summing the ratings given to each adjective pair on a 1-5 scale. Average ratings can be computed, and comparisons between sub-groups in the sample are feasible. To take it further, it is necessary in this research to carry out a factor analysis to assess the relationship of the different adjective pairs and link them to the evaluative dimension.

6.3. Data analysis and discussion of the result of pilot test

6.3.1. Task Characteristics

An examination of the means of individual task characteristic items shows respondents more likely to feel that their jobs involve time pressures (means=4.24) and unexpected problems (means=3.68), and somewhat likely to involve crises and urgent matters (means=3.97). Less often are jobs with the need to deal with new people on the job reported (means=3.35), slightly more moderate are jobs governed by rules, policies and regulations (means=3.65).

Jobs are not seen as very standardized (means=3.62), and are not seen as involving very well defined subject matter (means=3.52). In addition, respondents only perceived their tasks to have clearly defined outcomes to a moderate extent (means=3.21).

Generally, tasks are seen as moderately routine (means=3.47), and seem to require a certain amount of innovative thought (means=4.03). Overall, these task characteristics seem quite appropriate as a description of the professional manager's task situation in the organization.

Table 3.3 : Summary statistics for Task Characteristic items		
Variables *	Mean	S.D.
Crises/Urgent matters	3.97	.83
Time pressures	4.24	.70
Unexpected problems/situations	3.68	.88
Rules, Policies, and Regulations	3.65	.73
Working with people I'm not acquainted with	3.35	.88
Well defined subject matter	3.53	.79
Tasks with clearly defined outcomes	3.21	.77
Standard operating procedures	3.62	.85
Routine repetitive tasks	3.47	.79
Finding novel solutions to problems	4.03 °	.97

* Scales ranged from 1=not at all to 5=very much. The stimulus phrases "Most of your task involves....." or " Most of your task is governed by....." were used.

The 10 task characteristic items were factored, producing three dimensions (Table 3.4). A pressure dimension emerged, primarily defined by the presence of time pressure, crises and unexpected problems/situations. Expectedly, the extent to which subjects' jobs were governed by rules, policies, and regulations was negative on this dimension. One possibility here might stem from the non-routine nature of the manager's work, and the relative frequency of unexpected problems.

A second dimension containing items reflecting how well defined or standardized jobs were also emerged. The third dimension, routineness, contained just two high loading items; routineness or repetitiveness of tasks, and a negative loading for the extent to which jobs involved finding novel solutions to problems.

On the basis of these analyses, three scales were constructed and subjected to a reliability analysis. Cronbach's alpha for the three scales constructed from the means of high loading items were: pressures (.63), well defined tasks (.68), and routineness (.50). The inclusion of only two items contributed to the negative alpha on routineness (Table 3.5). These task characteristics provide a view of respondents' job as being somewhat likely to involve pressure (means=4.24), less likely but moderate in dealing with standardized activities, well defined outcomes and routine tasks (means=3.62), (means=3.53) and (means=3.47) respectively

Table 3.4: Factors Analysis Results for Task Characteristic Items *			
Variables	Factor 1: <u>Pressures</u>	Factor 2: <u>Standard</u>	Factor 3: <u>Routine</u>
Crises/Urgent matters	.824	.382	.177
Time pressures	.710	.320	-5.284E-02
Unexpected problems/situations	.778	6.730E-02	-1.113E-02
Rules, policies, and Regulations	-9.820E-02	.410	-.518
Working with people you are not acquainted	.215	.273	.362
Well defined subject matter	-.285	.777	-.352
Tasks with clearly defined outcomes	-.331	.457	.240
Standard operating procedures	-.233	.592	7.179E-02
Routine repetitive tasks	-.244	.260	.681
Finding novel solutions to problems	.557	-6.772E-02	-.119

*Principal factors analysis using communality estimates in the diagonal. Factors entries are varimax rotated loadings.

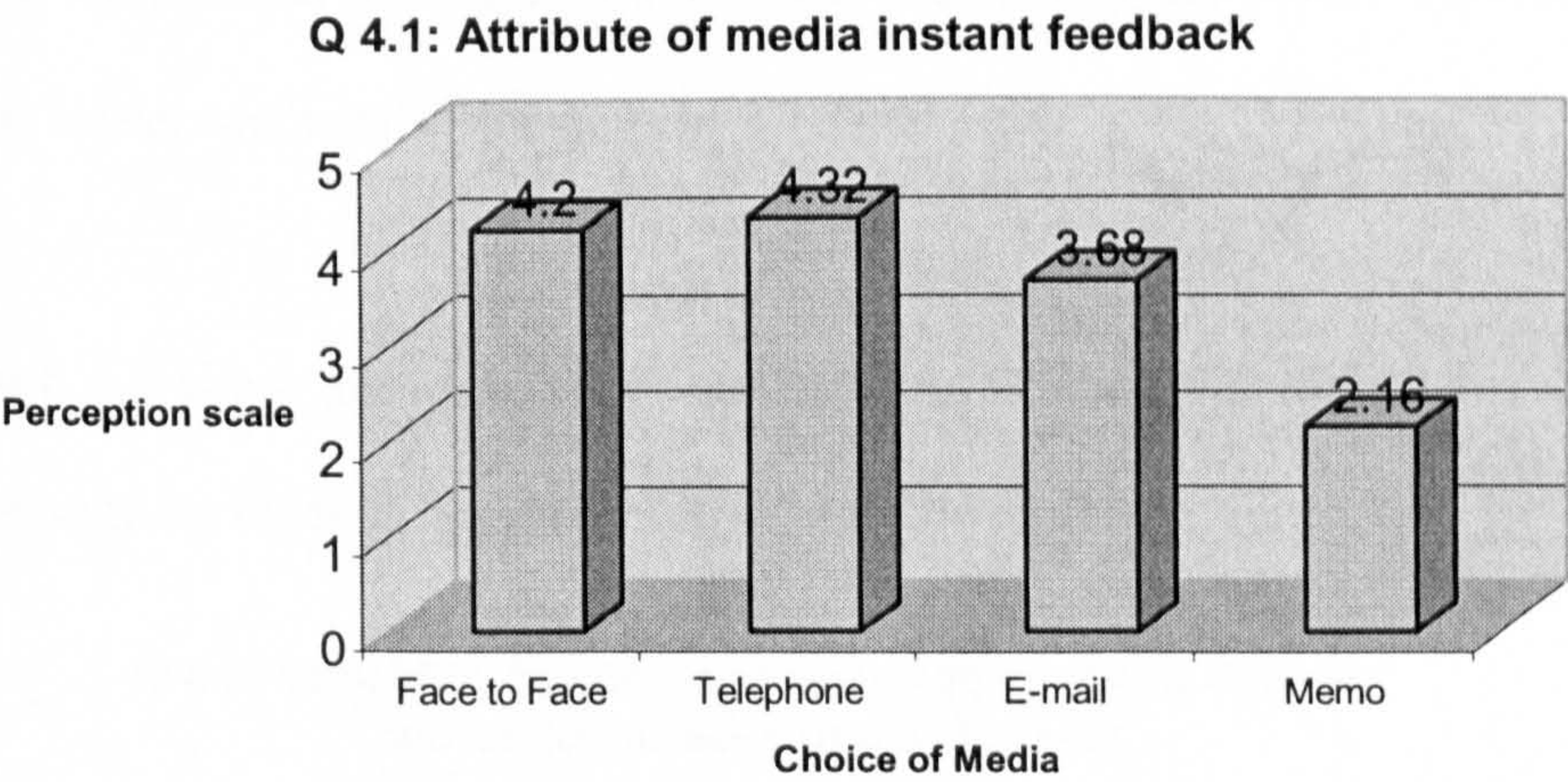
Table 3.5: Inter-item Correlation, Reliability, and Summary Statistics for Task Characteristic Scales

Pressure Scale	Correlation Matrix			
	1	2	3	4
1. Crises/Urgent matters	-			
2. Time pressures	.79	-		
3.Unexpected problems/situations	.60	.57	-	
4. Rules, policies, and regulations	.03	.10	-.08	-
5. Working with people I'm not acquainted with	.34	.15	.15	-.12
Cronbach's alpha = .63 Scale Mean = 3.8 Standard Deviation = 2.56				
Standardized Tasks Scale	Correlation Matrix			
	1	2		
1. Well defined subject matter	-			
2. Tasks with clearly defined outcomes	.46	-		
3. Standard operating procedures	.49	.30		
Cronbach's Alpha = .68 Scale Mean = 3.5 Standard Deviation = 1.89				
Routineness Scale	Correlation Matrix			
	1			
1. Routine repetitive tasks	-			
2. Finding novel solutions to problems (reverse coded)	.33			
Cronbach's alpha = .50 Scale Mean = 2.7 Standard Deviation = 1.43				

6.3.2. Information Richness of Media

Subject's perceptions of media attributes were measured by a series of 5 point Likert scales similar to those employed by Ruchinskas (1982) and Svenning (1982). Total of eight criteria were used to establish the perceived information richness of media. Four original criteria by Daft and Lengel (1984) are summed up as : immediacy (feedback), multiple cues, language variety, personal source. The latter four additional criteria, subsequently identified by Valacich are summed up as ; multiple addressability, externally recordable, computer processable memory, concurrency.

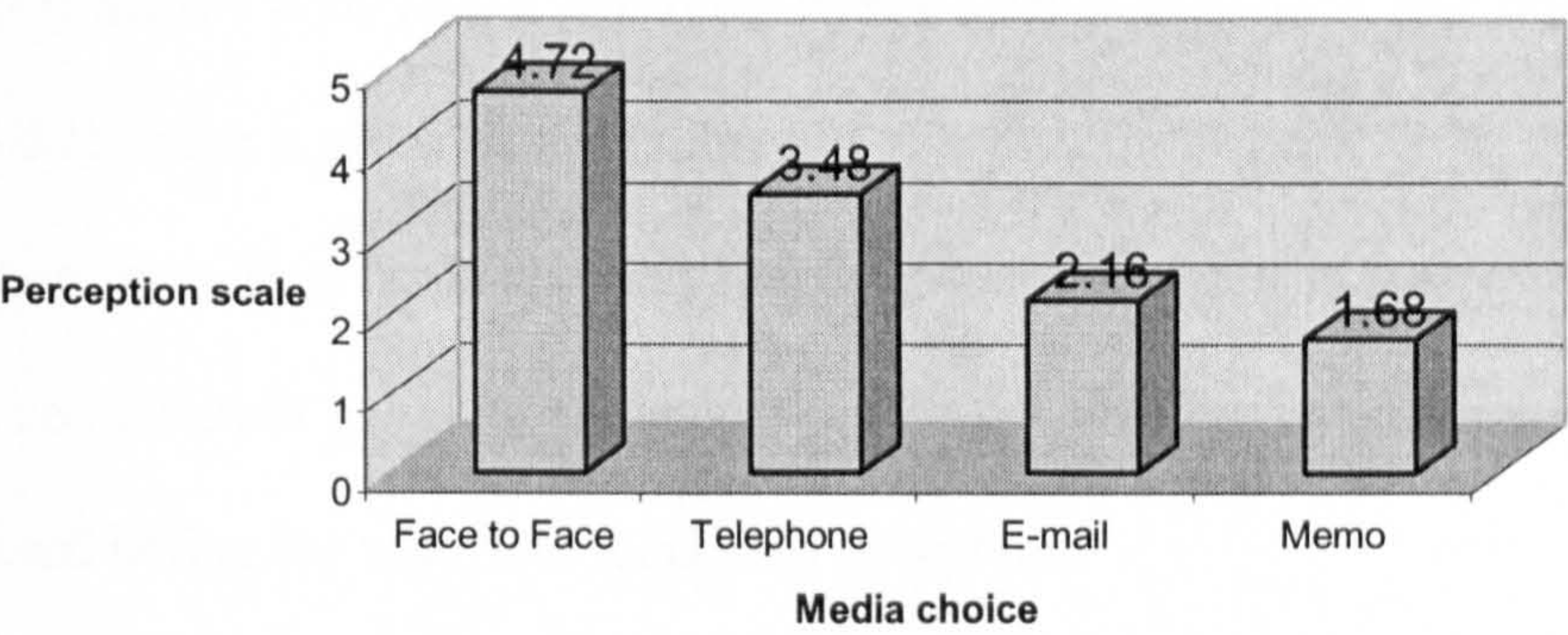
The bar graph 4.1 shows the managerial perception of communication media instant feedback attribute.



Face-to-Face and Telephone were perceived by Managers as the richest ways to provide instant feedback, allowing a more interactive discussion with means of 4.20 and 4.32 respectively. Electronic mail and memo on the other hand were perceived relatively leaner with means of 3.68 and 2.16 respectively.

The bar graph 4.2 shows the managerial perception of communication media multiple cues attribute.

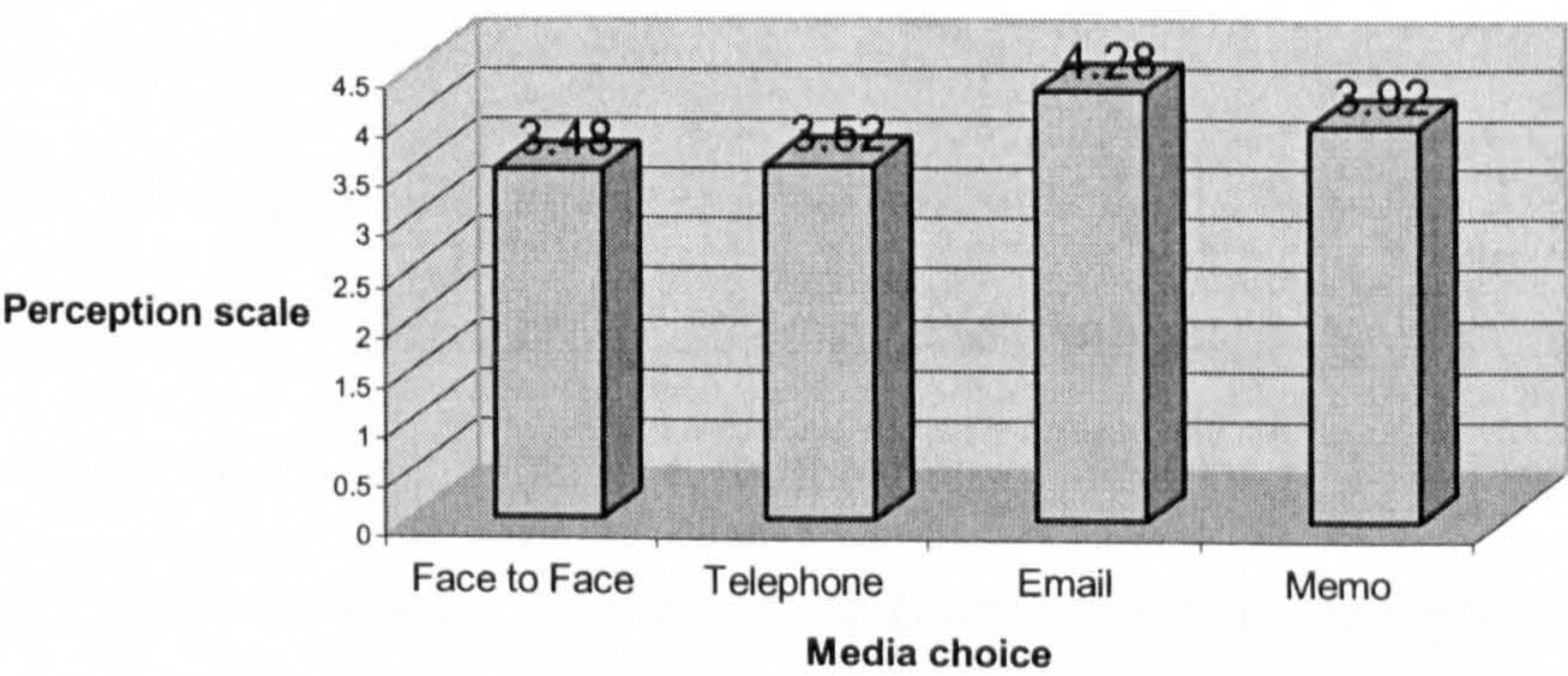
Q 4.2: Attribute of media multiple cues



On the richness of multiple cues, like voice inflection and body gestures or expression, Fact-to-Face and Telephone were perceived by Managers as the richest way to communicate with means of 4.72 and 3.48. Where as Managers perceived electronic mail and memo as leaner medium with means of 2.16 and 1.68.

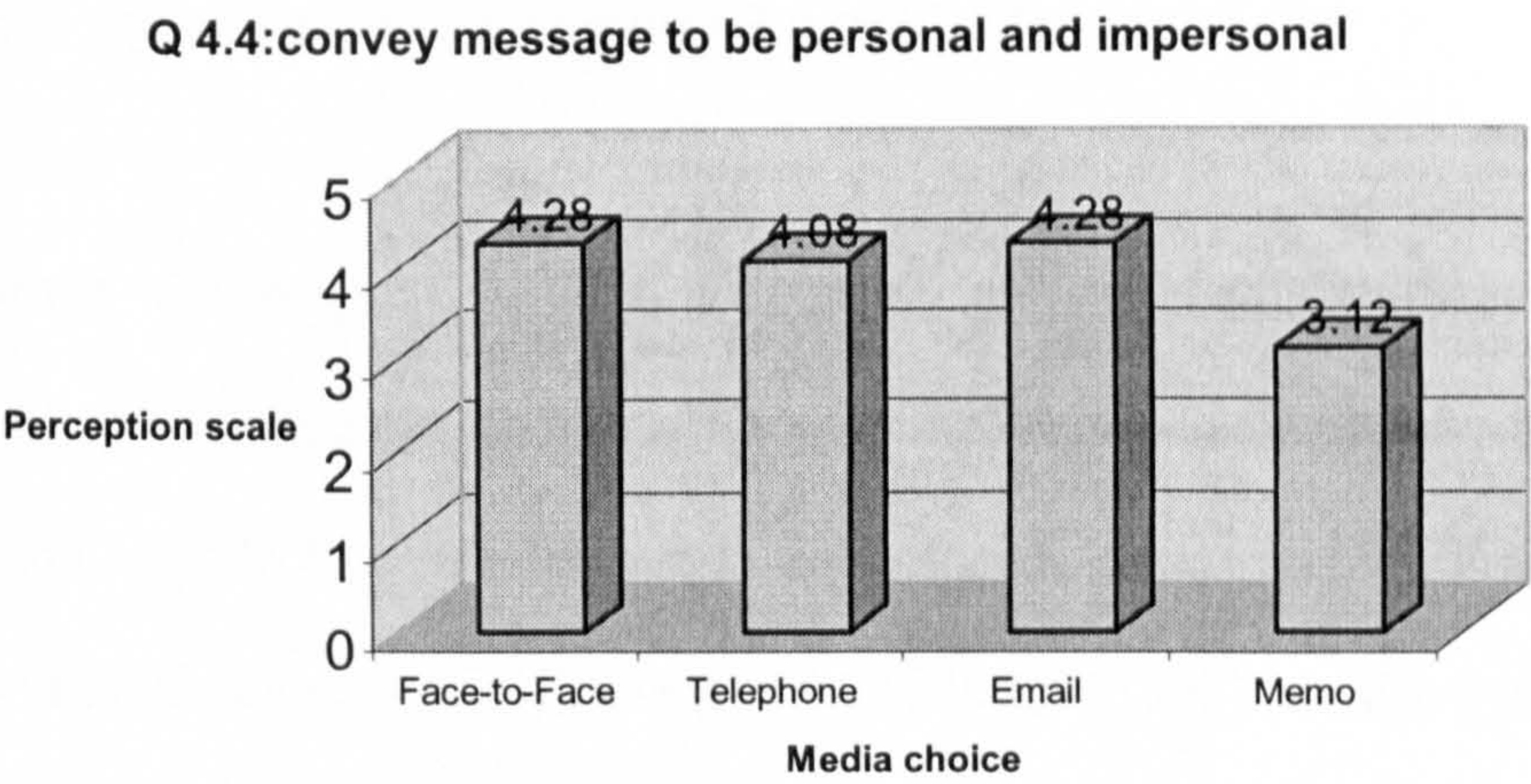
The bar graph 4.3 show the Managerial perception of communication media capability to compose message by using different words to increase understanding.

Q 4.3: Capability to compose message by using different words to increase understanding.



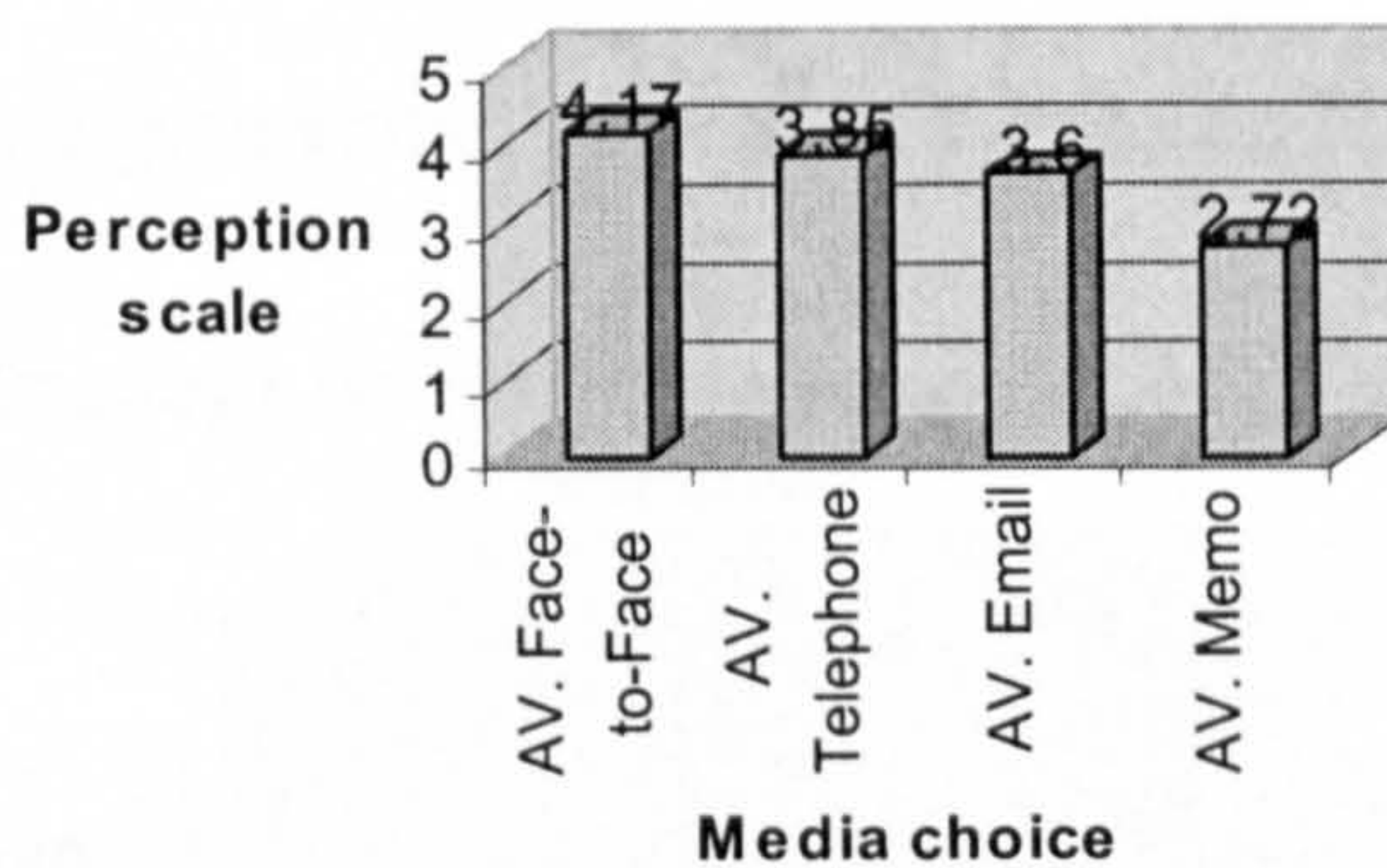
When considering the capability of media to compose messages by using different words to increase understanding, unexpectedly Managers perceived electronic mail and memo (means= 4.28 and 3.92) to be richer than face-to-face and telephone (means=3.48 and 3.52). After a close examination of the translation of the Thai question, it was found that there was an error in the translation. When the question was translated into Thai, the word composition has a meaning biased towards written text material. The error was later corrected before the real field work was issued out.

The bar graph 4.4 show the Managerial perception of communication media to enable a person to convey the message of being personal and impersonal.



The criteria of media richness that enables a person to convey the message of being personal and impersonal to the recipient, the managers perceived face-to-face and electronic mail to be equally the richest medium (means=4.28 and 4.28). Telephone came a close third (means=4.08) and memo was perceived as the leanest (means=3.12). Again the result of electronic mail was unexpected, after a close examination it was decided that the question has a double objective. Hence the question was later changed to asking if the media enabled a person to convey the message with a personal touch.

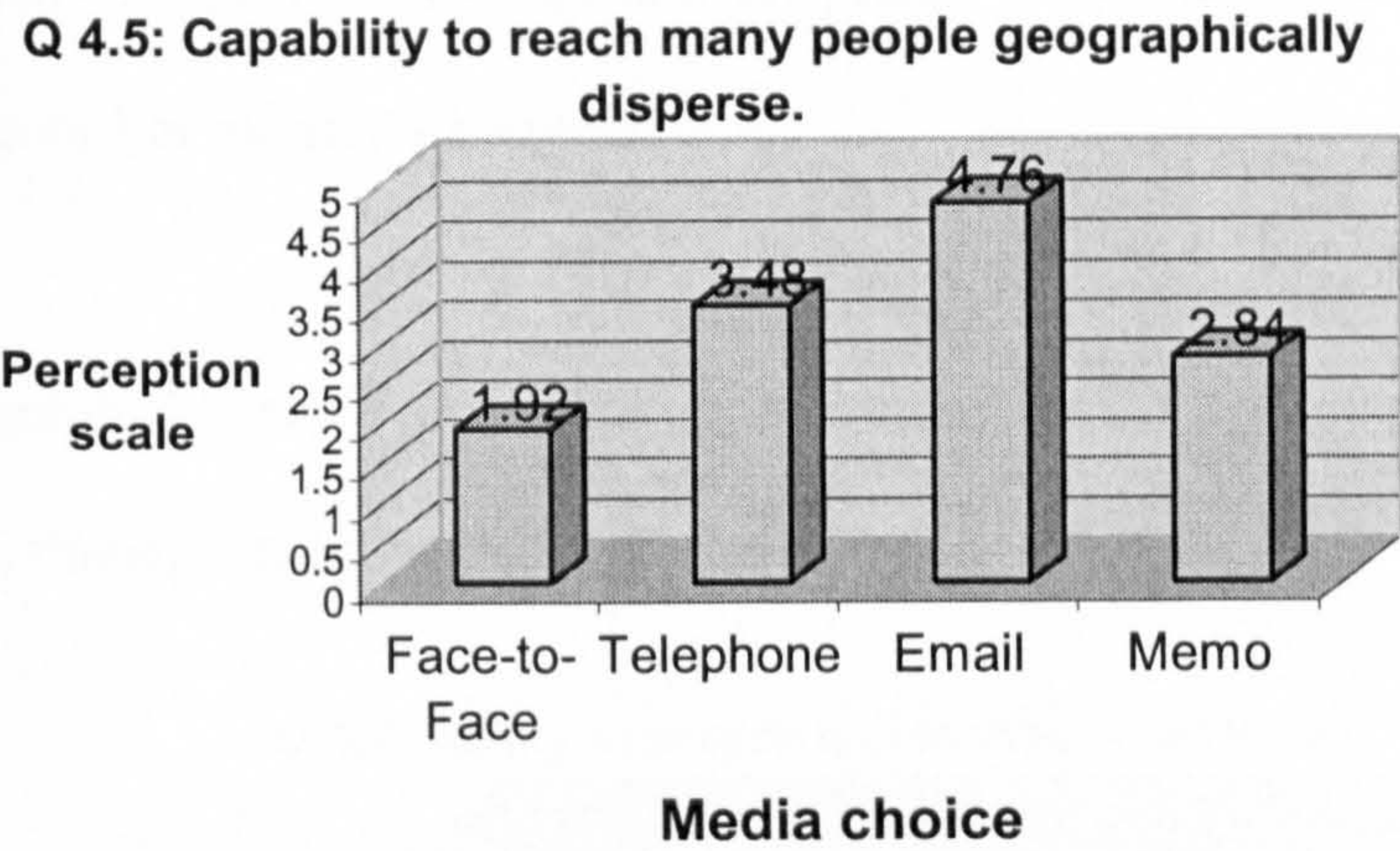
Averages of four original Information richness categories



Despite slight errors on two questions, the results of the first four original criteria does confirm with the previous finding (Zmud 1990), (Table 4) that face-to-face and telephone are richest medium (average mean =4.17 and 3.85), and leaner medium are electronic mail and memo (average means =3.6 and 2.72).

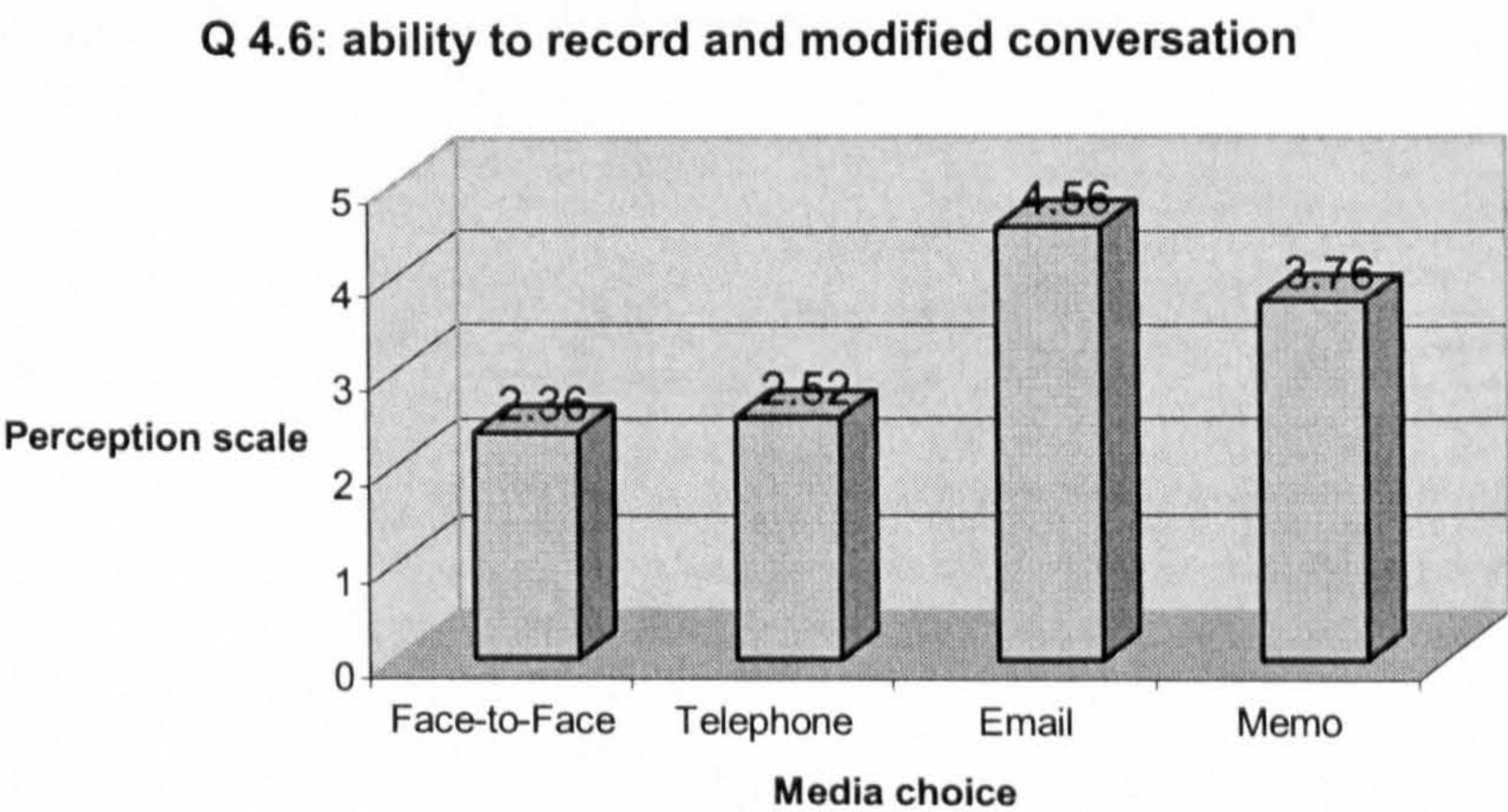
However the original criteria are based on the traditional mode of intra-organizational communication. In particular, it emphasises the strength of face-to-face communication. Modern communication technologies have qualities not found in traditional communications media. Subsequently, Valacich (1993) identified another related quality. The four results of additional criteria will now be looked at.

The bar graph 4.5 show Managerial perception of communication media capability to reach many people that are geographically dispersed at any one time.



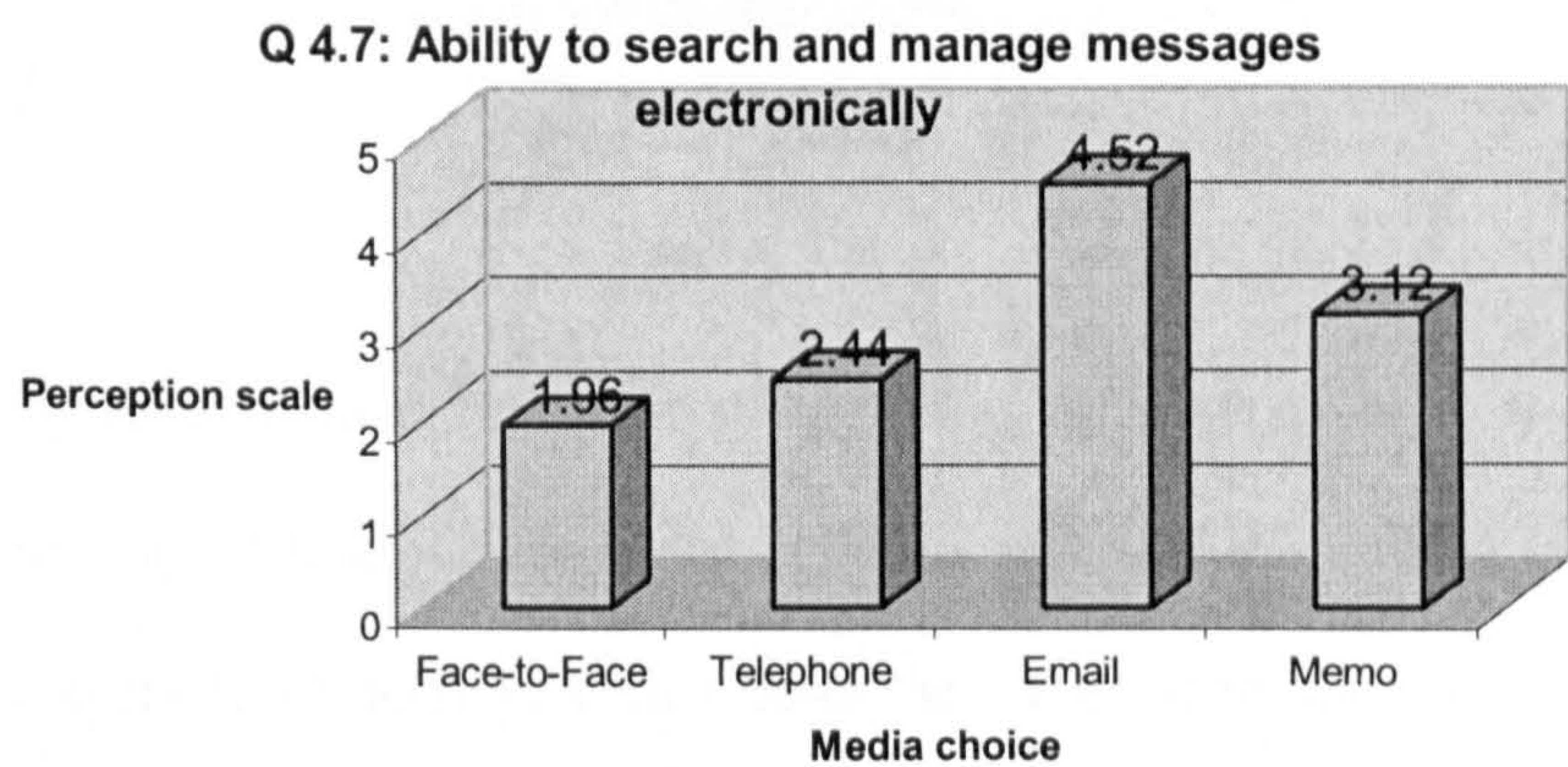
Managers perceived that electronic mail is the richest media (means= 4.76), when it comes to communicating with many people that are geographically dispersed. Less moderately agreed was telephone (means= 3.48). Face-to-Face and memo were deemed the leanest (means= 1.92 and 2.84) on this issue.

The bar graph 4.6 show the Managerial perception of communication media ability to record and modified conversation.



Electronic mail was deemed the richest (means=4.56) way for conversation made to be recordable and modifiable. Memo was perceived as moderately less rich than electronic mail (means= 3.76). Face-to-face and telephone were the leanest ways (means=2.36 and 2.52), to record or modify a conversation.

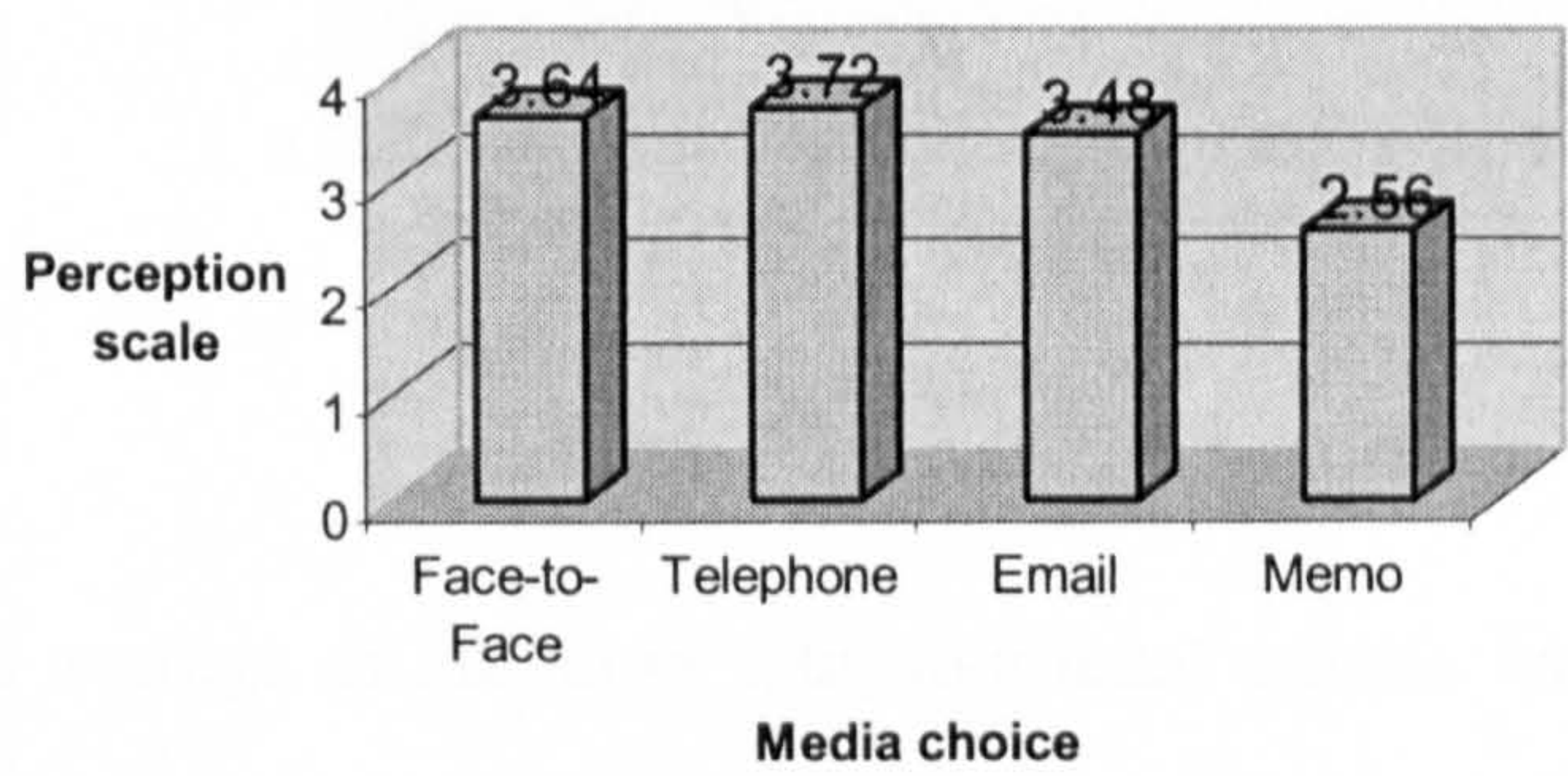
The bar graph 4.7 show the Managerial perception of communication media ability to search and manage messages electronically.



When it comes to search and managing your messages electronically, electronic mail was the richest media (means= 4.52). Memo was view as uncertain (means=3.12). Face-to-face and telephone were the leanest medium (means= 1.96 and 2.44).

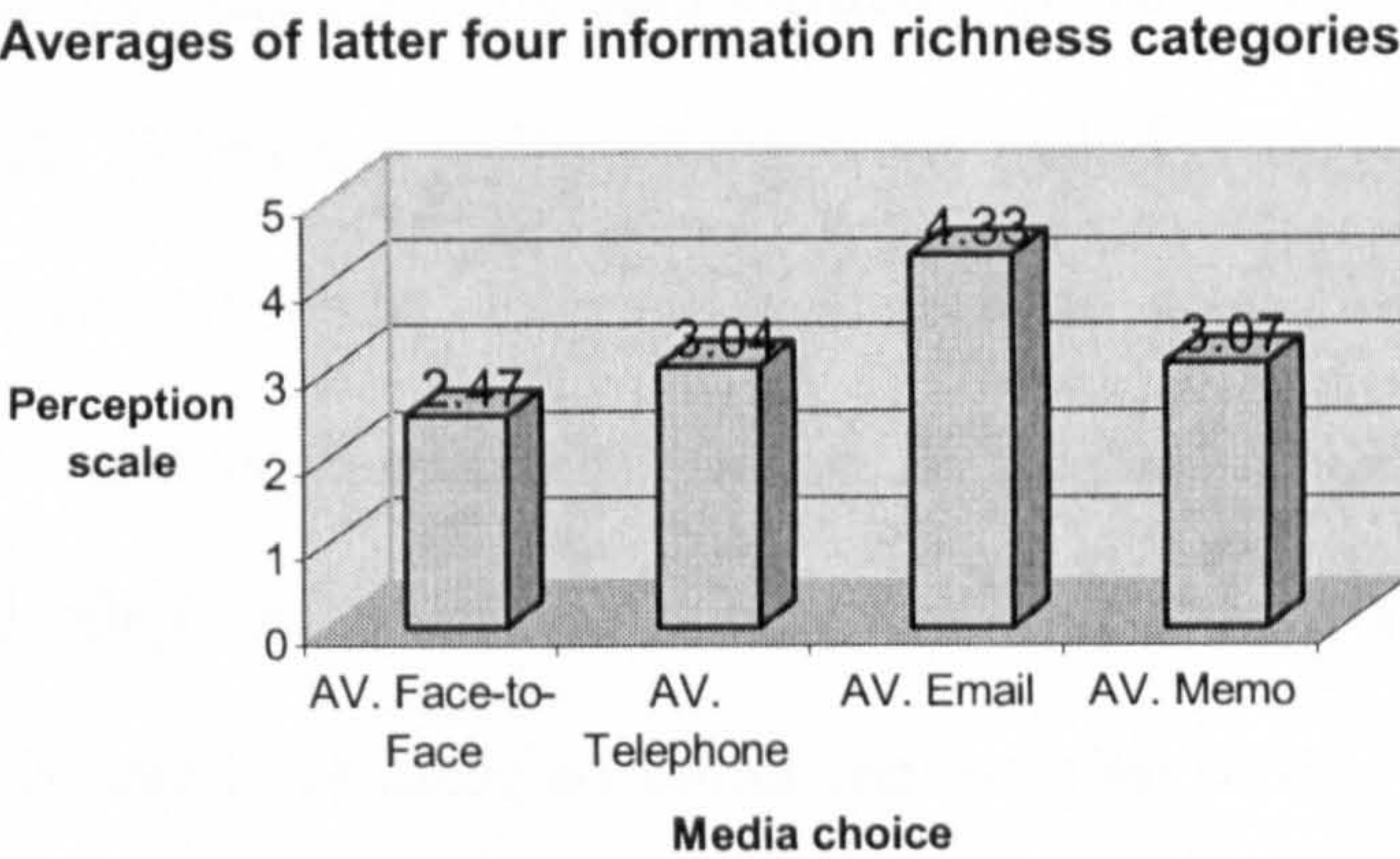
The bar graph 4.8 show the Managerial perception of communication media capability to allow anyone in a conversation to make statement at any time without detracting from the ongoing episode.

Q 4.8: allow anyone in a conversation to make statement at anytime without detracting the onging episode.



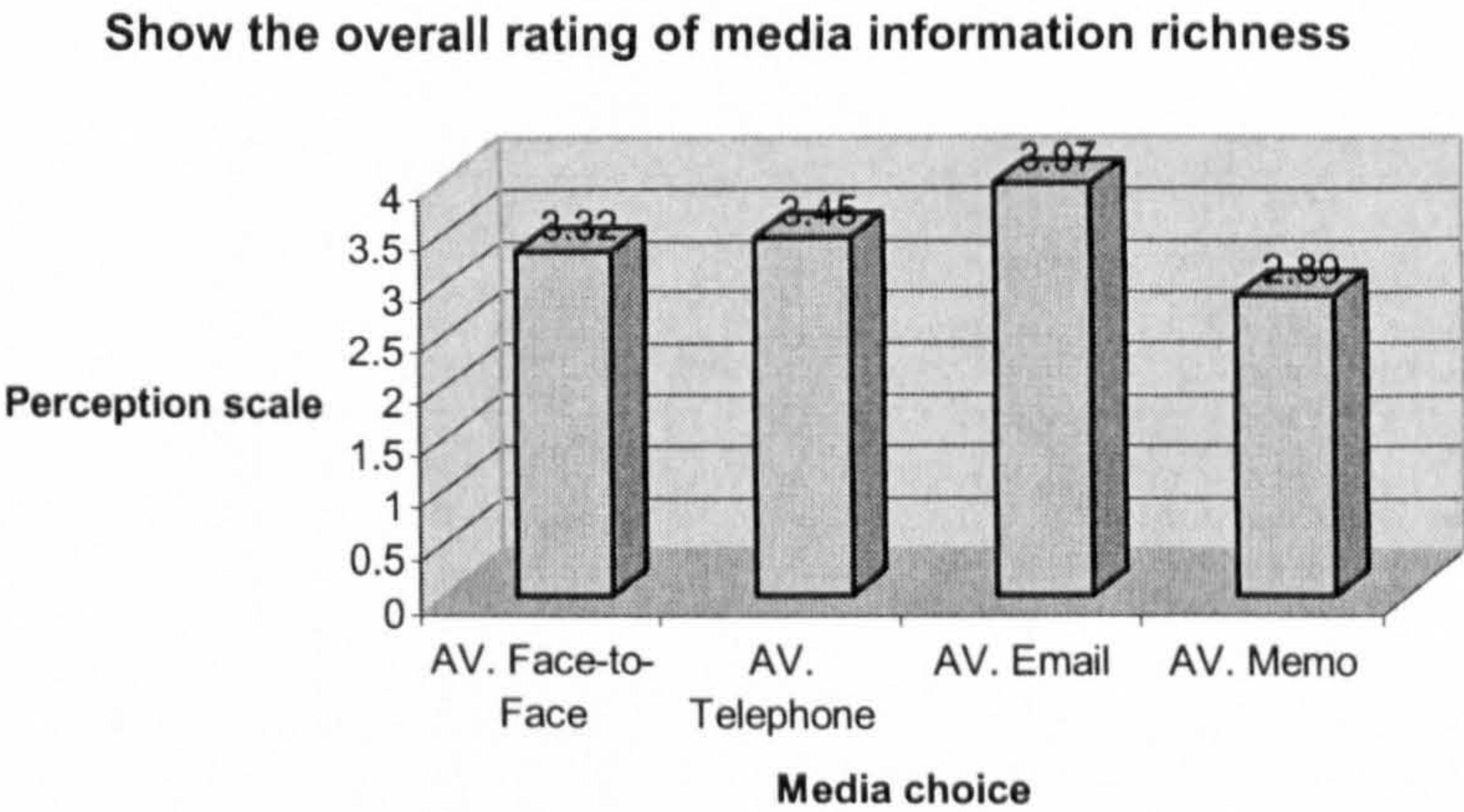
In the case of media that allows anyone in a conversation to make a statement at any time without detracting from the ongoing episode, the results were unexpectedly mixed, Managers feel uncertain with face-to-face, telephone and electronic mail (means= 3.64, 3.72 and 3.48). Memo was the only clear media to be found less moderately lean (means= 2.56). This result can be explained due to awkwardly phrased question, causing confusion among managers, as a result they were reluctant to be sure whether its rich or lean. The question was then remedied to use simpler wording before the real field work was done.

The bar graph below shows the averages of the latter four information richness categories.



When the average of the latter four additional criteria was produced, it shows the two medium that were thought to be the leanest came out to be the richest of all. The ranking of richest to leanest medium from the average of the latter four additional criteria are as follows; Electronic mail (means=4.33), Memo (means=3.07), Telephone (means=3.04) and Face-to-Face (means=2.47).

The bar graph below shows the overall rating of the communication media based on eight information richness categories.



When the eight criteria were computed together to get the average of the Managers' perceived information richness of the four medium, the results came out quite contrasting to the prior research. When the eight criteria were included together electronic mail was perceived as the richest media, followed by telephone, face-to-face and memo (means= 3.97, 3.45, 3.32 and 2.89 respectively). Where as the prior finding has been in favour of face-to-face and telephone to be the richest media and more suitable for task high in equivocality. This result has made an initial confirmation of this research hypotheses that the criteria used in the prior finding was biased towards the traditional media and that electronic mail is as equally rich if not richer, to cope with a task that is high on equivocality.

6.3.3. Media usage sensitivity (policy scenario of task uncertainty/equivocality and social influence).

In task scenario 1 (high equivocality/high uncertainty), Managers' respond were uncertain (means= 3.64) whether they would choose electronic mail as a means of communication. When they were allowed to choose the media of their choice, 72 per cent picked face-to-face, 24 per cent picked telephone and 4 per cent picked memo.

In task scenario 2 (high equivocality/low uncertainty), Manager's respond were moderately unlikely (means= 2.76) to choose electronic mail as a means of communication. When they were allowed to choose the media of their choice, 72 per cent picked face-to-face and 28 per cent picked telephone.

In task scenario 3 (low equivocality/high uncertainty), Managers' respond were moderately likely (means=3.84) to choose electronic mail as a mean of communication. When they were allowed to choose the media of their choice, 52 per cent selected face-to-face , 36 per chose pick telephone and 8 per cent picked memo.

In task scenario 4 (low equivocality/low uncertainty), Manager's response were moderately likely (means=3.92) to choose electronic mail as a means of communication. When they were allowed to choose the media of their choice, 68 per cent picked telephone, 20 per cent picked memo and only 8 per cent picked face-to-face.

The result has shown in principle that managers chose rich media for tasks high in equivocality and lean media for tasks high in uncertainty. Although Managers' responded to all four questions as predicted by Information richness theory, but the differentiation levels of (equivocality and uncertainty) between the four questions were not clear based on the Managers' responses. When asked to test whether the Managers know if the questions were high or low on equivocal and uncertainty issues, the respondent seemed uncertain on all four task scenarios. This put the reliability of the questions in doubt.

For this study, a new questionnaire instrument was devised to retain the logic of prior media sensitivity instruments (Russ 1990, Daft 1987) and social influence theory (Steinfeld and Fulk 1986 and Cadwell 1995), while avoiding those procedures most likely to confound the results. The new instrument made use of hypothetical communication tasks constructed by Trevino (1987). These researchers provide numerous examples of reasons for choosing media, along with the medium or media that information richness theory holds to be appropriate for each reason. Then to test if the social influence will have a different effect on managers' media choice, three social influence conditions of (geographical distance, amount of message content and time pressure (e.g. urgency of message) were included under each of the five different task scenarios.

Survey instruments requested respondents to select the single best medium for performing each hypothetical task, from the following list of choices: (1) Face-to-Face (e.g. by calling a meeting or travelling to visit, etc.), (2) Telephone, to place a telephone call, (3) Email, to send an electronic message, or (4), Memo, to send a paper memo.

6.3.4. Frequency of Electronic mail use and Institutional Influence

Frequency of electronic mail used by the respondent of the questionnaire, were tested for correlation of social influence by the firm, their superior and co-worker. This aspect of social institutional theory claimed that the norms, values, standards, expectations engendered by the institutional environment shape also the norms, values, standards, expectation of the individual (Scott, 1987). For example, where it is the accepted practice of the firm or work colleague (e.g. superior, co-worker), to use electronic mail for communication, the individual working with in it is likely to follow the same practice so as to give them a sense of legitimacy.

Electronic mail usage was measured by several self-report items on the survey instrument, e.g. number of messages sent, received, forwarded. The institutional influence is measured with a "yes" or "no" answer from the following questions; (1) does your company have a policy to encourage electronic use?, (2) does your company offer training in electronic mail use?, (3) does your superior encourage you to use electronic mail?, (4) does your co-worker encourage you to use electronic mail?.

Cronbach's alpha was calculated here on the four identified characteristics of institutional environment influence. The result was alpha score of .7096. This suggests that the influence measure is a consistent scale of institution environment.

The correlation coefficient analysis was conducted with the intention to check whether the answers given in the electronic mail usage were related to any of the four characteristics of institutional environment. The Pearson correlation gives positive correlation on question 8.4 and 8.5 (see table 5). This indicated that companies offering electronic mail training, superior and co-worker influence of electronic mail use will influence the individual to use the media more. According to these results, institutional environment questions 8.4 and 8.5 should be included for the field work study.

Table 5: Show Correlation of Email usage to four Institutional variables.

Variables	Pearson Correlation
Email usage & Q82 Does your company have a policy to encourage email usage	-0.133
Email usage & Q83 Does your company offer training in email use	0.112
Email usage & Q83 Does your Superior encourage you to use email	0.692
Email usage & Q84 Does your Co-worker encourage you to use email	0.553

On the other hand, it was noted that the result of the Pearson correlation of institutional environment questions 8.2 and 8.3 did not show a positive correlation or significance,(see table 5). This negative result and the non-significant results could be explained by the fact that the total number of the sample size used in this test was quite low (25 managers). It was to understand that the higher total number of the samples could have direct effect on the correlation results. Another possible reason for this negative result could come from the answer itself, that the company policy to encourage electronic mail use and company offer email training does not influence the individual usage of the media. However a much larger size of the sample is planned for the fieldwork, so it would be premature not to include these questions in the field work. For these reasons all four questions will still be included in the fieldwork test.

6.3.5. Experience and Social influence

The social influence model also incorporates the idea that expertise with a medium also influences media use. For example, lack of experience or skill will inhibit uses, or that the medium may not be perceived to be as "rich" (as otherwise) if the user lacks the skill or training to use it properly.

Electronic mail usage was measured by several self-report items on the survey instrument, e.g. number of messages sent, received, forwarded. The degree of electronic mail experience is measured with a five point Likert scale. Ranging from 1 being very inexperienced, 2 moderately inexperienced, 3 neutral, 4 moderately experienced and 5 very experienced.

The correlation test was conducted to show if the level of electronic mail experience has any relationship with the volume of electronic mail usage. The Pearson correlation has shown a positive correlation of (0.241). This indicates that the more experienced the electronic mail user, the more likely the high usage.

6.4. Pilot test summary

From the resulting analysis of all approaches used in the pilot test, the following summary was made:

- The overall perception of the questions used for the questionnaire in the pilot test were shown to be effective. All the required information was captured with the techniques used. Therefore, the same type of questions and the same data gathering technique will be used to carry out the fieldwork study.
- One factor discovered during the postal survey of Managers was that networking and personal touch with each of the sampled Managers is a very important commodity. Managers normally do not have time to spare and their schedules are always busy, especially during this period of economic crises. To the gratitude of this researcher, the networking and personal touch of family members and friends was more effective in drawing attention of Managers to filling in the questionnaire. In fact with hindsight, it was more effective than the motivation letter that was attached with the questionnaire.
- All the analysis methods used here for analysing questionnaire data (mean, standard deviation, correlation, cronbach alpha and factor analysis) appeared to be effective. All of these analysis tools we are able to test the reliability and validity of all the questions, weeding out any unrelated questions. All these analysis methods together with Amos structural programme will be used for the field work analysis.

- Regarding the test of "task uncertainty/equivocality scenario", some changes will be made for the field work research. The test used for this pilot test contained four questions based on characteristics of task uncertainty/equivocality concept of higher ranking managers will be more likely to deal with task high in equivocality and lower ranking managers will be more likely to deal with task high in uncertainty. Four combinations of different scenarios were created (1]high equivocality/high uncertainty, 2]high equivocality/ low uncertainty, 3]low equivocality/high uncertainty, 4]low equivocality/low uncertainty). Two additional sub questions were added for each task to ask respondents to rate their level of each task equivocality/uncertainty, this is to make sure if they understand the level of equivocality/uncertainty that each task presented them with. Although the respondent choose appropriate media of communication corresponding with the media richness and social influence theory, however, strong comments were made from the subjects regarding the meaning of the phrase equivocality/uncertainty since there was no direct translation into Thai word for the same meaning. Although the respondent picked the appropriate media according to the theory, almost all of the respondents were uncertain as to whether the tasks were high or low in equivocal or high or low in uncertainty. This in effect mean that the respondents found the questions too confusing and did not know the level of equivocality/uncertainty that each task presented them with. Hence it put the integrity of the question in doubt. Instead the researcher will adopt the tried and tested set of equivocality task used by D'Ambra (1990). This set of questions contains five levels of task scenarios ranging from high in equivocality to low equivocality. The five communication tasks were selected on the following basis:

- 1). To achieve a maximum spread of equivocality;
- 2). To be representative of subjects' task; and
- 3). To ensure that all communication media has a fair chance of being selected.

The framework in chapter 3 pointed out that there are many task characteristics that could influence media choice. To test the impact of these other task characteristics on media choice, this study introduced three additional variations for each of the five tasks studied. These variations are:

- 1). The other person (s) is/are located in a different country;
- 2). Group communication task dimension that was not examined in the D'Ambra study i.e. send messages to groups of people.
- 3). A time constraint aspect for each of the above variations by increasing the urgency of the task, i.e. You are under time pressure to respond.

These three variations are meant to cover the task characteristics noted in the framework, besides the task characteristic of equivocality, that have not been examined in prior studies.

Five of the communication tasks were drawn from D'Ambra (1995). The wordings for two of the tasks were modified slightly to align them with the general nature of subjects' tasks based on the preliminary focus interviews with managers in the pre-pilot test. As a result this would enhance a more realistic construction of the tasks and prevent artificial tasks that would not cover the subject's broad range of tasks and hence enhance the ability of this research to support the framework.

The task test excludes any uncertainty aspect, which means that these questions will not be able to test the sample at the bottom end of the organisation work force i.e. secretary, clerk. Since it is the intention of this research to only sample the Managers, hence the question can be directly applied for this study.

- The results on the information richness of media indicate a slight translation error on two of the questions (Q4.3,Q4.4) from the first four original criteria. Hence these questions will be rephrased to represent a clearer meaning for the respondent to answer in the field study.
- After the pilot test, the following were deemed unrelated and unnecessary for the field study and therefore will be deleted in order to make the questionnaire as short and precise as possible. These questions were as follows; (7.4,7.9,7.91,7.92 and four of the sub questions in section 7.8).
- Once again, an important factor which must be taken into account while analysing the results of these studies is that the total sample size of the pilot test was considerably small (n=35). The result from this pilot test analysis may not indicate strong significance in some certain parts of the statistic analysis due to this important factor. It is too early to come up with any concrete solutions, but some certain facts can already be deduced such as the existence of the media richness of the rational theory and the social influences of the non-rational theory. The prediction at this point is that for the fieldwork test, where the sample size is larger, the results will have stronger significance.

CHAPTER 7

FIELD WORK STUDY

7.1. Sample of the study

Population of the research: Thai Executive Managers

Sampling frame: List of registered companies with minimum fund of 20 million Bahts. The list of the companies' names was obtained from the Department of Commerce in Bangkok (1998/99), the Department of Industry in Thailand (1995-1999).

Sample: 450 Thai Executive Managers

The conditions in selecting the sample are:

- The samples have to work in a large company with over 200 employees.
- Each selected company must have universal access to media to satisfy the Critical mass theory i.e. nearly everyone have access to the media.
- The samples must occupy a senior position management level (e.g. President of the company, Vice president, Managing director, General manager) within the organisation.

Four hundred and fifty samples were randomly selected from the sample frame. All of the selected samples were sent with one set of questionnaires. Each manager was contacted by telephone to ask for his/her participation in the questionnaire before they were sent off. One week after the questionnaires were sent off, the second telephone call was made to follow up the progress.

7.2. Data collection method

The data collecting process for the field work research was conducted between December and February 2000. The total of four hundred questionnaires were sent off randomly to executive managers in Thailand. However, the main areas of concentration were in Bangkok and its outskirts, areas such Narkorn Pratum and Nonthaburi. The reason for this was because most of the big companies and organisations are either in Bangkok or in the outskirts. Also , more response to the questionnaires was expected from these areas.

All of four hundred and fifty questionnaires were returned, but only four hundred and twenty three were completely filled. After numerous tries, the remaining twenty seven questionnaires were discarded due to incompleteness. The first ninety seven managers returned the questionnaires within the first two weeks. At this stage, the researcher had to come up with a new questionnaire collecting method. By the beginning of the third week, all of the managers who had not at the time returned the questionnaires were contacted with

a second motivation letter from the researcher, and stating that all the questionnaires would be collected by messenger boys at the end of the week. By putting an appointment time for collection deadline, this added a sense of urgency in completing the questionnaires. Five messenger boys were employed to pick up all the questionnaires sent to all the companies within the Bangkok area. Most of the non-returned questionnaires was of those outside the Bangkok area. As a result a further one hundred and seventy nine questionnaires were collected after the sending of the second motivation letter in the third week. The remaining one hundred and seventy four questionnaires were collected during the fifth and sixth weeks after both personal encouragement by telephone and face-to-face from researcher and contacts within each organisations. Out of those one hundred and seventy four questionnaires, fifty were returned incomplete. The last fifty questionnaires were then returned to the subject to be refilled for the missing data, twenty three came back completely filled and the rest of twenty seven remained incomplete, hence those questionnaires were discarded.

The data collecting period, from sending off the questionnaires until receiving all four hundred and fifty questionnaires back, lasted for seven weeks.

7.2.1. Questionnaire

The total of 450 questionnaires was sent off to managers in various different business fields (see Appendix 1). Four hundred and twenty three questionnaires were returned completely filled . However, there were only four hundred and twenty three questionnaires, which could be used for this research. The rest of the returned questionnaires were found to be incomplete.

7.3. Data analysis method

7.3.1. Data decoding method

The paragraph will demonstrate and explain the data decoding technique into SPSS spread sheet.

7.3.1.1. Information Richness of Email

The analysis method used here was also the same as the one for the pilot test. All the results from the Likert-type Scale from each question was converted into mean scores. All the scores were then added up to the final total mean scores to give a value of information richness on each communications media. The higher score is taken to indicate a higher level of information richness of a media. An example of the scoring table for this test is shown below:

Q 4.1 The following media have the attribute to provide instant feedback, allowing a more interactive discussion

Descriptive Statistics

	N	Minimum	Maximum	Mean
ftf41	423	3	5	4.87
telephone41	423	3	5	4.45
email41	423	2	5	3.98
memo41	423	1	3	1.57
Valid N (listwise)	423			

Similar process is repeated for the eight criteria questions of information richness. And the mean of the overall information richness is displayed in the table below:

Information Richness rating of each media

Questions	FTF	Telephone	Email	Memo
4.1	4.87	4.45	3.98	1.57
4.2	4.57	2.01	3.01	1.49
4.3	4.28	4.20	4.50	1.44
4.4	1.71	4.41	4.78	1.43
4.5	1.30	1.54	4.86	1.32
4.6	1.02	1.68	4.98	3.80
4.7	1.03	1.06	4.96	3.75
4.8	1.11	1.03	4.96	3.82
Average	2.49	2.55	4.51	2.33

7.3.1.2. Experience in use of Email

The Analysis method for email experience questions remained the same as the one used in pilot test since it is a standard format for this test. First the two questions on experience was put through a factor analysis to see if they are both correlated. Then the total of both questions were combined and averaged to obtain a single value for experience.

7.3.1.3. Social influence to use of email

The analysis method used here was also the same as the one used for the pilot test. All the results from eight "yes" or "no" questions were converted into "1" or "2" scores. All the scores were then tested for Alpha value. A higher Alpha value is taken to indicate a higher level of correlation between questions. An example of the scoring table for this test is shown below.

Questions	Sub 1	Sub 2	Sub 421	Sub422	Sub 423
8.2	1	1	1	1	1
8.3	2	2	2	2	2
8.4	1	1	1	1	1
8.5	1	1	1	1	1
8.6	2	2	2	2	2
8.7	1	1	1	1	1
8.8	1	1	1	1	1
8.9	1	1	1	1	1

7.3.1.4. Media choice scenario of task equivocality and symbolic interaction.

The analysis methods used here was two fold, firstly the five communications tasks used were given weighting scores of 1.67, 2.33, 3.40, 3.53, 4.67 to correspond to the question in D'Ambra spread of task equivocality from question 1 to question 5 respectively. The equivocality level starts from the lowest with question 1 to highest with question 5. Four media choice of variables were given as Face-to-face, Telephone, Email, and Memo. And the choice scale was scored as 1 to 4 respectively. An example for this scoring test is shown below;

Task Qs	Sub 1	Sub 2	Sub 421	Sub 422	Sub 423
Q1(1.67)	3	3	3	3	3
Q2(2.33)	3	3	3	3	1
Q3(3.40)	1	1	2	2	1
Q4(3.53)	1	1	1	1	1
Q5(4.67)	1	2	1	2	3

Secondly three sub questions were put in the form of questions (b),(c),(d) of each equivocality test level. This to test the symbolic interaction theory, if the practicality such as ((b)geographic location(i.e. distance), (c)Group communication, and (c) time pressure) changes , then how would the media choice vary with it. An example for this scoring test is shown below;

Task1(1.67)	Sub 1	Sub 2	Sub 421	Sub 422	Sub 423
1(b)	3	3	3	3	3
1(c)	3	3	3	3	3
1(d)	3	3	3	3	3

- where subject's answer of 1=face-to-face, 2=telephone, 3=email, 4=memo.

7.3.1.5. Background information on manager's position

The analysis method used here for manager's background position remained the same as the one used in the pilot test since it is a standard format for this test.

7.3.1.6. Background information on manager's task characteristic

The analysis methods used here was also the same as the one used for the pilot test. All the results from the Likert-type scale from each question was converted into mean and percentage scores. All the scores were then grouped into task equivocality and task

uncertainty. A higher score is taken to indicate a higher level of task equivocality or higher level of task uncertainty. An example of the scoring table for this test is shown below;

Task	Sub 1	Sub 2	Sub 421	Sub 422	Sub 423	Mean
rrt2.1	2	1	3	2	3	2.17
tcdo2.1	1	1	1	2	2	1.76
wwpnaw2.1	4	3	4	4	4	4.22
fnstp2.1	4	5	5	4	4	4.36
cum2.2	4	4	5	4	4	4.43
sop2.2	2	2	2	2	2	2.07
wdsm2.2	3	2	3	2	3	2.32
tp2.2	5	5	5	4	5	4.48
rpr2.2	4	4	5	2	3	3.86
ups2.2	4	5	4	3	4	4.24

Chapter 8

Field Work Finding and Discussion

8.1. Introduction

This chapter presents and discusses the findings of each variable using statistical analysis and the combined testing of hypothesis's models using structural equation modelling program (AMOS). The data collected from questionnaire and the structural modelling analysed in relation to the framework established in Chapter 3.

8.2. Sample Characteristics

Chapter 3 shows how different background variables can influence media choice. The focus of this study is not on these variables, but is on the determinants within the boarder of the framework. The choice of subjects from the sample markets, as noted in the methodology, was to minimise variation among these background variables. The demographic details and results from questions 1 to 9 of the questionnaires suggest that this intention has been achieved.

8.2.1. Demographics

The subject sample has a good spread of managerial positions, and the experience of the subjects on computer and electronic mail ensures that they are familiar with the latest modern communication process within their organisation. Overall, the uniformity of subject's characteristics meant that they can be compared reliably, minimising concern that the subject's lack of experience in modern communication could confound the findings, which could lead to bias towards traditional communication media.

Subject Characteristics

Managerial position range: <ul style="list-style-type: none">• President-General Manager• Average of Directors	Electronic mail experience: <ul style="list-style-type: none">• Range from 2 years-12 years• Average of 6.35 years Computer experience: <ul style="list-style-type: none">• Range from 4 years - 20 years• Average of 9.78 years
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8.2.2. Background on Manager’s task equivocality and uncertainty

Summary statistics for all individual task and environment items used in constructing scales are provided in Table 6.

Table 6: Summary Statistics for Task Characteristic Items		
Variables*	Mean	S.D.
Crises/Urgent matters	4.43	.59
Time pressures	4.48	.64
Unexpected problems/situations	4.24	.69
Rules, policies, and regulations	3.86	1.03
Working with people I’m not acquainted with	4.22	.68
Well defined subject matter	2.32	.80
Tasks with clearly defined outcomes	1.76	.65
Standard operating procedures	2.07	.65
Routine repetitive tasks	2.17	.68
Finding novel solutions to problems	4.36	.60

- Scales ranged from 1 = not at all to 5 = very much. The stimulus phrases “Most of your task involves...” or “ Most of your task is governed by...” were used.

An examination of the means of individual task characteristic items shows respondents more likely to feel that their jobs involve time pressures (mean = 4.48) and crises/urgent

matters (mean = 4.43), and some what likely to involve crises and urgent matters (mean = 4.24). And often are jobs with the need to deal with new people (mean=4.22), less often are jobs governed by rules, policies and regulations (mean=3.86).

Jobs are not seen as very standardised (mean=2.07), and are not seen as involving very well defined subject matter (mean=2.32). In addition, respondents only perceived their tasks to have little clearly defined outcomes of (mean=1.76).

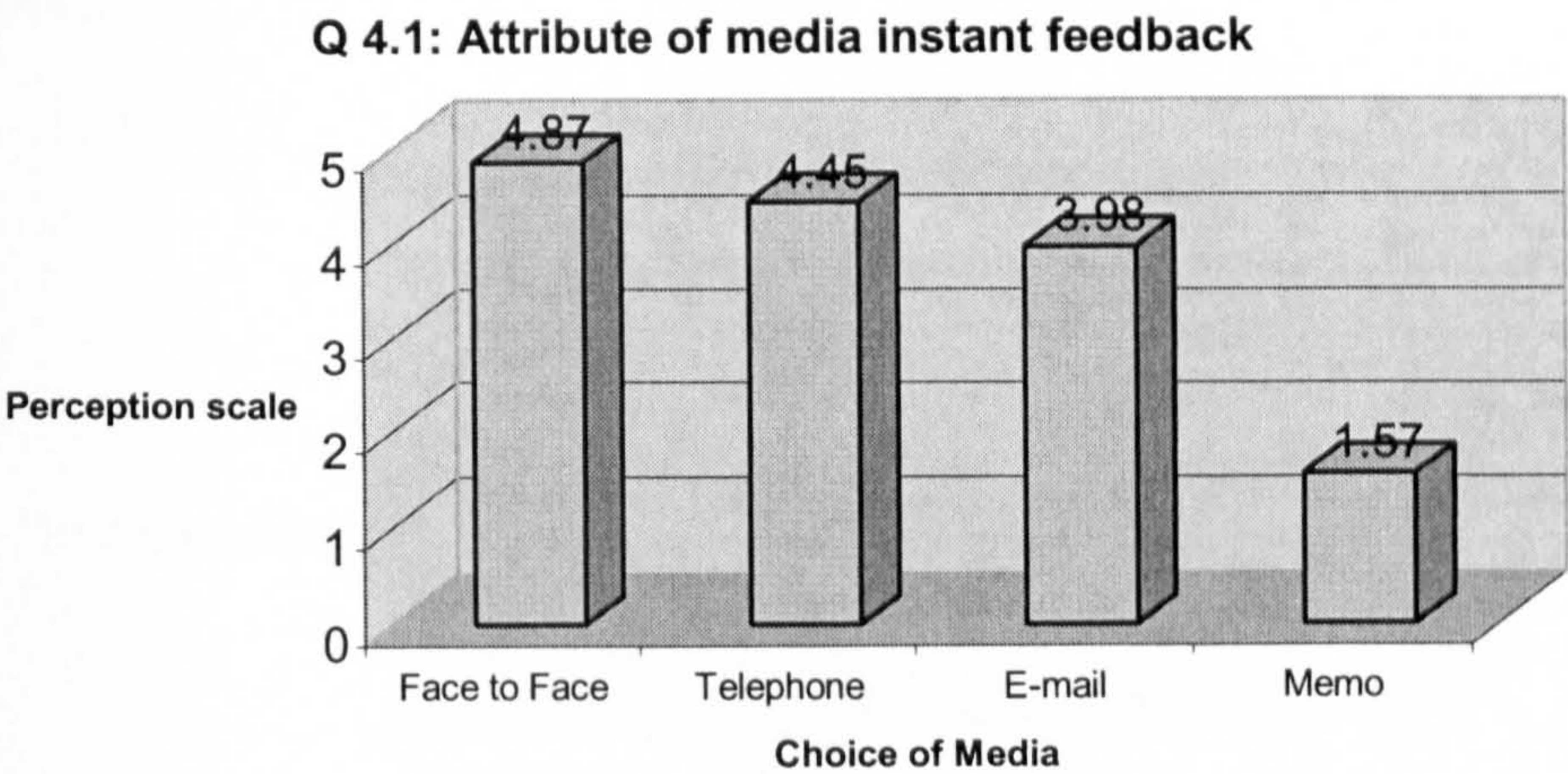
Generally, tasks are not seen as routine (mean=2.17), and seem to require a lot of innovative thought (mean=4.22). Overall, these task characteristics seem quite appropriate as a description of high level Manager's task situation in the host organisation.

8.3. Investigating Media Choice Variables

8.3.1. Information Richness of Media

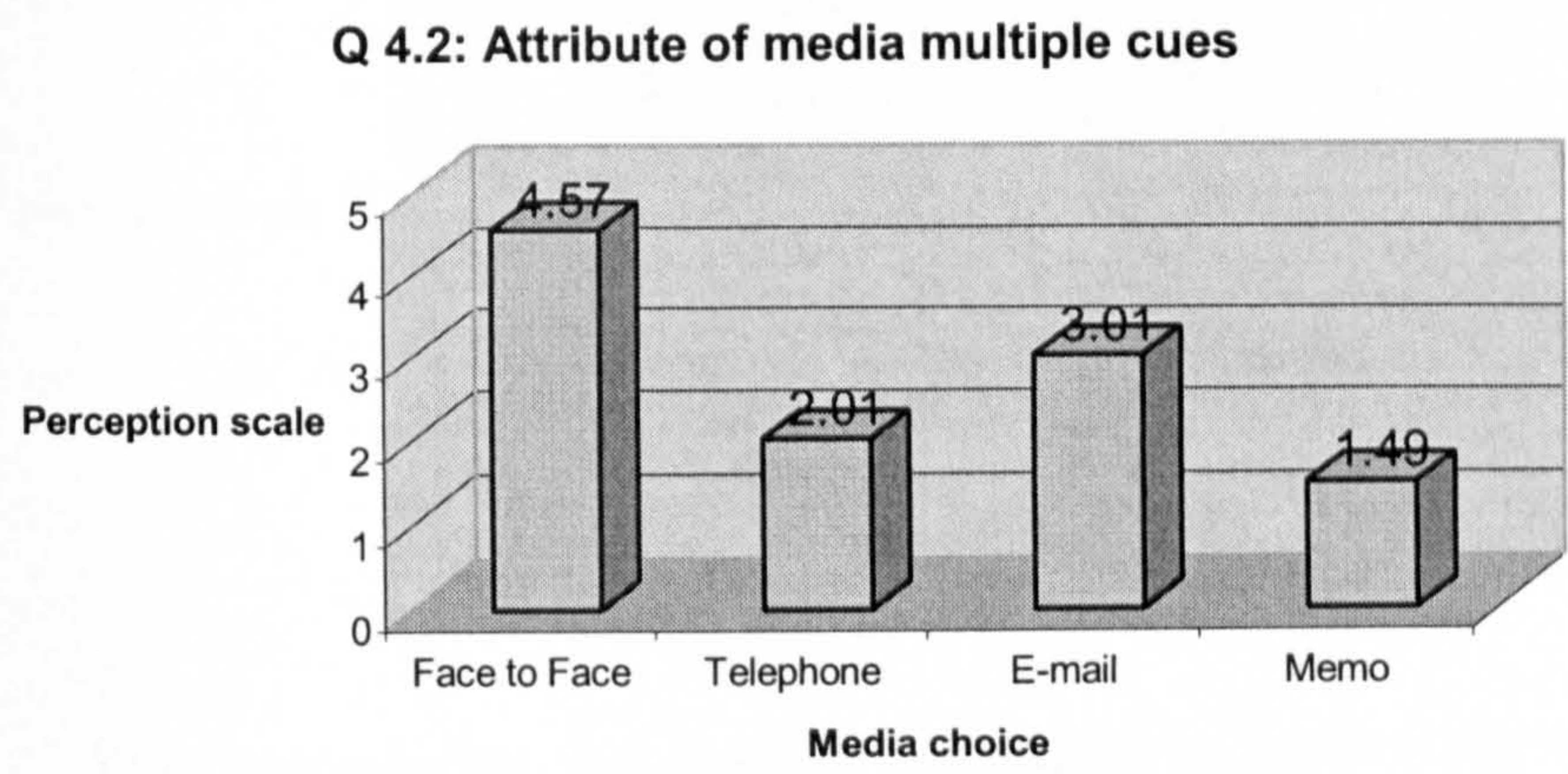
Subject's perception of media attribute were measured by a series of 5 point Likert scales. Total of eight criteria were used to establish the perceived information richness of media. Four original criteria by Daft and Lengel (1984) are summed up as; [1] immediacy (feedback), [2] multiple cues, [3] language variety, [4] personal source. The latter four additional criteria, subsequently identified by Valacich (1993) are summed up as; [5] multiple addressability, [6] externally recordable, [7] computer processable memory, [8] concurrency.

The bar graph 8.1 show the managerial perception of communication media instant feedback attribute.



Face-to-Face and Telephone were perceived by Managers as the richest ways to provide instant feedback, allowing a more interactive discussion with means of 4.87 and 4.45 respectively. Electronic mail and Memo on the other hand were perceived relatively leaner with means of 3.98 and 1.57 respectively. The result for this criteria is consistency with the original information richness of oral media (Daft and Lengel 1984, 1986, Zmud 1990). The likes of face-to-face and telephone are believed to be richer than written media because they provide synchronicity (i.e. with immediate feedback), where as email and memo are believed to be leaner because they are an asynchronous media (i.e. involve delay in the communication process).

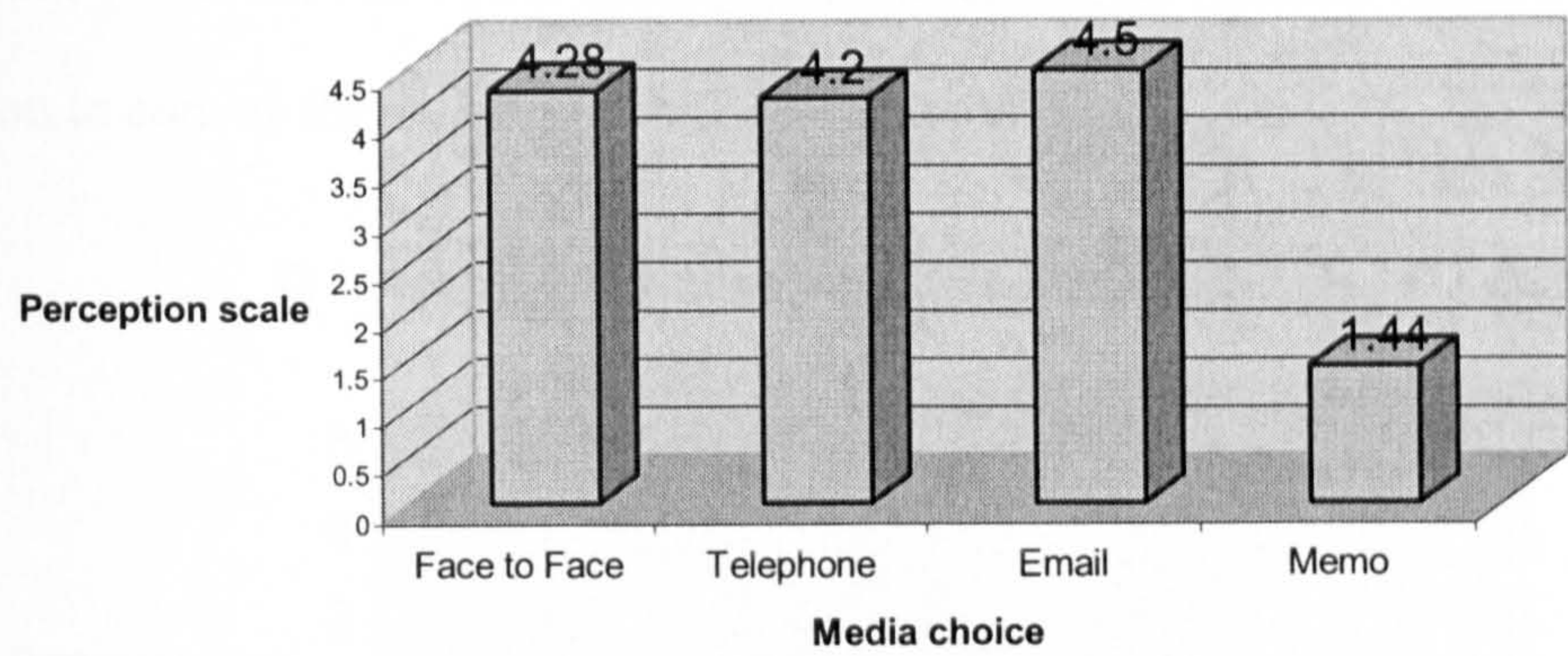
The bar graph 8.2 shows the managerial perception of communication media multiple cues attribute.



On the richness of multiple cues, like voice inflection and body gestures or expression, Face-to-Face was perceived by Managers as the richest way to communicate with mean of 4.57. Unexpectedly but interesting, E-mail was deemed richer than telephone with means of 3.01 and 2.01 respectively. And as expected Memo was deemed as the leanest medium in this category with a mean of 1.49. Generally one would anticipate telephone to have a much better richness to express multiple cues such as voice inflection and body gestures or expression, but maybe this group of sample find that the use of E-mail informal language are more useful than that of the telephone. It would be interesting to see what this result will do to the overall media ranking once the eight attribute means have been averaged.

The bar graph 8.3 show the Managerial perception of communication media capability to convey messages very clearly.

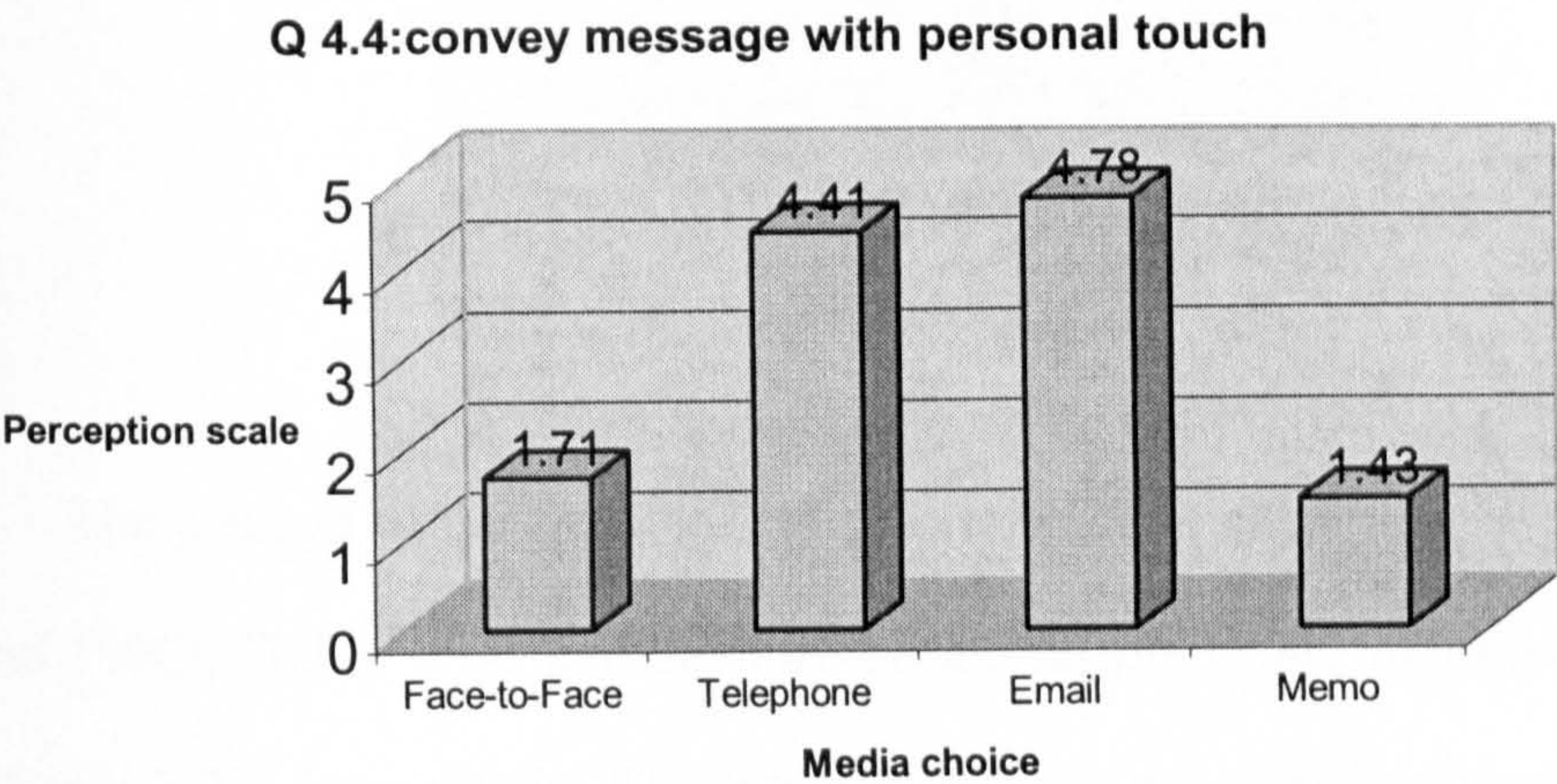
Q 4.3: Capability to convey message very clearly.



When considering the capability of media to convey the message very clearly, unexpectedly inconsistent with original information richness rating (Daft and Lengel 1984, 1986 and Zmud 1990), Managers perceived electronic mail (mean= 4.50) to be richer than face-to-face and telephone (means=4.28 and 4.20). The earlier classification for this criteria denote that oral communications such as face-to-face and telephone would have a better capability to tailor the message by using different words to increase understanding than a written medium. Although the mean of Email score is only slightly more than that of Face-to-Face and Telephone, but the interesting point is that it is on par in terms of richness with traditional media. One explanation for this could be that not only the subjects have more time to think when they are constructing the message on email, but they could communicate through email's variety of informal languages to increase understanding to be on an even par as face-to-face and telephone. This also explains why Managers see memo to be the leanest (mean= 1.44). Memo and company document are still regarded as a formal

communication channel in the work place and hence any informal written language is not encouraged .

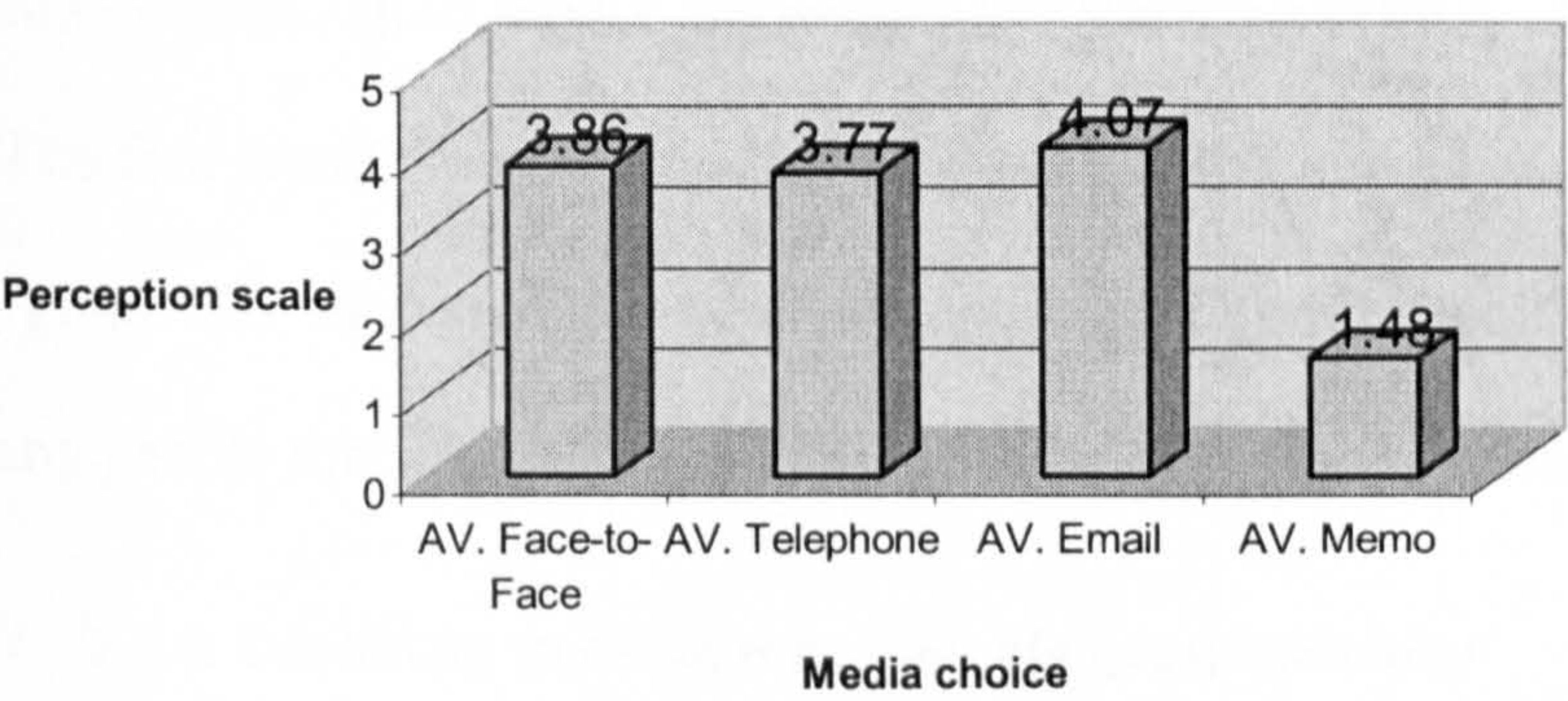
The bar graph 8.4 shows the Managerial perception of communication media to enable a person to convey the message with a personal touch.



The criteria of media richness that enables a person to convey the message with a personal touch to the recipient, the Managers perceived electronic mail and telephone to be the two richest medium for this category (means= 4.78 and 4.41) respectively. Surprisingly face-to-face was regarded as lean in third place (mean= 1.71) and memo was perceived as the leanest (mean= 1.43). It was interesting to see that email turned out to be on the same par as telephone richness, where as in the past research it was considered lean and not useful for displaying a personal touch (Markus 1994). Generally face-to-face would have been considered as rich in term of conveying a personal touch in any country. But one explanation for the lean rating among Thai top Managers could be the fact that when generally communicating through this channel it often involved a number of people and its often difficult to prevent others from listening in to the conversation. Since public display of affection is not a common culture in Thailand, hence it will be seen as

favouritism. This explains the preferences for more discrete channels of communication like telephone and Email.

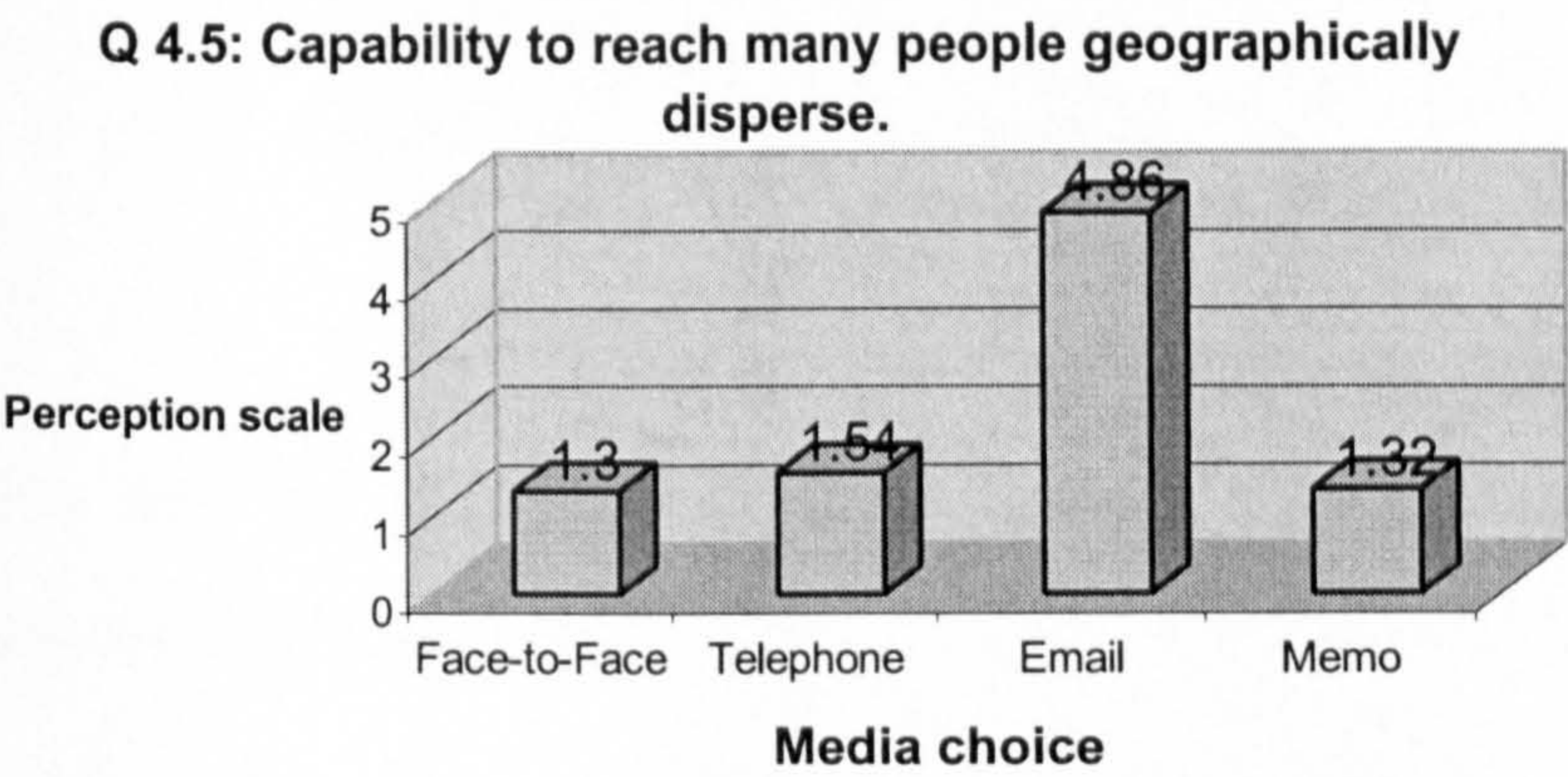
Averages of four original Information richness categories



The average of the first four original criteria do confirm with the previous finding (Zmud 1990), (Table 1.5), that face-to-face and telephone are rich medium (average mean =3.86 and 3.77) respectively. The interesting thing was that Email was also on the same richness level as traditional media like face-to-face and telephone, when it was considered as a lean media in past studies. Perhaps this shows that the media richness scale put together by Zmud (1990) then, does not reflect a current perception of email today.

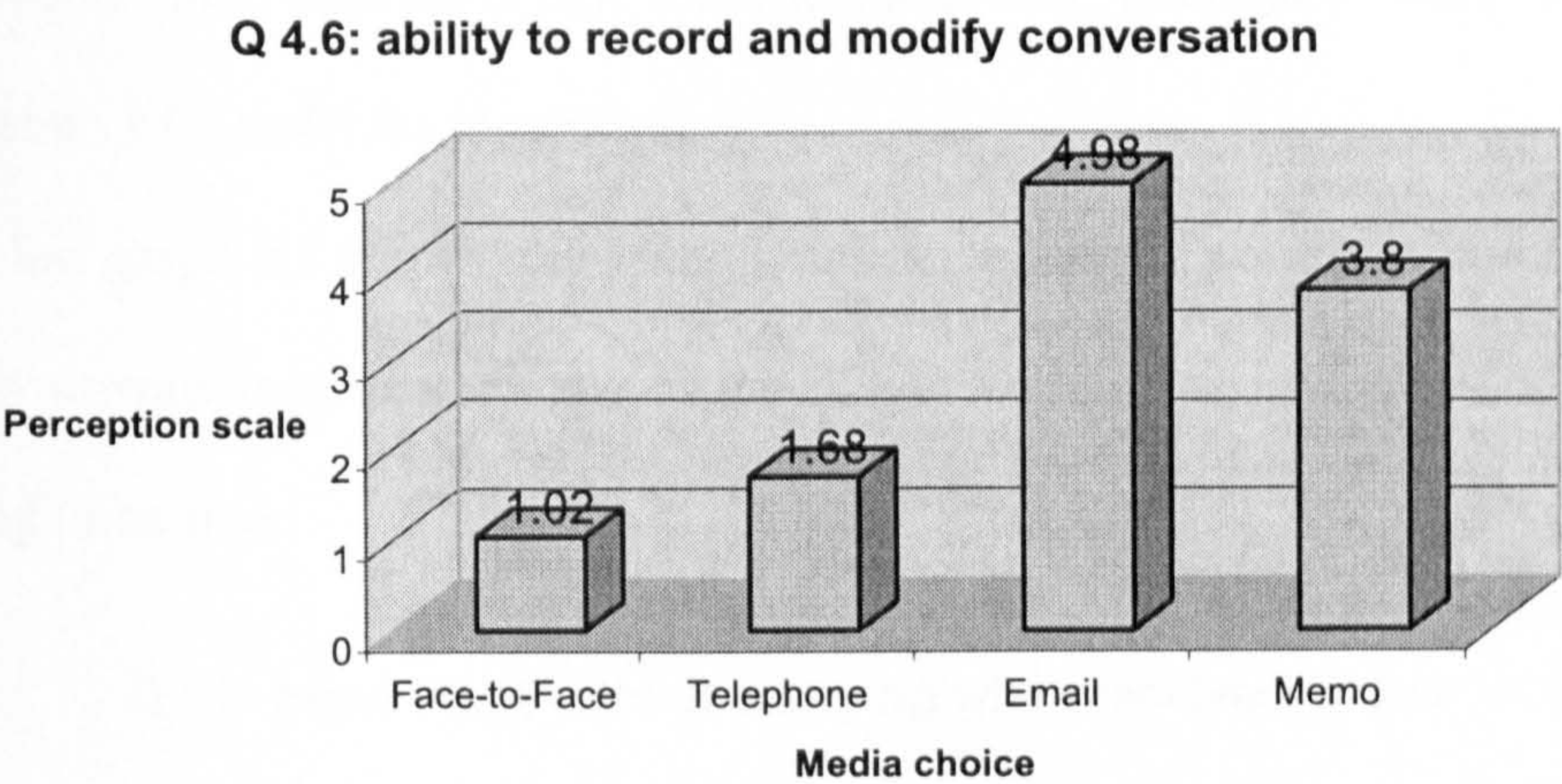
Furthermore, this original criterion was based on the traditional mode of intra-organisational communication, and was thought to emphasise the strength of face-to-face communication. However modern communication technologies have qualities not found in traditional communication media. Subsequently, Valacich (1993) identified another related quality. The four results of additional criteria will now be looked at.

The bar graph 8.5 shows Managerial perceptions of communication media capability to reach many people that are geographically dispersed at any one time.



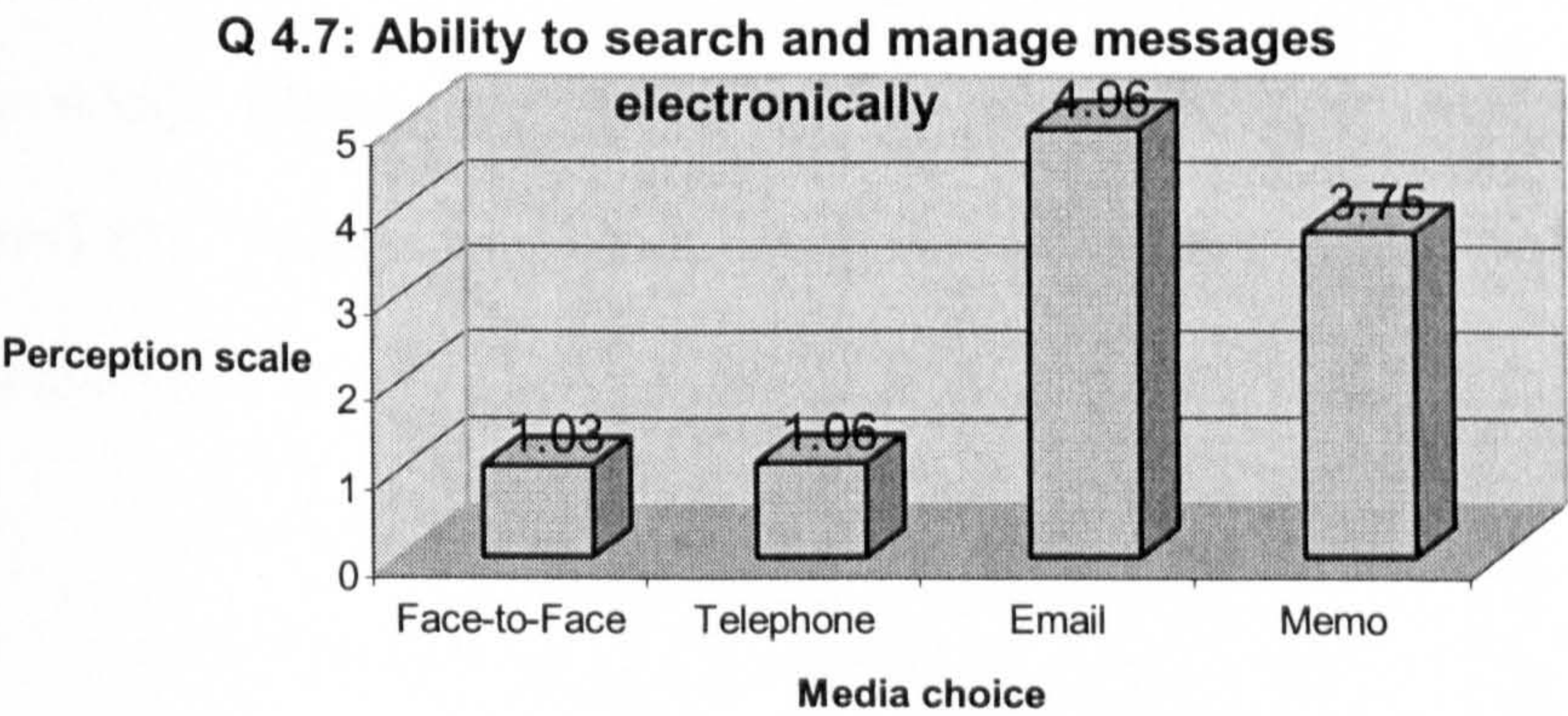
Managers perceived that electronic mail is the richest media (mean= 4.86), when it comes to communicating with many people that are geographically dispersed. Face-to-Face, telephone and memo were deemed to be on par as the lean media (means = 1.30, 1.54 and 1.32 respectively).

The bar graph 8.6 show the Managerial perceptions of communication media ability to record and modify conversation.



Electronic mail was deemed the richest way (mean=4.96), for conversation made to be recordable and modifiable. Memo was perceived as moderately less rich than electronic mail (mean= 3.75). Face-to-Face and telephone were the leanest ways (means= 1.03 and 1.06 respectively), to record or modify a conversation.

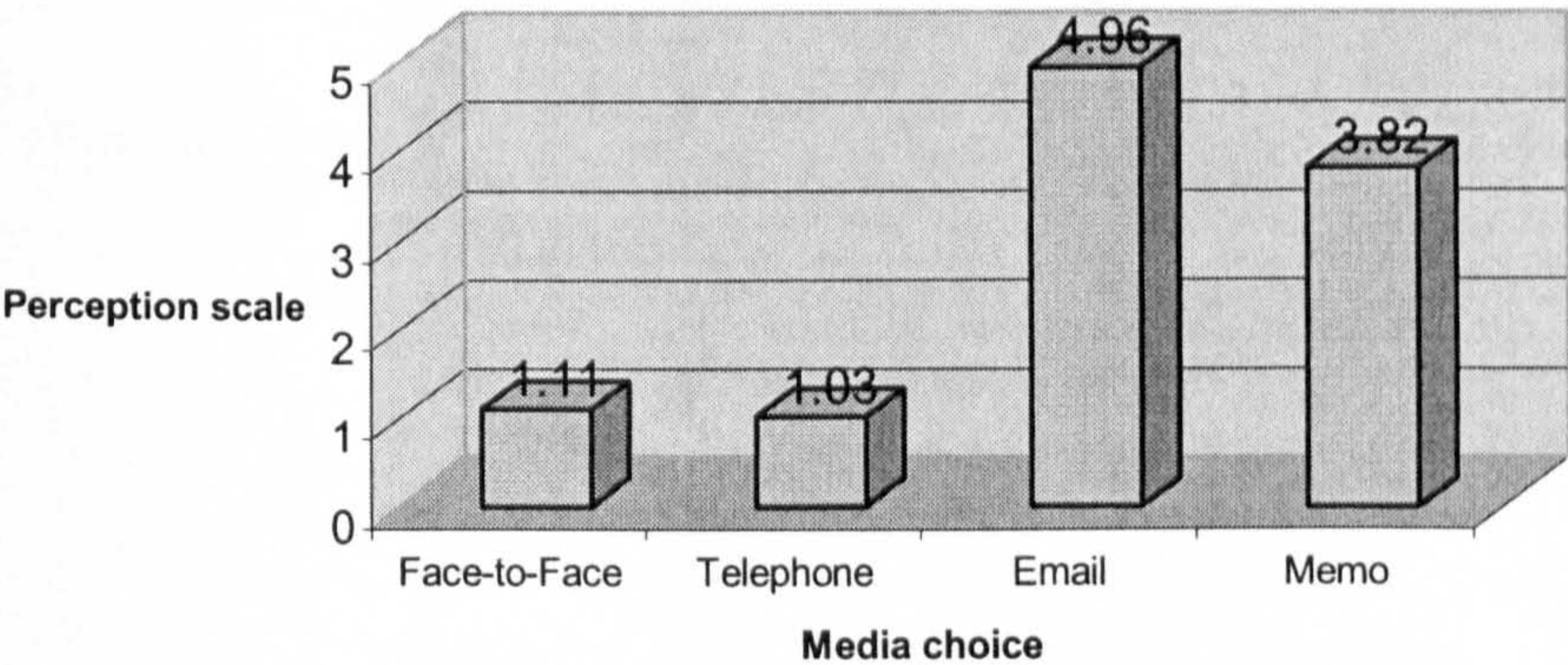
The bar graph 8.7 shows the Managerial perception of communication media ability to search and manage messages electronically.



When it comes to search and managing your messages electronically, electronic mail was the richest media (mean= 4.96). Memo was viewed as moderately less rich than electronic mail (mean=3.75). Face-to-Face and telephone were the leanest medium (means= 1.03 and 1.06 respectively).

The bar graph 8.8 shows the Managerial perception of communication media capability to allow anyone to contribute any of their input with out worrying about when the receiver is going to be free.

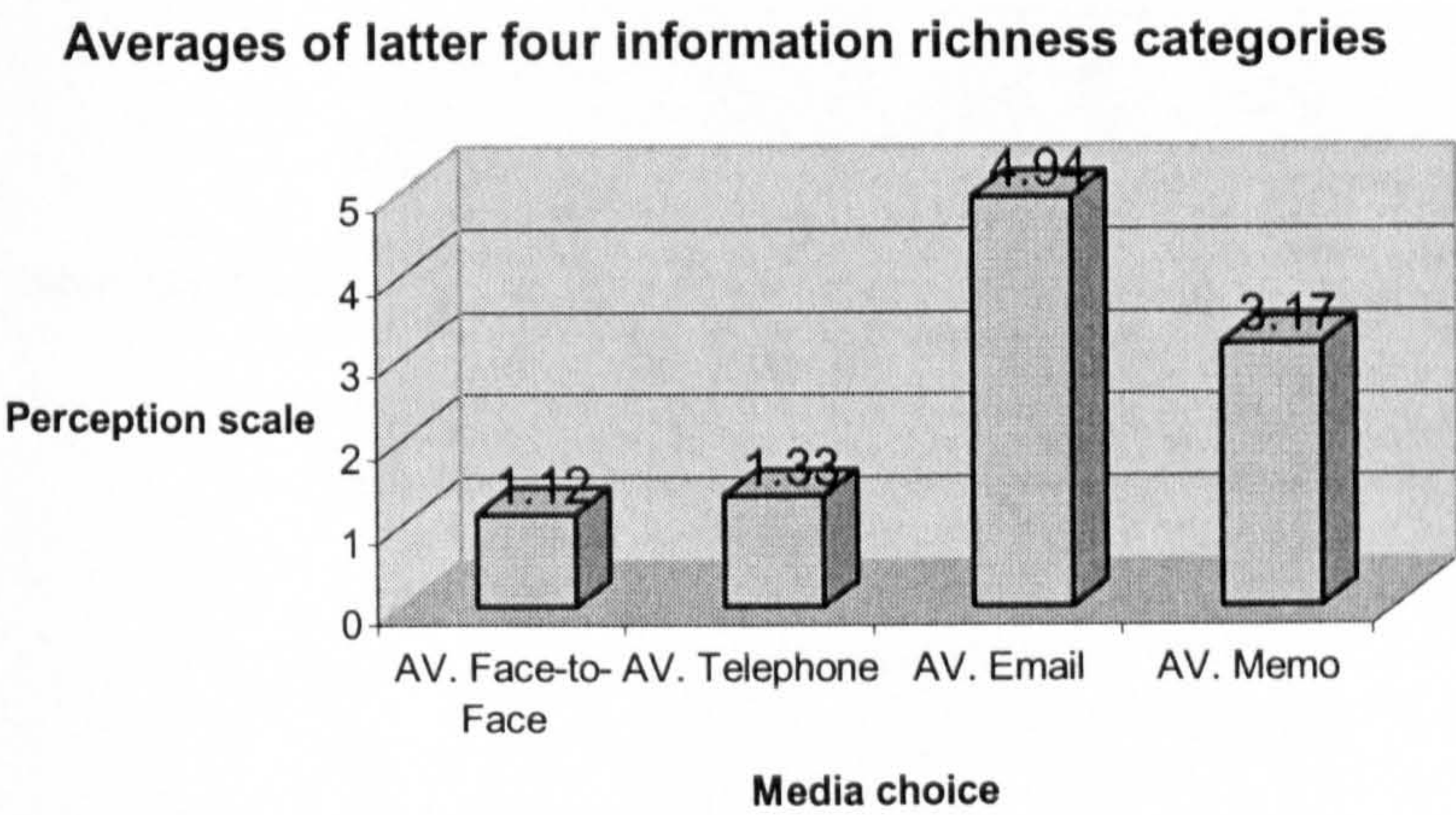
Q 4.8: make input without worrying when receivers is free



In the case of media that allows anyone to contribute any of their input without worrying about when the receiver is going to be free, electronic mail was the richest media (mean=4.96). Memo was perceived as moderately less rich than electronic mail (mean=3.82). Face-to-Face and telephone were the leanest (means= 1.11 and 1.03 respectively).

When the average of the latter four additional criteria was produced, it shows the two medium that were thought to be the leanest came out to be the richest of all. The ranking of the richest to leanest medium from the average of the latter four additional criteria are as follows; Electronic mail (means= 4.94), Memo (means= 3.17), Telephone (means= 1.33) and Face-to-Face (means= 1.12).

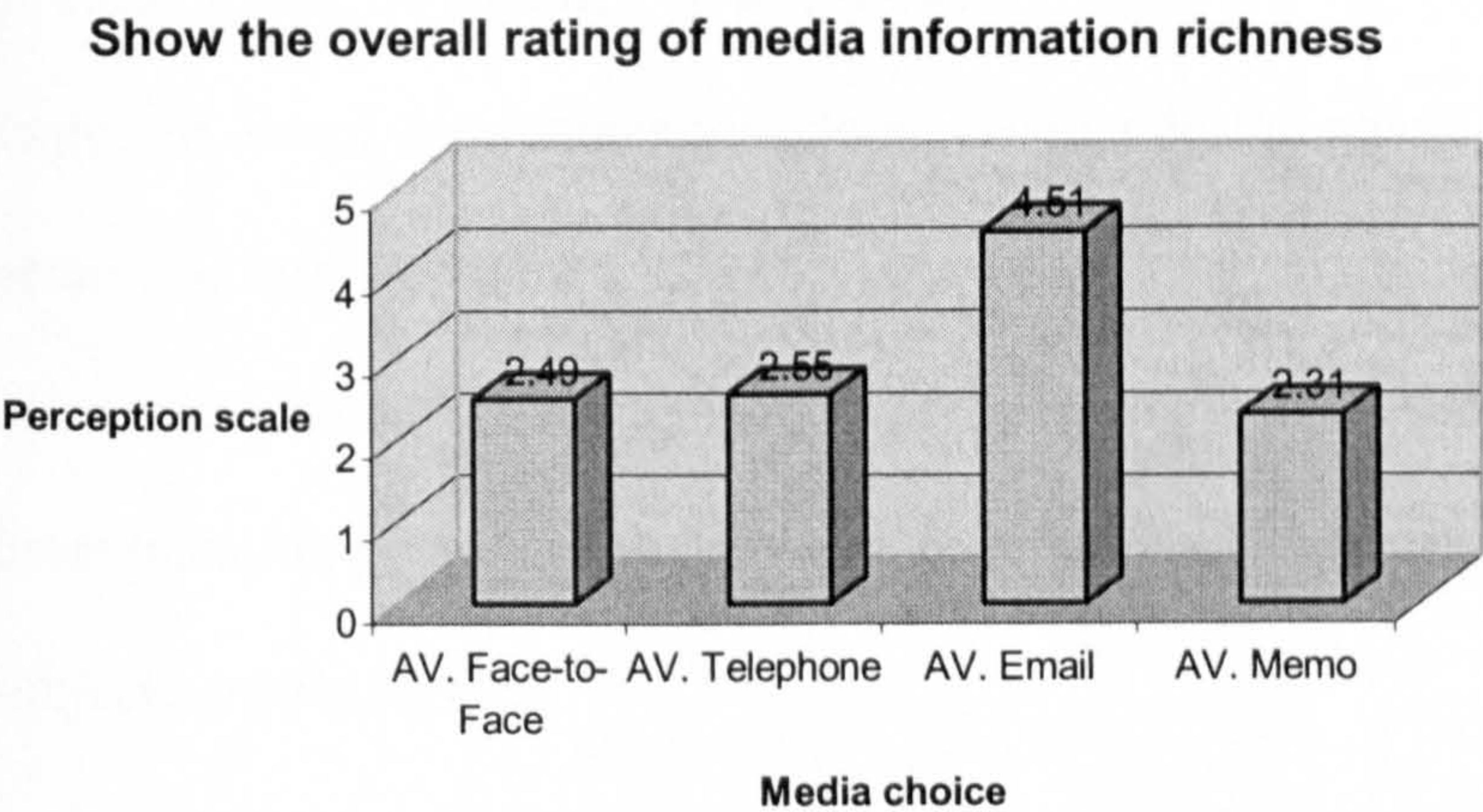
The bar graph below shows the averages of the latter four information richness categories.



When the eight criteria were computed together to get the average of the Manager's perceived information richness of the four medium, the results came out quite contrasting to the prior researches. When the eight criteria were included together electronic mail was perceived as the richest media, followed by telephone, face-to-face and memo (means= 4.51, 2.49, 2.55, and 2.31 respectively), this is consistent with studies by (Markus 1994, Sproull 1991, Valacich 1993). Whereas the prior finding has been in favour of face-to-face and telephone to be the richest media and was thought to be more suitable for tasks high in equivocality. This result has made an initial confirmation for this research hypothesis that the criteria used in the prior finding was biased towards the traditional media and that electronic mail is equally rich if not richer, to cope with task that is high on equivocality.

The second explanation could be due to the fact that maturity of email is beginning to set in every organisation as a standard communication channel. What was previously thought as lean due to the fact that not everyone was using electronic mail, is now on the same richness level as the traditional communication media like face-to-face and telephone.

The bar graph below shows the overall rating of the communication media based on eight information richness categories.



It is no surprise that research giving conflicting evidence tends to be of recent origin. With the incorporation of more modern communication technologies in the research design, studies are only recently in a position to expose the predisposition of the media richness theory towards traditional communications media. However it is still to be seen whether the notion "richness" is an appropriate test for media choice.

8.3.2. Media choice scenario of task equivocality and Symbolic interaction.

The media chosen for each task and their variations are presented graphically in Figures 9.1 to 9.4. The frequency on the chart represents the number of subjects that chose each communication media in relation to the different task characteristics.

The main findings can be summed up as follows:

[1] As expected, email communication media dominated the media choice. In most of the tasks, memo was rarely chosen.

[2] Subjects did choose different media when presented with different variations of the same communication tasks. The various task characteristics did exert a noticeable influence on the subject's media choice.

[3] Overall, email was chosen more frequently across all task characteristics than prior studies would have suggested. Email was also more frequently chosen for some tasks than face-to-face.

[4] Managers often chose more than one communication media to accomplish a task. Of course, not all the media chosen was relied upon to the same extent nor did they serve the same purpose. Some media, like memo have more of a supportive or backup role. Memo was also used to formalise email or telephone messages. Although memo was not chosen for many of the tasks, it was useful "when there is any trouble with the other communication mechanisms." Email is also recognised as a good co-ordination and mass distribution tool.

8.3.2.1. Communication task characteristics and media choice.

An important feature of the framework in Chapter 3 is that many task characteristics interact to determine managers' media choice. The influences of these task characteristics on the subjects' media choice are reported below. This section concluded by considering the explanatory power of equivocality.

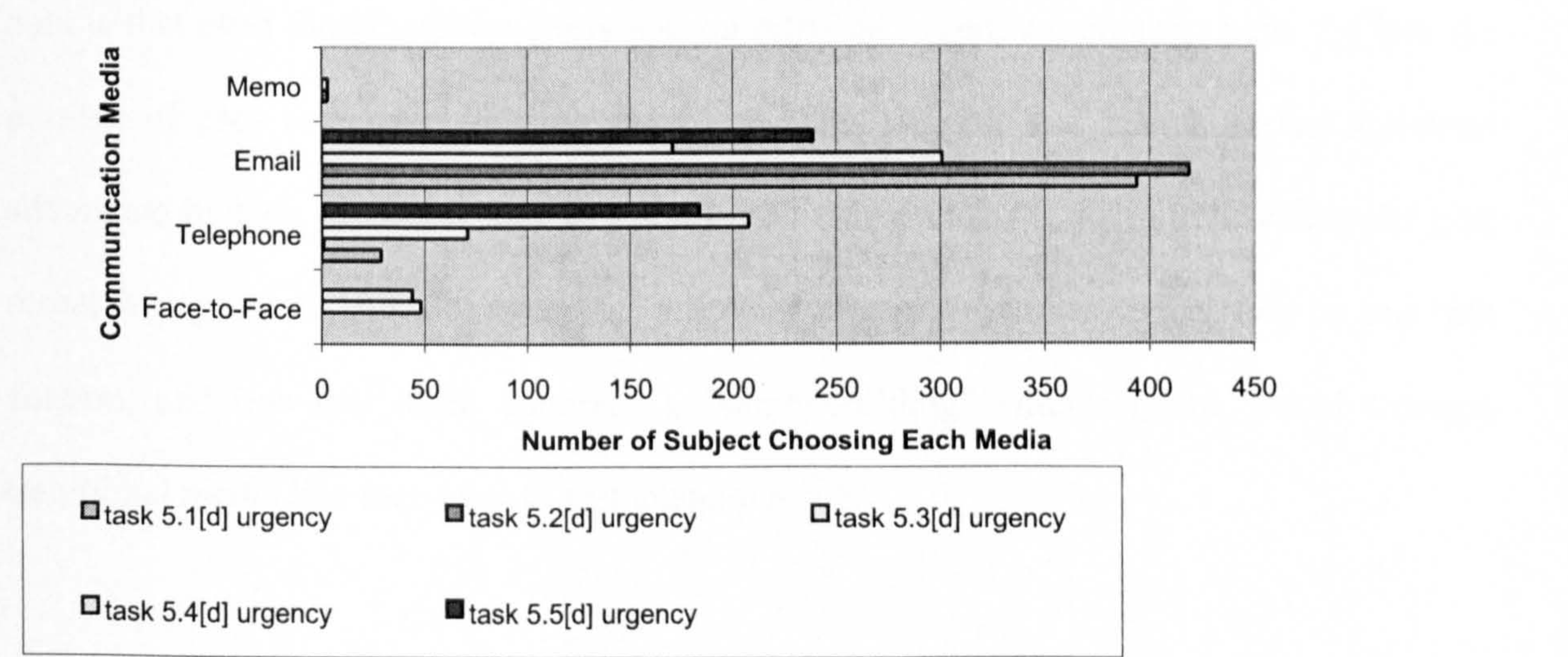


Figure 9.1

Urgency

Urgency has been observed to influence the pattern of communication media choice in a number of ways. First, for all five tasks where urgency was examined, the imposition of time constraint has resulted in more people opting to use email as one of their media of communication. The only exception is where the other person is located in the same building. Presumably this is because in such a situation nothing is faster and more

convenient than talking to the person face-to-face. Second, people also tend to choose more media to make sure they get through to the other person. One person noted:

"I suppose the reality is if it's something really urgent then you would use everything to get them.....email, hit the telephone....."

Third, an interesting and somewhat unexpected observation from the questionnaire data is that even though subjects rely less on email as urgency increases, none the less the number of uses is on par with telephone use. This suggest that telephone has a natural advantage in such situations, but also confirmed that email is a richer media than the past research suggested. This also raises the suspicion that prior studies in focusing on one task context, and one that often connotes a "same building" situation, are biased towards traditional media like face-to-face and telephone.

This said, it is not clear whether this is a result of random data, although it seems to depend on the individual's perception. Even though all the organisations are high in terms of IT maturity and all the subjects fully accept IT, some difference in individual preference would still arguably persist. In terms of its transmission speed an email message is just about as instantaneous as telephone, but in practice whether it is used for urgent tasks hinges upon people's pattern of email usage and how they perceive others use email;

" One is a backup. Really, if you ring them up and you know you have got 30 minutes... and you can not get them.... And they have got email, I would leave them an email message."

That is people's habits do influence strongly their media choice. People tend to choose a media that they know the other person is likely to use regularly, and if it is an urgent matter, they would choose a media that the other person is more likely to access within a short time limit. In another instance, one subject said that he is "the heaviest user of email" in his organisation. For this particular subject email seems to be the key to many communication tasks. In relation to an urgent task:

"I suppose it would depend on my work load at a particular time. The quickest means of raising the issue...would be to rip off an email and send it. It would take me 30 seconds."

These observations are entirely consistent with the social influence school of thought that people's perceptions do differ and that it is shaped by the norms and expectation of the social context. This thereby highlights the inadequacy with the strict rational logic of traditional media richness theory.

Unexpected Findings

First, one odd finding is that three subjects chose to use memo to handle an urgent task where the other person is not in the same building. This is unusual because generally memo is unlikely to get the task done quick enough. A partial explanation for this choice could be that the organisation in this case does not have email access to the outside.

The second curious observation is that not many subjects would choose telephone for urgent task in situations where the other person is not in their office. This is curious because most managers have mobile phones these days. With a mobile they can be contacted whether they are in the office or not. So why did the manager not choose to use telephone more? The data collected do not provide any explanation on this aspect. But, it may be that the subjects in this study did not associate telephone with mobile phone. Alternatively, they may not have a mobile, or they do not know the mobile number of the other person(s), or they are inhibited by the cost of making mobile phone calls.

Geographic Locality/ Time Zone

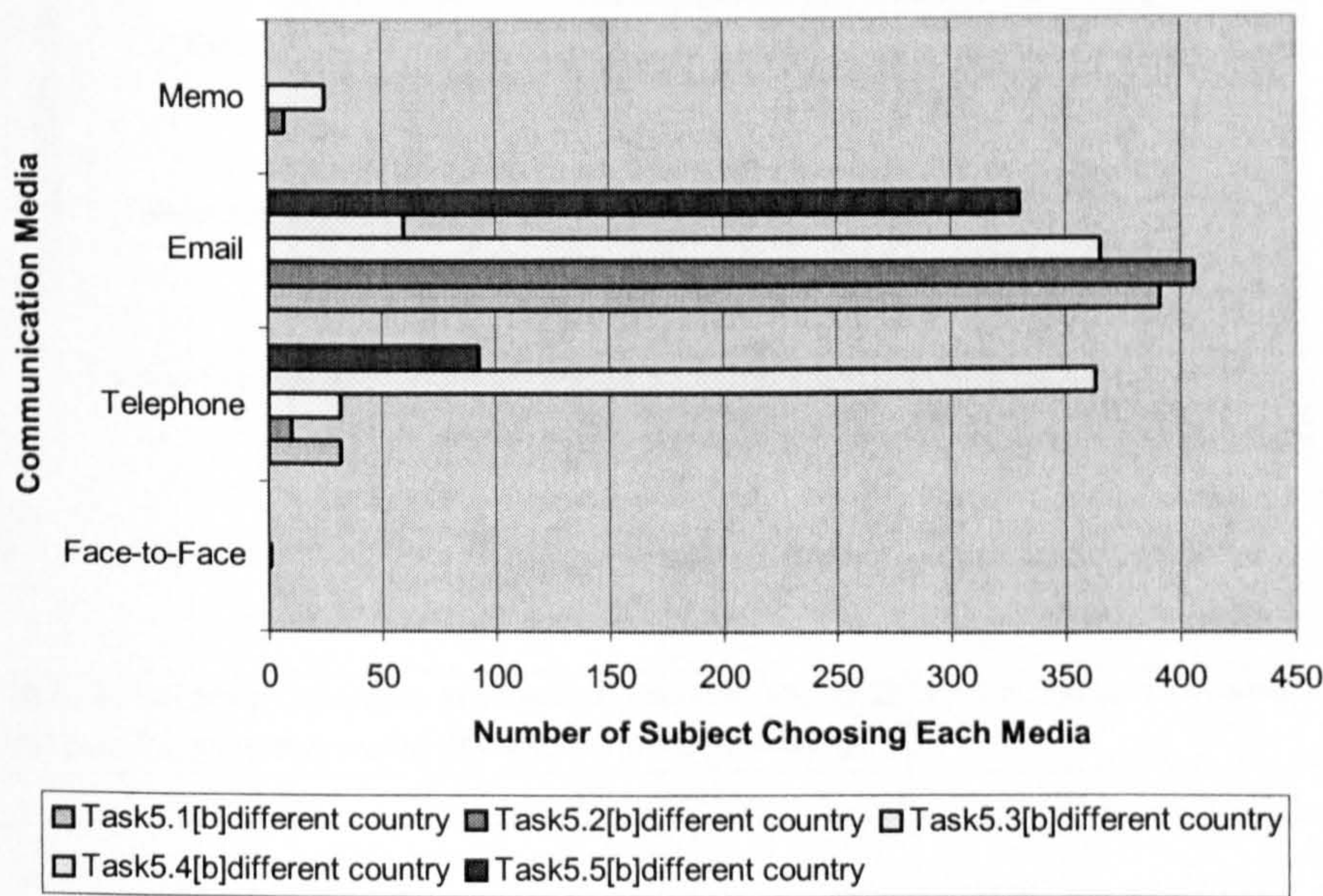


Figure 9.2

The different geographic location and time difference between managers impose two very practical and realistic constraints that have not been considered in previous media studies. These task characteristics dictate what communication media can be used. It is in situations such as these that the strength of modern communication technologies really

shines. In Figures 9.2, Task5.1[b] to 5.5 [b], it is evident that where the other person is in a different country, email is by far the most popular mode of communication. Telephone is only more popular where the other person is in a different country and where the task required personal persuasion. As expected, face-to-face is not even an option in such a case, with only one subject choosing face-to-face communication.

Group Task Messaging

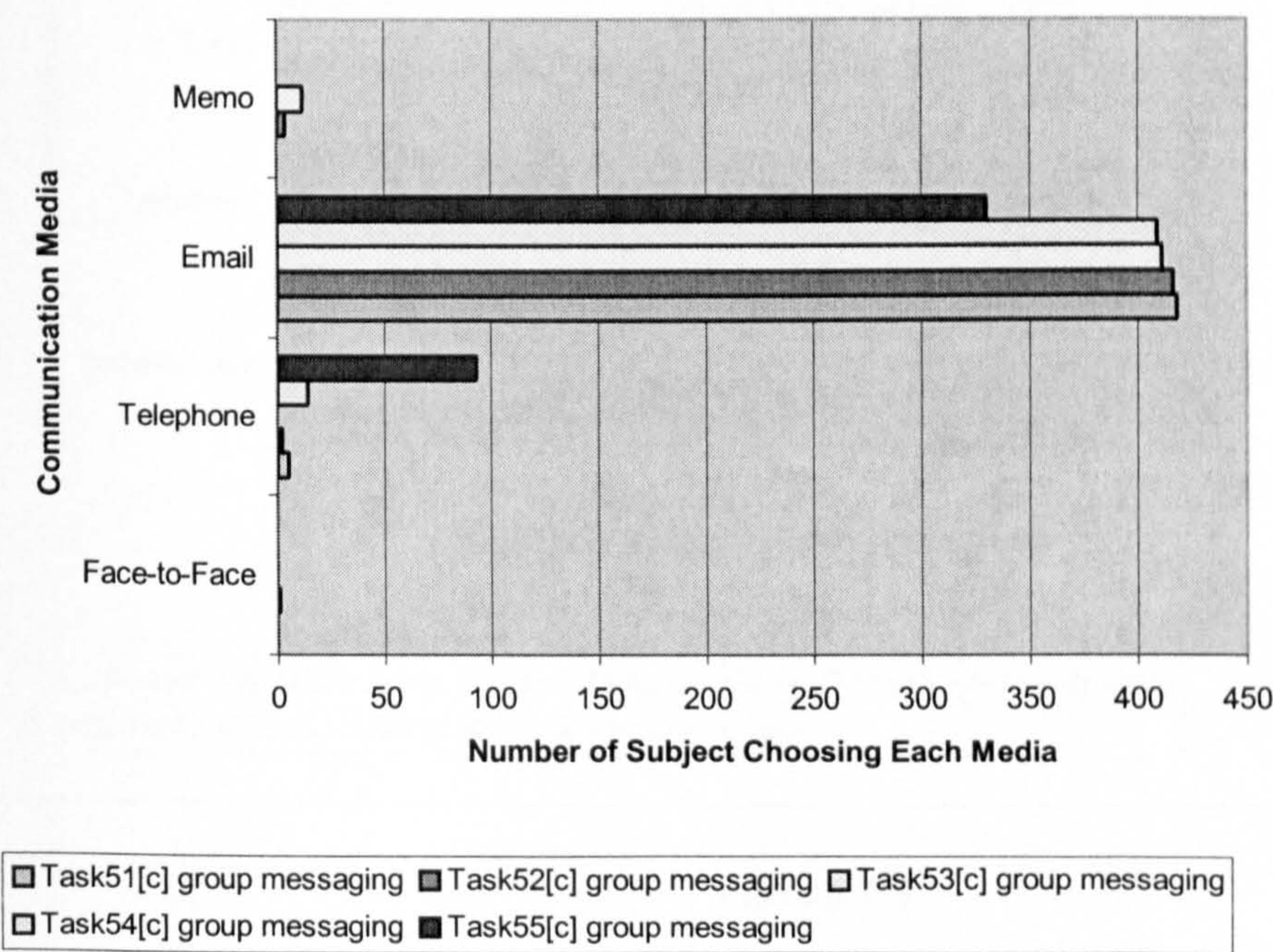


Figure 9.3

The difference in communications media capability to send the same message to different people efficiently imposes two very practical and realistic constraints that have not been considered in previous media studies. These task characteristics dictate what communication media can be used. It is in situations such as these that the strength of modern communication technologies really shines. In Figures 9.3, Task 5.1[c] to 5.5[c] it is

evident that where the managers want to send the same messages to groups of people, email is by far the most popular mode of communication. Telephone is the second most popular media for this task, but a long way behind email. As expected, face-to-face is not even an option in such cases.

Task Equivocality

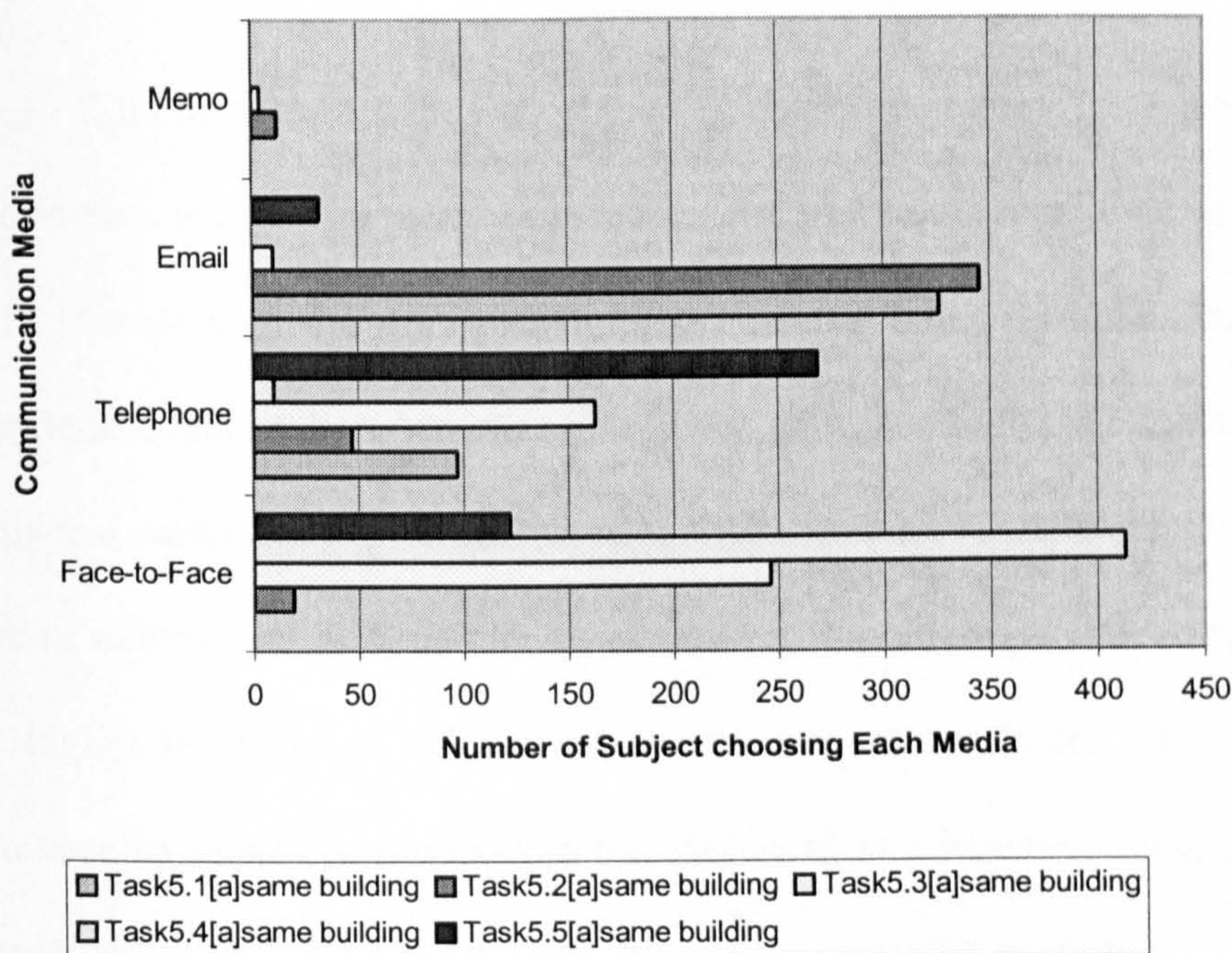


Figure 9.4

Prior studies typically found that where the task is equivocal people would tend to use face-to-face or telephone. The findings of this study are generally consistent with this. This is most evident when comparing the simple or unequivocal task of giving your subordinate a set of five cost figures that he/she requested last week,(Task 5.1) with a more equivocal task like getting an explanation from a peer in another department of a complicated technical matter in which you have little formal training or experience (Task 5.5). In Figure 9.4, Task 5.1[a] it can be seen that not a single person chose to use face-to-

face for this unequivocal task and only ninety seven people out of four hundred and twenty three chose to use telephone. Where as for the equivocal task in Figure 9.4 Task 5.5[a] it can be seen that one hundred and twenty two subjects chose face-to-face and a further two hundred and sixty nine people chose telephone, with only thirty two people out of four hundred and twenty three choosing email. However, notice that this explanation only applies where the other person is in the same building.

Similar pattern of media choice is observed within Task 5.4. It can be seen that face-to-face is more frequently chosen for the more equivocal task, in situations where the other person is in the same building. Where the other person is in a different country, telephone is the preferred media. This is also consistent with the media richness notion that equivocal tasks are performed through "rich media". Telephone is considered relatively high in richness in the literature. A surprise is that although face-to-face is supposed to be the higher in terms of richness, it is less frequently chosen for this task (Task 5.5). Equivocality alone can not explain the choice. If, as advocated in the framework, other task characteristics are considered, then this choice could be attributable to the group nature of the task. That is, telephone would be better suited to the task in that it enables multiple parties to communicate simultaneously.

According to media richness theory, the usage of email should decrease as equivocality increases. This effect is only noticeable in relation to situations where the other person is in the same building. Meanwhile, notice how all subjects chose email as one of their communication media for all five tasks examined, and how email is much more popular for situations where the other person(s) is in a different country, sending the same

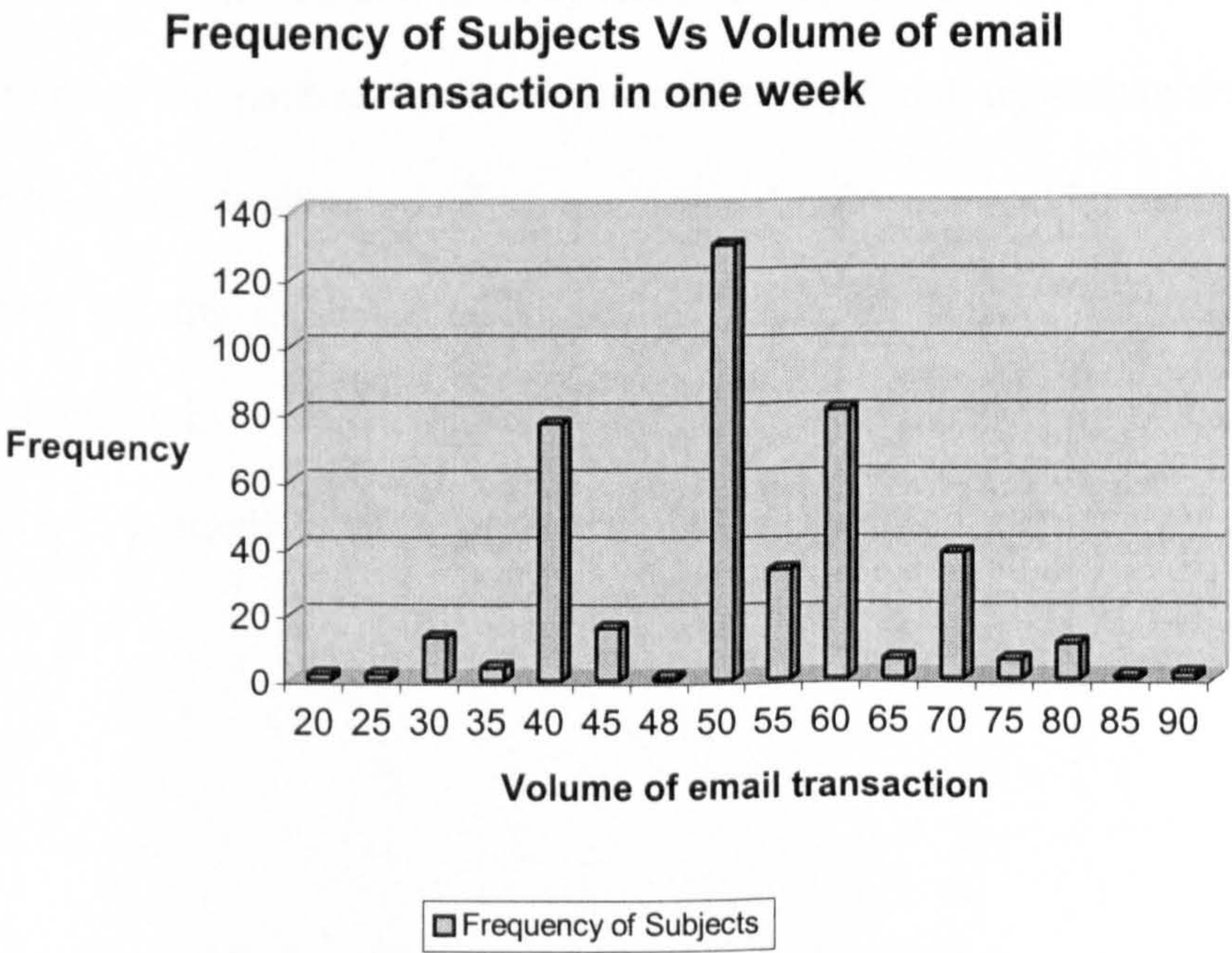
messages to a group of people or when under time pressure. This defies media richness predictions.

This finding supports the conflicting evidence within the literature reviews that, under media richness theory, task characteristics refer primarily to the notion of equivocality only provides a partial explanation for media choice (Cadwell 1995, D'Ambra 1995, Lee 1994). It explains some of the choice but often it is impossible to divorce the explanation from mentioning other task characteristics. The question that arises is why just equivocality?. A communication task can possess many other task characteristics. For example, the task could involve different locations, or there may be a time limit, or it may involve more than one person, etc. Therefore this finding has demonstrated and supported the need to include other task characteristics in order to give a fairer chance of modern communication such as email of being picked.

8.3.4. Frequency of electronic mail use and institutional influence

Electronic mail usage was measured by several self-report items on the survey instrument, e.g. number of messages sent, received, forwarded. The institutional influence is measured with a "yes" or "no" answer from the following questions; (1) does your company have a policy to encourage electronic mail use?, (2) does your company offer training in electronic mail use?, (3) does your superior encourage you to use electronic mail?, (4) does your co-worker encourage you to use electronic mail?. See graph below.

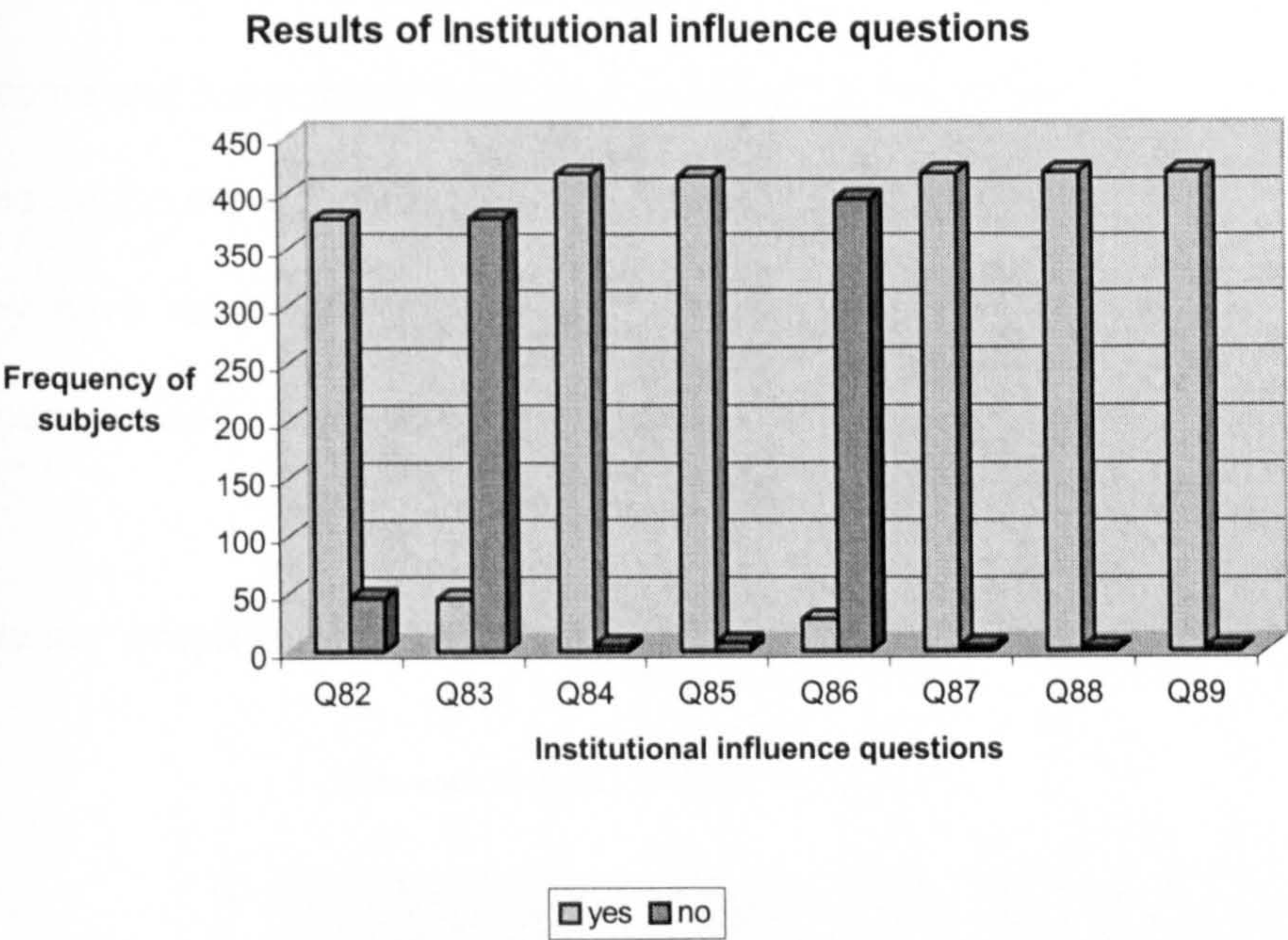
Figure 9.6 Bar graph show the subject's email usage pattern



Cronbach's alpha was calculated here on the four identified characteristics of institutional environment influence. The result of alpha was 0.3625, compared to the alpha result in the pilot test of 0.7096. After a close examination of the data, the result of the low alpha was due to the fact that most subjects seem to all be ticking "yes" to the question or in some cases tick "no". This lack of variation between subject's answers can give a result of low alpha, which did not show up during a small pilot sample test. Otherwise, with the benefit of hindsight the researcher could have use a five point Likert scale to spread out the variation of the subject's opinion.

Although it was important to discuss the difference between the results of the pilot alpha test and the results of the field work alpha test. However, because this research is examining the path analysis of the models and not representation in models of latent constructs, the total value of the institutional influence will be averaged out to get a single number for the influence in any case. Hence the lack of variations within each of the questions in this case would not be a problem with the principle of path analysis employed, since only a single measure of each variable is required.

Figure 9.7 The bar graph below shows the results of Institutional influence.

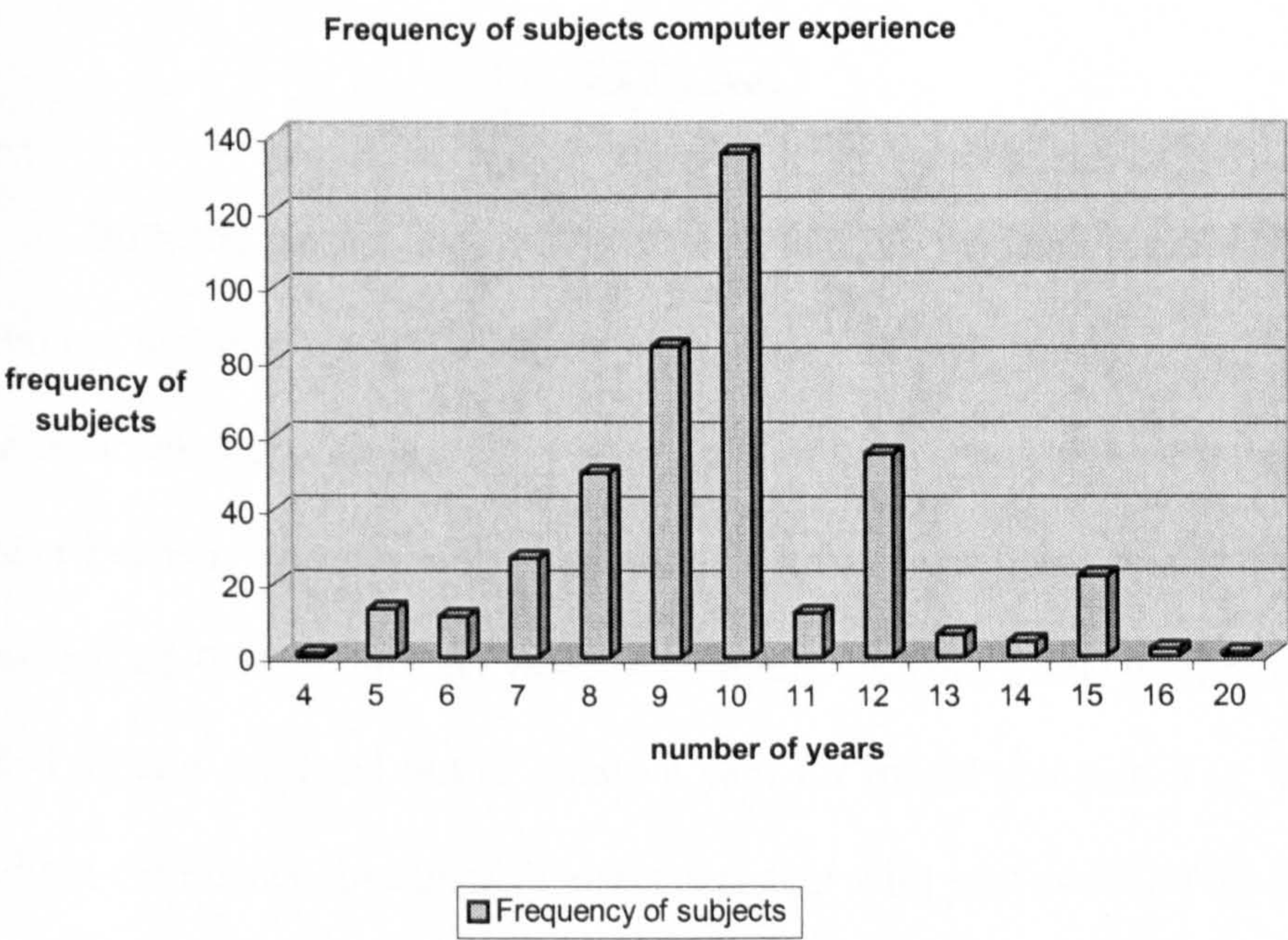


The correlation coefficient analysis was conducted with the intention to check whether the answers given in the electronic mail usage were related to the averaged sum of the institutional influence. The Pearson correlation gives a strong significant correlation of 0.87. This mean that the stronger the characteristics of institutional environment, the stronger it will influence the individual to use email more, and of course the reverse is true. This is further backed up by research (Markus 1994), which indicated that the social definition of institutional influence at the high level, sponsorship played an essential role in getting collective behaviour started. And once it started, according to social definition of institutional theories, the behaviour must be maintained through a process of social definition. However well it appears to be established, the target behaviour may cease if sponsorship is withdrawn.

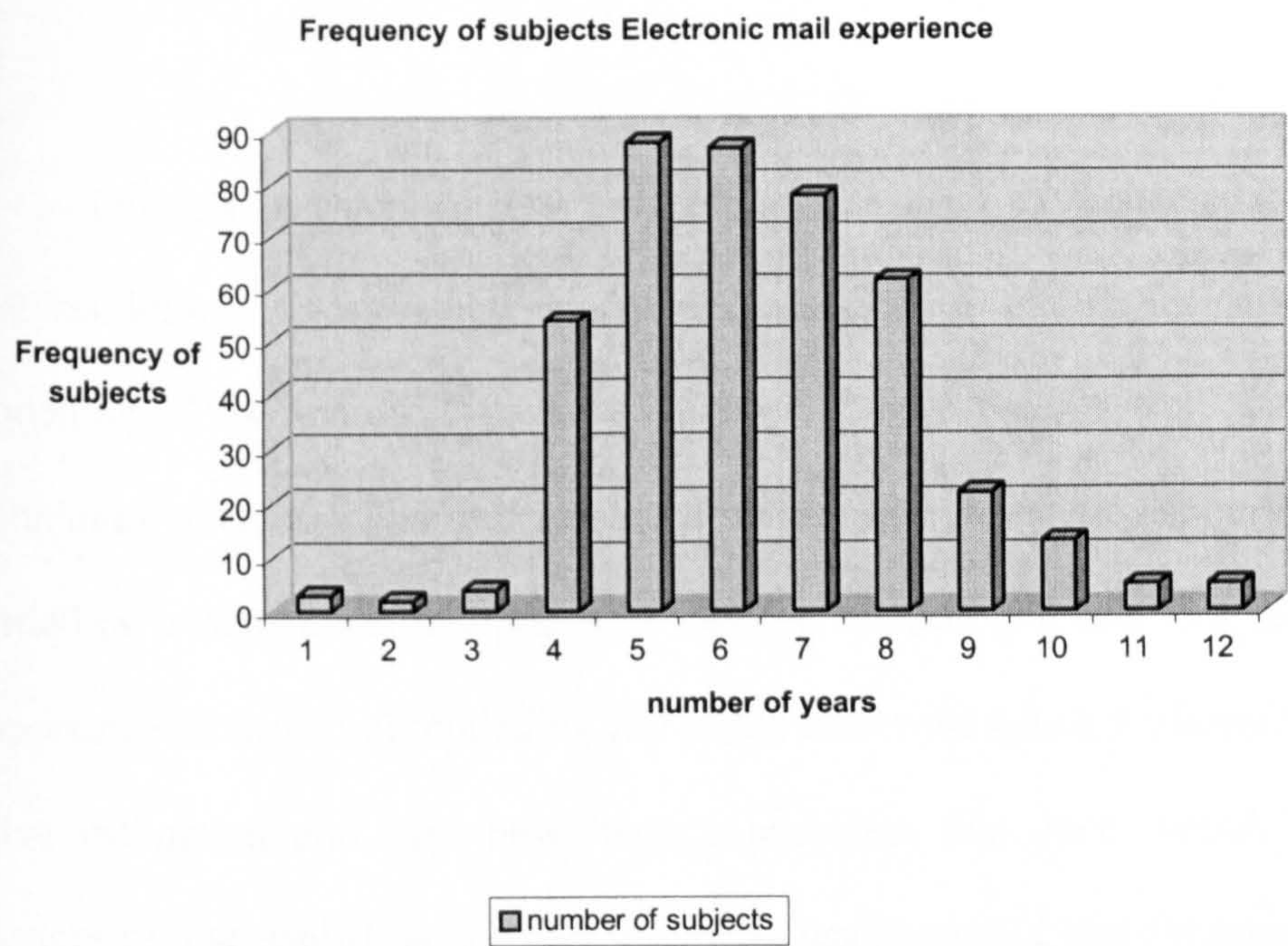
8.3.5. Electronic Mail System Experience:

The more experience the respondents have with E-mail the more comfortable they become and hence more tendency to use it (Markus 1994). Several self-report items were used on the survey instrument. The respondents were asked to report the number of years they have used both the computer and Electronic mail. The results of both computer experience and electronic mail experience will then be computed into one average sum.

The bar graph Figure 9.8 below shows the frequency of subjects computer experience



The bar graph Figure 9.9 below show the frequency of subjects electronic mail experience.



Both the graphs above have shown that the subjects sample are very experienced computer and electronic mail users with means of 9.78 years and 6.35 years respectively. The cronbach test reveals a fairly high alpha of 0.67, considering a small set of questions. A further Pearson correlation test points out a strong significant relationship between the two questions of 0.518. The total value of computer and electronic mail experience will then be added up and averaged out to obtain a sum for model analysis. The finding of these two medium experience questions is also consistent with past studies that the idea of expertise with a medium also influences media use (Schmitz and Fulk 1991). The lack of skill will inhibit use, or that the medium may not be perceived to be as "rich" as otherwise if the user lacks the skill or training to use it properly. In relation to email, this is supported indirectly by Komsky 1991, which found that frequent users of email tend to be more tolerant of system problems and to perceive the medium as easy to use.

8.4. Introduction to Structural Equation Modelling(AMOS software).

For this research AMOS programme was used as the general approach to data analysis known as structural modelling, analysis of covariance structures, or causal modelling. This approach includes as special cases many well known conventional techniques, including the general linear model and common factor analysis. Structural modelling is sometimes thought of as difficult to learn and use. But indeed, much of the importance of structural modelling lies in the ease with which it allows non-statisticians to solve estimation and hypothesis testing problems that once would have required the services of a specialist. Amos was originally designed as a tool for teaching this powerful and fundamentally simple method. Amos provides the following methods for estimating structural equation models: maximum likelihood, unweighted least squares, generalised least-squares. Amos has a number of distinguishing features in addition to the usual capabilities that are also found in other structural equation modelling programmes. Amos can compute full information maximum likelihood estimates in the presence of missing data. The programme can analyse data from several populations at once. It can estimate means for exogenous variables, and intercepts in regression equations. Multiple models can be fitted in a single analysis. Amos examines every pair of models in which one model can be obtained by placing restrictions on the parameters of the other. The program reports several statistics appropriate for comparing such models.

Amos accepts a path diagram as a model specification, and displays parameter estimates graphically on the path diagram. The path diagrams used for model specification, as well as those that display parameter estimates, are of presentation quality. They can be printed directly, or imported into other applications, such as word processors, desktop publishing programs, and general purpose graphics programmes.

It must be noted that there are other methods or software programmes that can be used to analyse this research. But for the reasons above, coupled with the availability of this software to the research, it was therefore adopted as a means of analysis and obtain the output of this research.

8.5. Testing the models

8.5.1. Theoretical Models

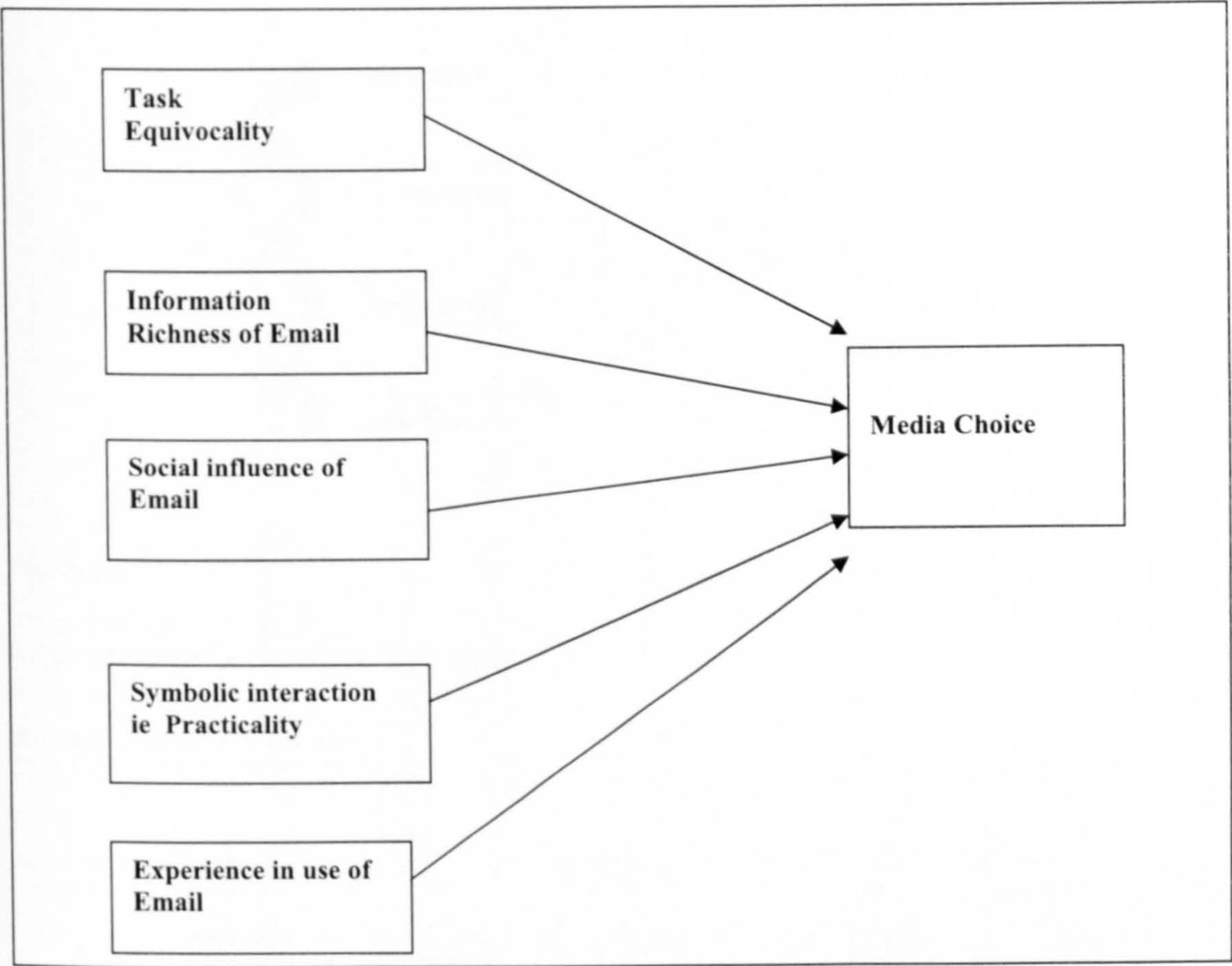
The two models 1 and 2 were tested using maximum likelihood procedures in PC AMOS 4.1. The paths diagram will be tested through a conventional regression analysis, predicting a single observed variable of Media choice of email use, as a linear combination of five other observed variables, i.e, Task equivocality, Information richness, Symbolic Interaction, Social influence and experience. The significance of regression weighting individual paths was assessed using t-ratios. For examining the full structural model, we also used the covariance's values to explain the correlation between each observed exogenous variable (Task equivocality, Information richness, Social influence and experience). To interpret whether each model is a good fit as a meaning that endogenous

variable are strongly predicted, standardised squared multiple correlation of the two models will be compared.

In the case of testing other task characteristics under symbolic interaction theory, (1]task urgency, 2]geographic/locality task and 3]group messaging task), each of models 1 and 2 will be computed and analysed separately under each of the new tasks using AMOS. The results of the media choice under each new task characteristic will demonstrate extra explanatory power for Media choice.

8.5.2. Analysis of model 1

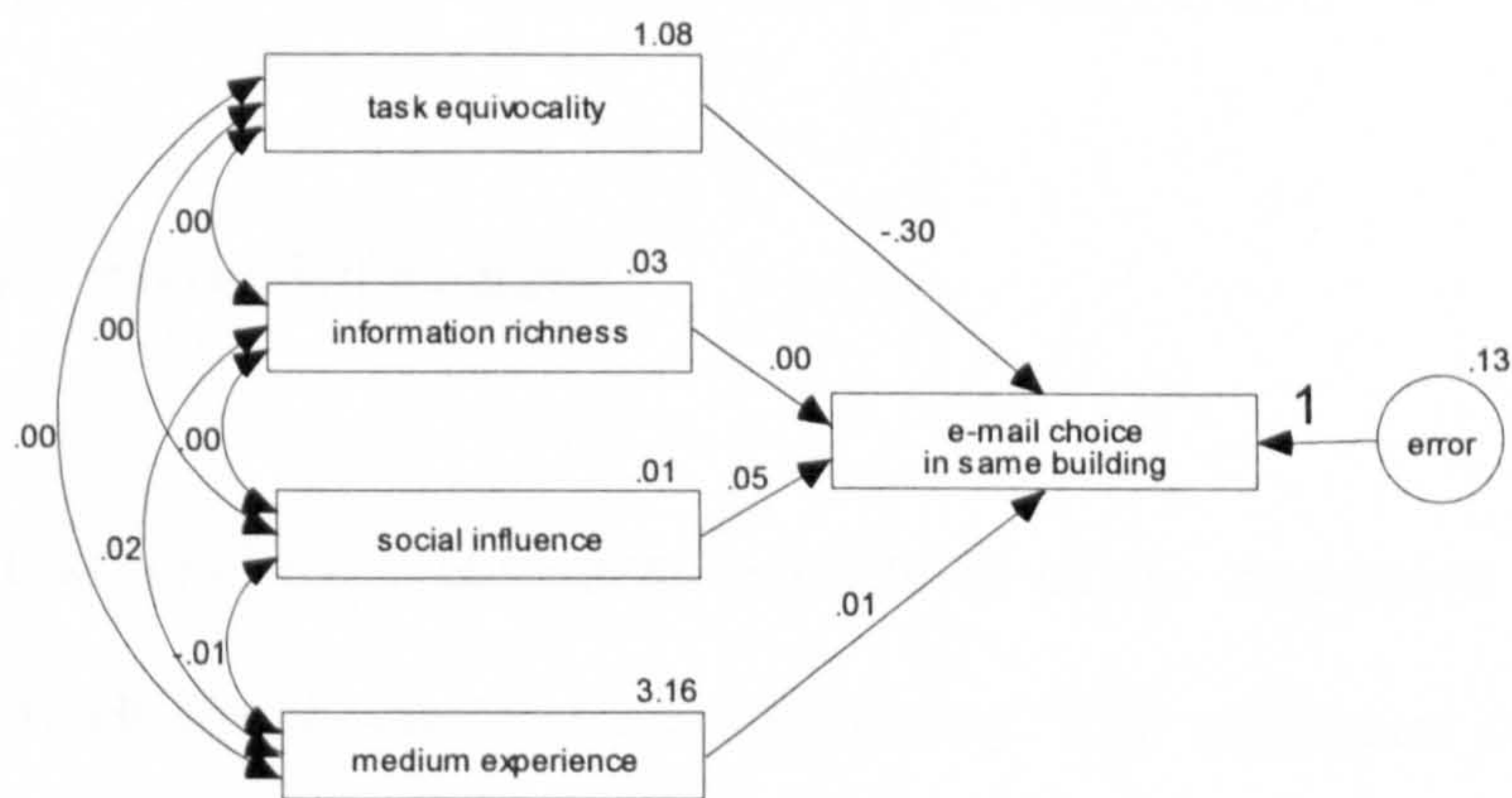
Figure 3.1



Results of the Analysis

Graphics output model1a

The path diagram output, for unstandardized model solutions, follows below. Here is the diagram with unstandardized values:



Text Output

Amos Text displays the maximum likelihood estimates:

Maximum Likelihood Estimates

Regression Weights:		Estimate	S.E.	C.R.	Label
choiceem <----- equnew		-0.299	0.007	-40.302	
choiceem <----- exper8		0.009	0.004	2.025	
choiceem <---- inforic8		0.002	0.045	0.042	
choiceem <----- soin8		0.052	0.089	0.578	
Covariances:		Estimate	S.E.	C.R.	Label
inforic8 <-----> soin8		0.000	0.000	1.290	
inforic8 <-----> equnew		-0.000	0.004	-0.000	
soin8 <-----> exper8		-0.011	0.003	-3.144	
soin8 <-----> equnew		0.000	0.002	0.000	
inforic8 <-----> exper8		0.019	0.007	2.863	
equnew <-----> exper8		0.000	0.040	0.000	

Discussion of Output1

Output 1 presents the results for the AMOS analysis of model 1. The results show that the maximum likelihood has been achieved, where estimate is the parameter estimate, S.E. is the approximate standard error and C.R. is the critical ratio.

Explanation of regression weights;

The first significant parameter estimate is of the regression weight from **task equivocality** to **choice of email** in the same building. The regression weight is estimated to be -0.299. Right next to that estimate, in the S.E. column, is an estimate of the standard error of the regression weight, 0.007. Right next to the standard error, in the C.R. column, is the critical ratio obtained by dividing the parameter estimate by its standard error ($-40.302 = -0.299/0.007$). Thus, using a significance level of .05, any critical ratio that exceeds 1.96 in magnitude would be called significant. In this case, since -40.302 is greater than -1.96, the regression weight of **task equivocality** to **choice of email** in the same building is significantly different from zero at the .05 level. The size of critical ratio shows a large significance of task equivocality influencing the choice of email when the sender and the receiver are in the same building. From the theory of task equivocality, the negative sign means that as the level of task equivocality increases then the Managers will choose E-mail less as a means of communication.

The second significant parameter estimate is of the regression weight from **medium experience** to **choice of email**. The regression weight is estimated to be 0.009 with the standard error of 0.004. The critical ratio is 2.025, and since its greater than 1.96, the regression weight of **medium experience** to **choice of email** is significant at .05 level. This suggests that the choice of email is influenced by the experience of the communicator.

The remaining two parameter estimate of regression weight of **information richness** to **choice of email** and **social influence** to **choice of email**, each have a critical ratio of 0.042 and 0.578 respectively. Since those two critical ratios are less than 1.96, therefore it is deemed not significant at .05 level. This means that **information richness** does not directly influence **choice of email** and **social influence** does not directly influence **choice of email**.

Explanation of Covariances;

The first significant estimate of the covariance is between **social influence** and **medium experience**. The covariance is estimated to be -0.011, standard error of 0.003 with critical ratio of -3.114. Since -3.114 is greater than -1.96, then the covariance between social influence and medium experience is significant at .05 level. The negative correlation between the two covariance implies that if the subjects are influenced by their superior, co-worker to use email then they are not influenced by email experience or if the subjects are influenced by email experience then they are not influenced by their superior, co-worker to use email.

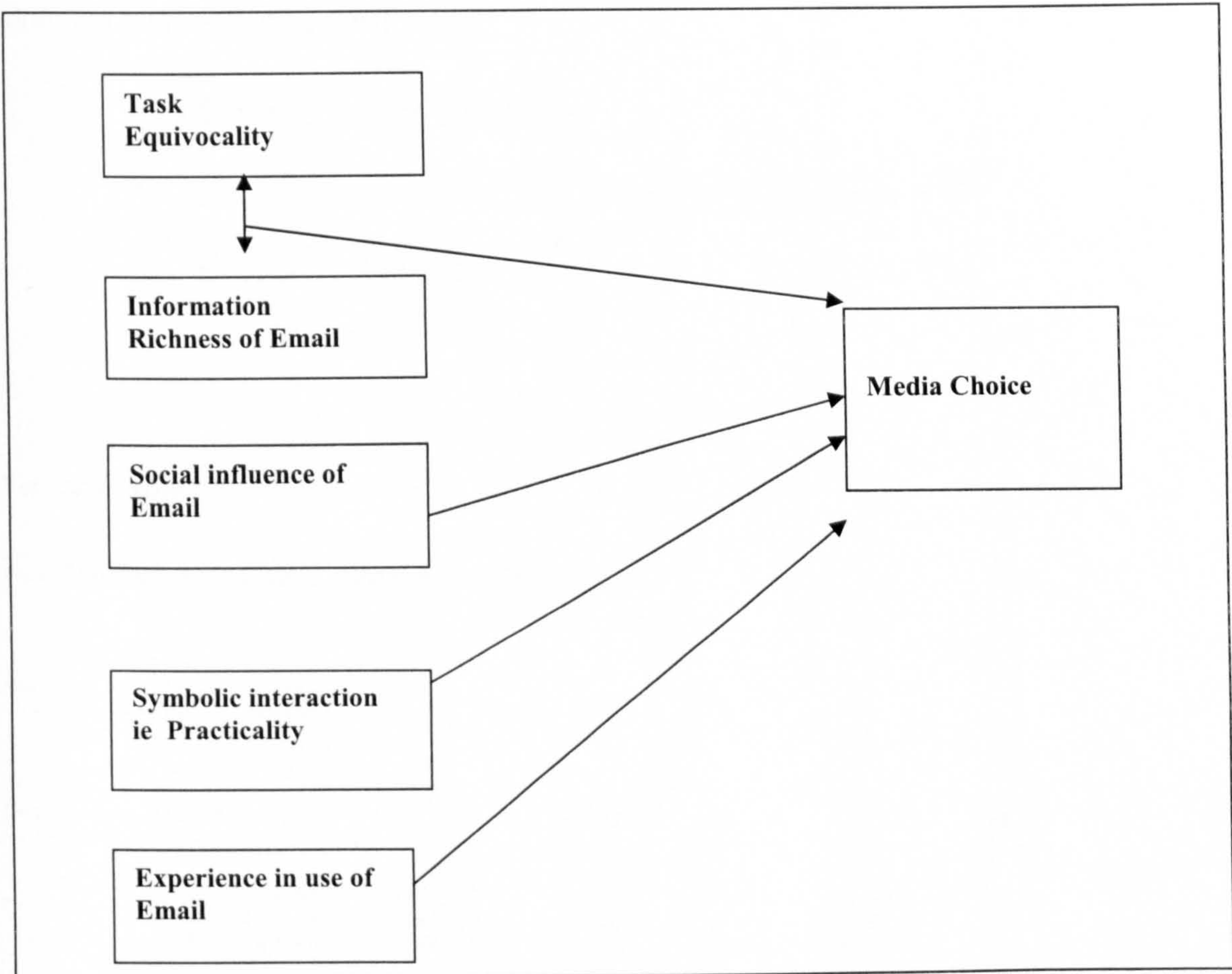
The second significant estimate of covariance is between **information richness** and **medium experience**. The covariance is estimated to be 0.019, standard error of 0.007 with critical ratio of 2.863. Since 2.863 is greater than 1.96, then the covariance between information richness and medium experience is deemed significant at .05 level. What this means is that the more experience the subject has with email the more they will perceive email as a rich medium.

The remaining four parameter estimate of covariance of **information richness** and **social influence**, **information richness** and **task equivocality**, **social influence** and **task equivocality** , **task equivocality** and **medium experience**, each have a critical ratio of 1.290,0.000,0.000,0.000 respectively. Since those four critical ratios are less than 1.96, therefore it is deemed not significant at .05 level. This just means that none of these sets of covariances have any significant influence on each other.

To interpret good fit of the model mean that the endogenous variables are strongly predicted. The standardised model solution was calculated to produce the squared multiple correlation value, where the value is the proportion of its variance that is accounted for by its predictors. For this model the squared multiple correlation value of Email choice was estimated to be 0.435. This means that, Task equivocality, Information richness, Social influence and Experience account for 44.5 percent of the variance of Email choice under the condition that the sender and receiver are in the same building.

8.5.3. Analysis of model 2

Figure 3.2

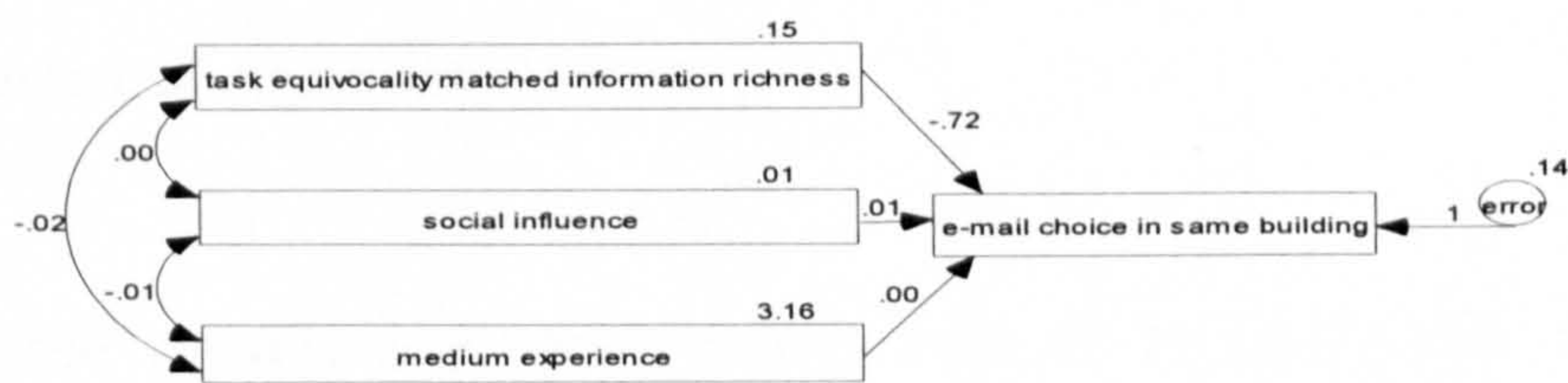


Results of the Analysis

Explain how values for equiv/IR match were calculated

Graphics output model 3a

The path diagram output, for unstandardized model solutions, follow below. Here is the diagram with unstandardized values:



Text Output model 3a

Amos Text displays the maximum likelihood estimates:

Maximum Likelihood Estimates

Regression Weights:	Estimate	S.E.	C.R.	Label
choiceem <---- equ01_01	-0.723	0.021	-33.772	
choiceem <----- exper8	0.004	0.005	0.934	
choiceem <----- soin8	0.005	0.096	0.057	

Covariances:	Estimate	S.E.	C.R.	Label
equ01_01 <-----> soin8	-0.000	0.001	-0.570	
exper8 <-----> soin8	-0.011	0.003	-3.144	
equ01_01 <-----> exper8	-0.019	0.015	-1.266	

Discussion of Output2

Output 2 presents the results for the AMOS analysis of the combined hypotheses 2. The results show that the maximum likelihood has been achieved, where estimate is the parameter estimate, S.E. is the approximate standard error and C.R. is the critical ratio.

Explanation of regression weights;

The significant parameter estimate is of the regression weight from **task equivocality matched information richness** to **choice of email** in the same building. The regression weight is estimated to be -0.723. Right next to that estimate, in the S.E. column, is an estimate of the standard error of the regression weight, 0.021. Right next to the standard error, in the C.R. column, is the critical ratio obtained by dividing the parameter estimate by its standard error ($-33.772 = -0.723/0.021$). Thus, using a significance level of .05, any critical ratio that exceeds 1.96 in magnitude would be called significant. In this case, since -33.772 is greater than -1.96, the regression weight of **task equivocality matched information richness** to **choice of email** in the same building is significantly different from zero at the .05 level. The size of critical ratio shows a large significant of **task equivocality matched information richness** influencing the choice of email when the sender and the receiver are in the same building. From the theory of task equivocality and information richness, the significance of this path shows that subjects do match information richness of communication media to the tasks equivocality encountered.

Whereas in the earlier model which tested information richness separately, the result does not show any significant direct influence on the email choice. One explanation could be that subjects combined the matching between the perceived media richness with the task at hand to come to the conclusion of media choice. The negative sign just means that the higher the level of richer media is required to communicate task with high equivocality, email will be chosen less as a means of communication.

The remaining two parameter estimate of regression weight of **social influence** to **choice of email** and **medium experience** to **choice of email**, each have a critical ratio of 0.934 and 0.057 respectively. Since *those two critical ratios are less than 1.96*, therefore it is deemed not significant at .05 level. This means that **social influence** and **medium experience** do not directly influence **choice of email**.

Explanation of Covariances;

The significant estimate of the covariance is between **social influence** and **medium experience**. The covariance is estimated to be -0.011, standard error of 0.003 with critical ratio of -3.114. Since -3.114 is greater than -1.96, then the covariance between social influence and medium experience are significant at .05 level. The negative correlation between the two covariance implied that, if the subjects are influenced by their superior, co-worker to use email then they are not influenced by email experience or, if the subjects are influenced by email experience then they are not influenced by their superior, co-worker to use email.

The remaining two parameter estimate of covariance of **task equivocality match information richness** and **social influence, task equivocality matched information richness** and **medium experience**, each have a critical ratio of -0.570, -1.266 respectively. Since those four critical ratios are less than -1.96, therefore it is deemed not significant at .05 level. This just means that none of these sets of covariance have any significant influence on each other.

To interpret good fit of the model as meaning that the endogenous variables are strongly predicted. The standardised model solution was calculated to produce the squared multiple correlation value, where the value is the proportion of its variance that is accounted for by its predictors. For this model the squared multiple correlation value of Email choice was estimated to be 0.351. This means that, Task equivocality match Information richness, Social influence and Experience account for 35.1 percent of the variance of Email choice under the condition that the sender and receiver are in the same building.

When trying to compare the two models to interpret good fit, the squared multiple correlation of both models were estimated to be 0.435 and 0.351 respectively. This means that for model 1 present, Task equivocality, Information richness, Social influence and experience to account for 43.5 percent of the variance of Email choice. For mode 2, present that Task equivocality match Information richness, together with Social influence and experience to account for 35.1 percent of the variance of Email choice. Both models provided a reasonably similar percentage that account for the variance of Email use. To determine a good fit of the model by judging on squared multiple correlation, would point

that model from model1 is a better fit of the two because it offer a reasonably better interpretation of a good fit as meaning that the endogenous variables are strongly predicted. Hence, under the situation where sender and receiver are in the same building the higher the percentage would indicate that model from model1 can reproduce the observed correlation or covariance better in the event of repeating the experiment.

This initial finding is interesting, since IR theory say it should match richness with equivocality But here, it found that equivocality by itself is better predictor of choice. Perhaps existing measures of IR , especially for email, are not good enough. Or perhaps ingrained cultural influence chooses email less for high equiv tasks irrespective of whether the subject perceives email as high or low IR.

8.6. Equivocality: How much does it explain?

So far the results have shown that equivocality has been relied upon in media richness theory to explain managers' choice of communication media. The question is just how much can it explain?. In this study, equivocality of the five communication tasks was gauged by the subjects using a measure commonly used in prior research. The AMOS analysis results show that as the equivocality increases the choice of email decreases, under the scenario that the sender and receiver are communicating within the boundary of the same office building.

The equivocality ranking of the tasks studied in Table 10, the ranking order corresponds with that in D'Ambra (1995). As intended by the choice of tasks, there is also a good spread of equivocality.

Table 10: Equivocality of the Communication Tasks	
Communication Tasks (in order of equivocality from lowest to highest)	Mean Equivocality Score for corresponding question in D'Ambra (1995)
Task 1 (Question 5.1)	1.67
Task 2 (Question 5.2)	2.33
Task 3 (Question 5.3)	3.40
Task 4 (Question 5.4)	3.53
Task 5 (Question 5.5)	4.67

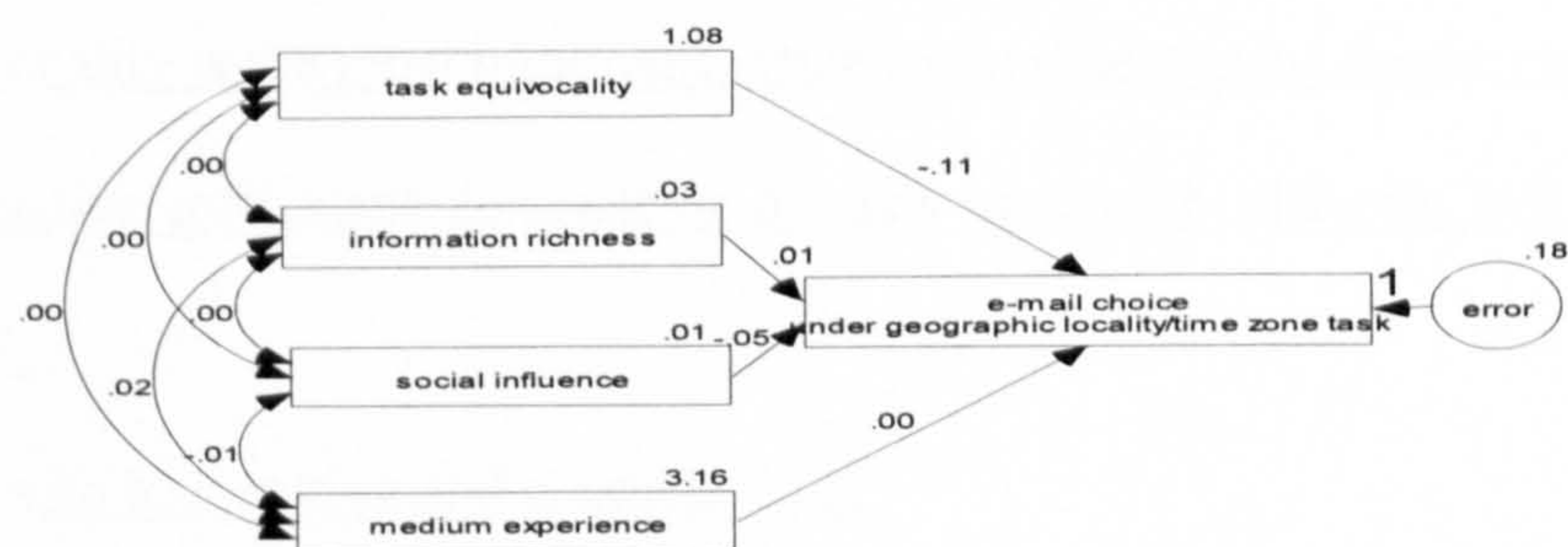
8.6.1. Choosing Multiple Communication Media

The finding from general equivocality discussion further suggests that, as equivocality increases subjects tend to choose more combinations of communication media to accomplish the task. For the most unequivocal task, see Task 1 (Figure 5.1), the subjects chose much fewer media compared to the most equivocal task, see Task 5 (Figure 5.5), where subjects chose almost all the media. As one subject said in relation to Task scenario:

"If the task is complicated I would use email, telephone calls, all sorts of things to put together the recommendation on what we should do...produce something, and then disseminate it, and look at it. But then we get together to have an other meeting...".

This suggests another explanation of the findings that IR/equivocality match is not a good predictor: high equiv is dealt with by multiple media and so the chance of choosing email is relatively less. An important point to be questioned here is whether this observation only holds where the other parties are in the same building. As other task characteristics in symbolic interaction theory are introduced, would the trend break down and equivocality cease to explain the observed media choice?. The AMOS analysis on the next page will show the results of the model tested against email media choice under three task characteristics of symbolic interaction theory. For example; Geographic locality/ Time Zone task, Group task Messaging, Urgency task.

8.7. Hypotheses 1 test under other Task Characteristics (Symbolic Interaction; Urgent task, Geographic locality/ Time zone, Group task messaging).



Summary table of Squared multiple correlation estimate of standardised model showed the differences when we introduce these task characteristics (For detailed analyses please see appendix)

Task Characteristics	Squared multiple correlation estimate
Task under the same location	35.1 %
Task under Urgency	10.9%
Task under Geographic dispersion/Time zone	5.6%
Task under Group messaging	0.04%

location to , urgent task messaging, group task messaging and geographic dispersion/time zone task, then the explanatory power of task equivocality decreases and for some tasks it became obsolete.

Equivocality can be a good explanation within a certain domain. Examining the data as a whole, the domain where equivocality can provide a good explanation has been mapped out in Figure 10.1. Equivocality is a good explanation where it is easy or feasible to contact the other person(s). For example, where the other person is in the same building. In such a situation, as noted above, equivocality explained the observed choice in this study perfectly.

Figure 10.1: Show the scope of Equivocality in providing explanation

Ease of contact	High	Where it is easy or feasible to contact the other partner(s). e.g. In the same building In different country	
	Low		Where it is not easy or feasible to contact the other person(s) e.g Group messaging Urgency In different country
		High	Low
		Explanatory power of Equivocality	

Meanwhile, as the ease of contact decreases or urgent task and group task come into the consideration, the ability of equivocality to explain the media choice similarly decreases. So where the other person is not in the same building equivocality is unable to explain the choice made. This is supported by the squared multiple correlation estimate of standardised model. The strength of the estimate will interpret whether a model is a good fit as meaning that the endogenous variables are strongly predicted. As summarised table results of the estimate has shown that as the media choice moves away from traditional task equivocality under the same location, the predictive power of the email choice also decreases and in some cases becomes obsolete.

The findings in relation to the different country variation of the tasks studied provided a good illustration of when equivocality can be a good explanation. The questionnaire data and the subjects' comments indicate that both email and telephone could be chosen for this task. In particular, telephone would be chosen if the managers can be easily reachable through telephone, such as where they are in their office or during office hours; while email would be chosen if the managers are not reachable, such as when the other person is not in their office or it is not during office hours. In other words, if the other person is easily contactable then equivocality can explain the managers' choice of using the telephone because telephone is the next richest communication media after face-to-face. But when it comes to the choice of email, equivocality fails to offer any explanation. Other task characteristics need to be invoked to explain the choice.

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8.10. Issues in Prior Studies

The above discussions have demonstrated that as the ease or feasibility of contact decreases the explanatory power of equivocality decreases also. In fact once outside a certain domain equivocality would have difficulty explaining the media choice, it is necessary in such situations to consider the other task characteristics. As one subject said "when you look at this thing it is the task that actually dictates the type of medium that you actually use". Table 10.2 summarises the different task characteristics and media that subjects in this study have chosen. Previous studies that focus on just equivocality (Trevino, Lendel Bodensteiner, Gerloff and Muir, 1990), are therefore questionable to the extent that their focus is too narrow. They failed to present a comprehensive story of the media choice process.

Table 10.2: Communication Media and Task Characteristics				
Media	Equivocality	Urgency	Geographic Locality/Tim e Zone	Group tasks
Face-to-Face	**			
Telephone	*	**	**	
Email	**	**	**	**
Memo			*	
* is where subjects indicated that they would choose the media for some task characteristics: ** is where the media seem to be the most popular and appropriate for each task characteristic.				

This thesis further argues that this rather narrow focus may have contributed to many of the mixed and unexpected results in prior studies. The fact that face-to-face was found to be richer and used more frequently for equivocal tasks in prior studies is only because the tasks used were primed towards face-to-face. In other words, by focusing on equivocality and task that lies within the domain that favours equivocality, previous results were biased against email.

If a fairer and broader comparison is adopted, then a case can be made that email is a much more versatile media. The present study suggests that although face-to-face is a preferable means to achieve tasks where the other person is in the same building, for tasks involving geographic locations, or where the other person is not otherwise easily contactable, email dominates the choice. And while email is relatively popular across all task characteristics, the same can not be said of face-to-face. This suggests that email is in fact a much more versatile communication media; it is capable of handling a broader range of task characteristics.

Chapter 9.

This study is based on the work of many researchers over the last 40 years by using a questionnaire design that allowed various variables, both rational and social, to explain the real manager's media choice in the real organisation. The study has made three contributions to the media selection literature.

First, it has reviewed the previous work in media selection, organised , and explained it. The literature review illustrates that the basis for the rational theories of media selection (task equivocality matching with information richness of each media) are well founded. Task equivocality includes concepts such as "matching the task high in equivocality to medium high in richness and matching task low in equivocality to medium low in richness" , set of criteria in the present study. In fact, when studying the underlying concepts of information richness variable, it becomes clear that the emphasis is on the personal perception of the sender to the media,(self-orient). When the underlying concepts of task equivocality matching ,"other-oriented" variables are examined, it becomes clear that the emphasis is on accommodating the communication partner. These notions are true to the concepts of information richness and matching task equivocality situations. This observation shows why the rational theories (information richness and task equivocality) were the first to be proposed as researchers investigated the area of media selection and how significant results were obtained in both rational theories.

Second, the study has illustrated, through the large number of variables that are important in the media selection process, at least one of the reasons that the area of media selection is so complex. It has also shown why consistent explanations were not found for media selection using rational theories, since some of the reasons given (Task urgency, Group messaging task and Geographic/time zone) for media selection are not in a major rational theory. The use of multiple variables from rational and social theories produced results that would not have been obtained using rational theories alone.

Third and perhaps most importantly, the study has created the basis for a model of media selection decision making. It shows that managers tend to select traditional media as a means of communication to resolve tasks that are high in equivocality match with media high in richness (ie face-to-face and telephone). But the notion of equivocality match information richness only explains media selection under a situation where the sender and receiver are in the same company building. As other task characteristics under the notion of Symbolic interaction theory (Task Urgency, Group messaging task and Geographic/time zone) are introduced, the equivocality match information richness decreases in explanatory power of media selection process and in some cases becomes obsolete. In other words, where managers tend to favour traditional media (face-to-face and telephone) to resolve task equivocality match information richness is when communicating within the same building. On the other hand under different task characteristics where distance, time constraint and group task messaging are the factors, managers do however prefer modern communication of Email as a means of resolving the issues. This observation is supported by results from the literature showing the impact of other social theories on behaviour, in which those managers at the top of the organisation more often choose media considered to

be low in media richness, and those at the managerial level are more likely to use media that allow rich communication.

These facts lead to a model in Hypotheses 1, for media selection supported by the literature. The model states that most equivocality task match information richness explain the media choice very well when the sender and receiver are in the same building. But modern communication such as email is richer than past research has predicted. If a broader task characteristics were included in the test, Email would rival the traditional media if not dominate the media selection process. The model is useful because it suggests the order of importance of some of the variables in the decision process and also because it supports the findings in the literature. The model shows that many variables are important in the media selection process. It accommodates the rational theories of media selection because it suggests that task equivocality matches with information richness of media is the default selection criterion with other variables such as "other task characteristic" Symbolic interaction theory (task urgency, group messaging and geographic/time zone) offer more explanatory power as they are present. What the model does not support is the social influence(superior/co-worker influence), institutional influence and experience. The importance of this status, while mentioned by some authors, did not appear as a main theory to influence media selection in this research. This leaves open the question of when the media becomes mature and reaches critical mass, then the manager's choice of media selection process might not depend on the influence of superior, co-worker and experience to encourage email use.

Implication for research in practice

Modern communication process in organisation

This thesis started by stating that modern communication constitutes importance to manager's media choice (if not greater importance than past studies suggest) mode of disseminating and sharing information. It provides a forum where issues, whether pertaining to the organisation or to the individual, can be addressed and resolved. The modern mode of communication far exceeds what is possible with the formal information system. Interpersonal, or face-to-face, communication has been the traditional and primary means of this organisation process. With organisations investing millions of pounds into information technology, individuals have at their disposal many modern communication technologies. What did this do to the organisation communication process?.

Under the media richness school of thought, modern communication technologies are viewed as incapable of delivering "rich" information (Daft 1987), compared to face-to-face. In ranking communication media from "rich" to "lean" the basic argument is that the "rich" media is better for equivocal tasks. The literature adopting this view tends to suggest that face-to-face remains the best communication medium for organisation communication.

This raises questions about the values and benefits of investment on information and communication technologies. However, this thesis submitted and has shown that, if a broader and more realistic perspective is adopted, one that takes into consideration the broad range of task characteristics and does not favour any communication media, modern

communication technologies are adding value above and beyond that of traditional media. Modern communication technologies both complement and supplement the informal as well as formal communication process in organisations. The following draws out some of the implications in relation to modern communication processes and organisational information processing.

Role of Modern Communication Technologies

One implication of this study is that modern communication technologies augment both the informal and formal communication process. By adopting a fairer and more realistic task context this study has shown that modern communication technologies have broadened the scope of communication and enabled managers to handle larger variety of tasks. As one author pointed out earlier;

" The issue is not one of the technologies driving out the use of richer media, but rather of the technologies enabling communication that otherwise would be unlikely to occur" (Kiesler 1992).

In addition, while face-to-face remains highly appropriate and popular in some situations, in other contexts modern communication media can provide a preferable solution. Indeed, it appears that media like email can be a far more versatile medium for informal and formal communication. Subject to personal inhibition towards modern technologies and social context the person is in, email can and does handle a different variety of communication tasks.

Modern communication technologies are opening up communication possibilities not otherwise possible. Among some of these possibilities are: efficiency and speed of communication, co-ordination with and control of multiple persons, ability to sort, send, and retrieve messages at any time and place. Managers recognise these possibilities and do capitalise on it.

Organisation Information Processing

Another implication that follows from the above is in relation to organisational information processing. As organisations become flatter, customer-focused and dynamic, effective organisational information processing requires what Galbraith (1973) called the creation of lateral relations, the ability to convey information beyond the confines of hierarchical or formal organisation structure. Modern communication technologies, in strengthening the informal communication process in organisations, directly contribute towards the creation of lateral relations. This is so because lateral relations, by definition, requires the ability to cut across the formal organisation structure and to exceed the space-time boundary. The possibilities opened up by modern communication technologies enable this.

Strength and weakness of the research

As with all research the findings need to be interpreted with regard to the limitations. The study was conducted based on 423 questionnaire responds across three industrial sectors, explicitly to provide generalisability. An additional concern centres on limitation to generalising these findings. Clearly , the respondents in this sample were highly educated, since they were all top management executives. It is difficult to predict how well results might generalised to settings that involve a greater array of hierarchy of positions. The fact that the research was driven by theory lends some protection to the problem of generalisability (Anderson, 1987).

At the same time, this sample was atypical in positive ways. Many studies of electronic mail in the past have been conducted in organisations that adopted the technology quite recently. Johansen (1976) argues persuasively that conclusions from such studies are highly suspect, because usage patterns have not had a chance to mature. Also, in many studies respondents have unequal access to the medium, in terms of obtaining accounts, terminals or other hardware, appropriate training, non-punitive budgeting, support staff and other facilitating features. The sites for the present study had had email experience an average of 6.35 years, provided full access to all, had critical mass of regular users, provided expert training and support from a trained full-time staff and the system had strong top-level management support. Thus the findings have enhanced validity in the light of these factors.

A second concern is that despite the use of a sophisticated causal modelling program this research only used the path analysis technique. This is the original structural equation modelling technique which concerns only observed variables and lack of direct way to represent latent variables. None the less this researcher believed, it is important to know about the basic principles of path analysis because many of these same ideas hold for more complicated kinds of models for future research. For instance, the evaluation of the structural portion of a hybrid model is essentially a path analysis conducted with estimated covariance among the latent variables. Researchers who master the fundamentals of path analysis will be better able to understand and critique a wider variety of structural equation models.

Thirdly, there are some points that need to be taken into account when studying the results of this research. The original questionnaire was conducted in English version, however, the questionnaire had to be translated into Thai before it was used with all the Thai executive managers. It was understood that Thai managers would have difficulty in responding to the questionnaire in an English version. Therefore, some shades of meaning may have been lost in the process of translation. Moreover, the researcher has no way to find out if the particular selected managers completed all the questionnaires. This is a common problem for posted questionnaires (Gilbert, 1993). It is very useful in terms of gaining a large sample size of the data for the purpose of generalisability but risky in terms of accuracy.

Fourthly, this research has been designed and executed explicitly to probe a large sample of real top executive managers working in real organisations to test and integrate

competing theories of media behaviour. Too often researchers have opted for a small sample size or artificial sample to test this field. The natural setting greatly enhanced the basis for external validity of research in this field.

Future Studies.

This research has tried to formulate the media choice model from two contrasting theories and disciplines (rational and social theories) to try and answer some conflicting questions that arise from past studies. But, what is the best method to combine the rational and social theories into a model?. This study simply added the different influences using path analysis technique. Much advance model will require a deeper understanding of structural equation modelling programme in order to alleviate the model of media choice into another level.

Another, related dimension that distinguishes the CST (Critical Social Theory) perspective from positivist and interpretives on communication richness is the emphasis on people, who, as actors in a social or organisational context, themselves “process” data into information. This image stands in contrast to the assumption of most IS research, that the processing of data into information is primarily, if not exclusively, the job of computer hardware and software and that the role of the organisational actor is limited to “user” of both the output and the richness produced by the hardware-software system. The CST perspective is instructive for showing how organisational members are more than just knowing subjects; they are also actors-people who are more than just passive receptacles for data or meanings that are somehow transported or downloaded to them. They act to

contextualise a message by placing it within institutional arrangements in which they find themselves: "People act in terms of their own and not the observer's definition of the situation" (Schutz 1964). In general, further research in the area of CST perspective is needed to point us toward a rich, multi-layered, contextualised formulation of communicative interaction in electronic media. When people communicate, they do not send messages as electronically linked senders and receivers. They perform social acts in action situations that are normatively regulated by , and already have meaning within, the organisational context. As organisational actors, they simultaneously enact existing and new relationships with one another as they communicate. This CST approach is phenomenologically sensitive to the shaping and reading of action as meaningful. It does not treat meaning construction as a disembodied or political activity. The new research on CST perspective will allow further investigation as to how organisational actors formulate and reformulate their communications to achieve specific outcomes in action situations. It will also enable researcher to look closely at the "how" and "what" of communicative practice, in any type of media use situation.

Advancements in technical capabilities of the electronic media are also very likely to affect future research . As electronic media become more sophisticated, gaps between Email, Fax, face-to-face and telephone will disappear and newer technologies will emerge (Craig 1991). It will be more beneficial to include more modern technologies in the future study. Present suggestion is that there is room for greater reliance on Email in most communication situations and by extension, other electronic media such as Video conference, Computer conferencing with the potential for savings in air travel, time, meetings should be economically studied for cost potential.

Finally, research must also move beyond the dyad to consider the broader and pervasive influence of the organisational and national culture. A comparison of organisational culture can provide a relevant insight into source of social influence. For example some firms employ a dominant face-to-face mode as normative for doing business, whereas others rely more on written media and focus on document.

Another point worth mentioning is national cultural differences, clearly modern business is rushing at a rapid pace. This current research made it suggestion based on data collection of Thai sample populations. Is this study Thai specific, Asia specific or Worldwide in validity?. It is imperative, therefore, that knowledge about the effects of national cultural differences on the way organisations function is communicated to managers is studied and compared.

Both cultural norms are likely to affect both the media choices and the perceptions of media richness for these media. Social influences take a great variety of forms in organisation setting and national setting. The immediate social network is but one of a complex set of very real and significant forces on media communication.