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Messaging Media Perceptions and Preferences: An Exploratory Study

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Abstract

Although a significant amount of research has focused on traditional media choice and use and even on some of the “new” media, these studies have neglected Instant Messaging (IM) and Short Messaging Service (SMS). This study offers a novel exploration of students’ perceptions of and preferences for two new messaging media (IM and SMS) in the context of the use of other traditional and new communication media (face-to-face, telephone, and email) in their university learning activities. The findings reveal media richness is rated in decreasing order of face-to-face, telephone, IM, email and SMS. Face-to-face is the most preferred medium in most communication activities. Students preferred email in a manner similar to the telephone. This study has identified the importance of media experience, familiarity and frequency of use, when selecting media. The overall findings of this study support media richness theory.

Keywords

Media richness, new media, Instant Messaging, Short Messaging Service, traditional media, media preference

INTRODUCTION

The rapid development and diffusion of new communication technologies have offered people more options than ever before for communicating in organisational contexts and daily life. Among these new communication media are email, Instant Messaging (IM), and text messaging in the form of Short Messaging Service (SMS). These three electronic messaging media have different forms of interactivity (synchronous vs. asynchronous) and delivered over different electronic channels (over Internet vs. mobile telephone networks). They have been widely adopted both in workplace and personal interaction (Segerstad and Ljungstrand, 2002). However, much of IS research has, so far, focused primarily on email and other computer-mediated communication (CMC) technologies when investigating the business uses of communication technology in organisational settings. Previous studies demonstrate that people choose different media to fulfil their specific requirements. Many factors have been identified that influence media use. Despite these studies, however, we do not yet have a thorough understanding of individuals’ perceptions of and preferences for IM and SMS over other traditional and new media for communication. Academic interest in IM and SMS is only recent and fairly scattered. In particular, how university students perceive and adopt IM and SMS, in conjunction with other available media in their university learning, remains unanswered. IM and SMS are two popular communication media adopted widely by young generations (Grinter and Palen, 2004, Nysveen and Pedersen, 2002). Thus, understanding how students are using the IM and SMS media is of importance for a rigorous examination of the new information technologies’ development, use and social effects (Flanagin and Metzger, 2001). Also, today’s university students can be expected to be tomorrow’s business executives and they will carry their perceptions of media with them into the workplace.

Another gap in our knowledge of media perception and use is that much of the communication technology research tends to focus on a single technology at a time. As Rice (1993) noted, use of any one technology should be considered in light of the repertoire of other media available to fully understand when, why, and how any single medium is used. The study reported here contributes to the efforts to examine users’ behaviours and their views of why they adopt IM and SMS and how they perceive and choose these two media, in conjunction with other media (face-to-face, telephone, and email), in university contexts.

This study examines issues raised by the introduction of new communication technologies. By exploring students' perceptions of and preference for IM and SMS in the context of their use of other communication media, this study seeks to contribute to the body of understanding of media choice for communication within university student populations. Specifically, this paper describes a field study examining how university students perceive and choose five available media: face-to-face, telephone, IM, SMS, and email, in their learning and group collaborations.

This paper firstly explores the various functions of electronic messaging media. Secondly, research in IS literature describing and explaining media choice is briefly reviewed. Then two research questions are developed. This is followed by a description of the research method and the results of the data analysis. Finally, the paper concludes with a discussion of the implications of the findings in terms of the new media environment.

ELECTRONIC MESSAGING MEDIA

Email, a computer-based messaging system is asynchronous, quick and text-based, and allows written messages to be composed and edited on a computer screen and then sent either to an individual or to a pre-defined list of recipients (Rice and Webster, 2002). It does not need visual confirmation of the receiver's presence at the time of sending. Although it can be instantly transmitted, it is frequently stored for later attention. In fact, feedback is not guaranteed. Email communication shares many features of traditional written communication: it is indeed written using the same graphic system and monomodality as traditional writing. The ease of sending the message is considerably greater. As a specific CMC system, email has changed the way people keep in touch and the way business is done. It has become an integral component of the corporate culture in many organisations (McManus et al., 2002).

The IM system discussed in this paper refers to Internet-based synchronous text chat, with one-to-one or small group communication among users on the same system. IM systems of various forms have gained high popularity during the past few years, particular in young people's use. Commercial instant messaging systems such as AOL Instant Messenger, Yahoo Messenger, and Microsoft MSN Messenger have attracted millions of daily users in recent years (Segerstad and Ljungstrand, 2002). IM distinguishes itself from previous text messaging technologies by the predominance of users messaging with known others. IM uses a near-synchronous (cf. Ferrara et al., 1991) conversational tool by which the participants know that other participants are presently logged on, even though they are not located face-to-face and unable to take advantage of the multimodality that face-to-face communication allows. Thus, the time delay is much less compared to email interaction and the message will be read within seconds, in this regard coming closer to spoken communication. The interaction is characterised as near-synchronous since the messages have to be typed first and then transmitted, whereas telephone and face-to-face interaction are fully synchronous modes of communicating (Segerstad and Ljungstrand, 2002). The younger generation has already adopted IM (Grinter and Palen, 2004). But, IM is no longer just a facet of teenage life, it now speeds everything from naval operations to customer service (Cherry, 2002). According to a survey by Osterman Research, a technology research company, almost half of all U.S. and Canadian companies are using some form of IM (Patton, 2003).

SMS, a service for sending short text messages to mobile phones, is an asynchronous mode of communication. SMS is highly valued because it provides the opportunity of delaying the reception and the answering to a more appropriate time. Consequently, there is a very low threshold for sending such a message, such as merely trying out whether recipients take notice of the message, answer it, or even "escalate" the relationship by calling back orally. The second advantage of SMS is its privacy in contrast to oral calls: it is relatively certain that the SMS will be received by the individual to whom it is sent, without anybody else taking notice. Finally, the need for extreme shortness (typically limited to 160 characters) makes it legitimate to use conventionalised forms of writing: so that even shy people feel free to communicate because they do not have to expose themselves in a highly personalised way (Thurlow and Brown, 2002). Recent developments in mobile communication services imply that the mobile phone is becoming an increasingly important communication and information distribution medium. A study by Barwise and Strong (2002) reports an overall penetration of mobile phone at almost 70% in the UK in August 2001 and East Asia area is believed to be as high as 70-80% (Thurlow and Brown, 2002). In some user segments, such as the ages 18 to 24, there is a penetration rate of almost 80%. Voice is reported as the key application of mobile phones, but SMS sent from mobile phones is increasing very fast. In Barwise and Strong's study, they found that the use of SMS services is very high among the youngest users, about 93% of mobile users aged 18 to 24. Interestingly, SMS is used more on a daily basis than voice among users below 25 years (Nysveen and Pedersen, 2002).

Not only as a technology for communication but also as a text-based format like IM and online chat, the study of SMS is easily brought within the remit of CMC (Thurlow and Brown, 2002). University students are using email, IM and SMS, in conjunction with telephone and face-to-face interaction, to communicate and coordinate their actions both for learning and for social activities (Segerstad and Ljungstrand, 2002). However, academic

interest in IM and SMS is only recent and fairly scattered, though email has been an important topic in business research for more than a decade. Little is known about how students perceive these messaging media, compared with traditional media. Which medium is most preferred for accomplishing specific communication tasks in students' learning?

To answer this significant question, some basic insight into why individuals choose a particular medium for a particular task is necessary. Thus, prior research related to this study describing and explaining media choice within organisational contexts is briefly reviewed in next section.

PRIOR RESEARCH ON MEDIA CHOICE

There are many factors that influence media choice; such as the characteristics of the media the task characteristics, the purpose of the interaction, and the medium-task fit.

The present study focuses on a few primary media characteristics associated with two related theories: media richness and social presence. Both emphasise how communication media differ in the extent to which they "(a) can overcome various communication constraints of time, location, permanence, distribution, and distance; (b) transmit the social, symbolic, and nonverbal cues of human communication; and (c) convey equivocal information" (Rice, 1993, p.452). Media richness is defined as a medium's material capability to convey certain types of information (Daft and Lengel, 1986a). Communication media can be arrayed along a continuum of media "richness" based on each medium's capacity for immediate feedback, multiple cues, language variety, and the personal focus of sources (Daft and Lengel, 1984). Similarly, social presence theory argues that social presence is the degree to which a medium is perceived as conveying the presence of the communicating participants (Short et al., 1976). This social presence depends not only on the words conveyed during communication but also on a range of nonverbal and verbal cues and the communication context (Rice, 1993). Social presence is an important factor in communication with different communication media providing different levels of social presence. This study focuses on media richness theory, though a similar study could be done using social presence theory.

Daft and Lengel (1986b) categorised communication tasks based on uncertainty and equivocality. Task uncertainty is caused by a lack of sufficient information and can be overcome by acquiring additional information. Task equivocality is caused by ambiguity, the existence of multiple and conflicting interpretations about an organisational situation (Weick, 1979, Daft and Macintosh, 1981). When managers are confronted with equivocal cues, they must discuss the issues among themselves and gradually arrive at a common interpretation and frame of reference. A major difference between uncertainty and equivocality is in the information processing response of managers. Uncertainty leads to the acquisition of data. Equivocality leads to the exchange of subjective views among managers to define the problem and resolve disagreements (Daft et al., 1987). Daft et al. (1987) propose that equivocality is the barrier confronting communication media. The organisational response to equivocality is to create a solution rather than to find a solution in external data. The management group defines what events mean and enacts a solution. Thus, differences in task environments represent a variety of information processing requirements that may be satisfied by different communication media.

Media richness theory proposes that (a) media differ in richness; (b) tasks differ in information processing requirements; and (c) performance improves when managers use richer media for equivocal tasks and leaner media for unequivocal tasks (Daft and Lengel, 1986b, Daft et al., 1987). Individuals seek to match the richness of a communication medium with the complexity of the communication task at hand for better performance. Highly equivocal tasks call for richer media that allow a higher degree of personal interaction, while less equivocal tasks can be performed through lean media. The "medium-task fit" explanation of media choice is supported by strong evidence, while empirical and anecdotal evidence illustrates sometimes contrasting views on why new technologies are selected, the tasks for which they are best suited, and people's perceptions of these media (for review see Guo, 2002).

Based on Daft and Lengel's (1986b) media richness criteria, face-to-face interaction supports the highest level of interactive activities by providing continuous feedback during the interaction, various social cues and body language, and enables unpredictable and spontaneous remarks. Compared to face-to-face interaction, telephone (verbal) communication is considered less rich since communicators are not physically present. However, telephone communication is still ranked quite high in terms of media richness since it provides synchronous communication. Empirical studies show that telephone calls often function as a full substitute for face-to-face meetings (Licoppe and Heurtin, 2002). The telephone enlarges the social networks of individuals by adding communication that otherwise would not occur (Geser, 2004). The telephone also facilitates contacts during times when individuals do not feel disposed to present themselves visually. One more reason for the relatively rich ranking of the telephone is that voice contacts have capacity to articulate personal emotions through verbal cues (Geser, 2004). Since the work of Daft and Lengel (1986b), email has been added to the set of available

communication media as a new medium and numerous studies have been conducted to examine the role of email in organisational communication practice. Email was added to the richness continuum later at a point between the telephone and written document (Burke and Chidambaram, 1999, Steinfield, 1986, Trevino et al., 1987, Trevino et al., 1990, Zmud et al., 1990) since email does not support the level of information richness typified by a face-to-face or telephone exchange.

Among the three electronic messaging media, email, IM, and SMS—while they appear to differ—there are several important characteristics in common. Each requires written communication by typing. Writing the message requires more physical effort and a longer time than speaking. Each message is presented in text only and what can be expressed is constrained by the lean written system, which in this case is alphabetic. More than that, all of them lack the full range of paralinguistic cues, providing no verbal or social clues because communicators are not visually or auditorially present. The feeling of contact or social presence via each of them is lessened and communication is likely to be described as less friendly, impersonal, and task-oriented (Rogers, 1986). However, all such types of communication disregard distance as a barrier since written communication is possible even with those physically separated in time and space. In terms of differences, IM is a semi- or near-synchronous medium as the interlocutors are on-line simultaneously, while email and SMS are fully asynchronous.

This study builds on previous research that investigated media richness ranking and examined media richness theory in traditional and new media landscapes. According to media richness criteria, IM interaction supports the higher level of interactive activities by providing continuous feedback during the interaction, without various social cues and body language available due to the lack of physical presence. SMS provides less support for interaction, no social cues and body language are available. However, little is known about how IM and SMS are placed in media richness ranking, compared to traditional and other new media. No empirical study has reported how IM and SMS are preferred by university students for tasks that require different levels of media richness. The goal of this study is to explore the media richness ranking and the preferences for this wider range of communication media. These research questions guided this study:

RQ1: How are old and new media rated in terms of media richness?

RQ2: How are old and new media preferred for communication activities theoretically requiring different levels of richness?

METHOD

Data for this study were collected from a large university in Australia. 50 undergraduate students participated in this study. The average age of the subjects participating in the study was 20 years and 74% were male. The questionnaire was completed in classrooms and required approximately 20 minutes to complete.

The questionnaire was developed to measure personal and media-related variables, perceived media richness, media preferences, and communication activity equivocality.

Perceived media richness was measured with a 4-item scale developed by D'Ambra and Rice (1994) across five available media: face-to-face communication, the telephone, email, IM and SMS. An example item is: "if communicators are unclear about something or do not understand it, the medium (such as face-to-face communication, the telephone, etc.) allows them to ask questions and obtain answers as they arise". This item investigates the way the medium facilitates feedback. Three other items have a similar structure to tap the other characteristics of the medium. The respondents were asked to indicate the extent to which they agreed or disagreed with the items on a 7-point scale ranging from 1=strongly disagree to 7= strongly agree, where higher values indicated greater media richness. The reliabilities of these scales also were generally satisfactory (.74, .76, .64, .76, .69 for face-to-face, telephone, email, IM, and SMS respectively).

Media preference was measured by asking the respondents to specify their ranking of preferred media for each of six communication activities. These communication activities were originally developed by D'Ambra (D'Ambra, 1995) to capture daily organisational communication activities and have been used in previous media use studies (e.g., Guo, 2002, Rice et al., 1998). All communication activities were rephrased to fit the university context. These communication activities showed high loadings on a single-situation dimension. Table 2 below provides descriptions for each activity. Media preference was measured by directly asking the respondents to specify their preference rankings for each of the communication activities when they collaborated with their group. For each communication activity, for each medium, these rankings were scaled as 1=chosen 5th, 2=chosen 4th, 3=chosen 3rd, 4=chosen 2nd, and 5=chosen 1st.

Each communication activity's equivocality was measured by using Goodhue's (1995) three-item scale. The items included "This activity is not well defined," "This is a non-routine activity," and "This is an activity I have never dealt with before." The respondents were asked to assess each activity's equivocality on a 7-point scale

ranging from 1=strongly disagree to 7=strongly agree, where the higher values indicated more equivocality of the communication activity. The Cronbach alpha reliability for the three-item equivocality mean scale was generally satisfactory, ranging from .59 to .73 across activities.

RESULTS

Research question 1 asked how old and new media were ranked in terms of media richness. To answer question 1, a one-way ANOVA followed by post hoc significance tests were used to identify how media differed in media richness ranking. Table 1 shows the analysis results. It is clear that there were significant media richness differences across traditional and new media ($F(4,245)= 135.10, p<.001$). It was confirmed by a Kruskal-Wallis test ($\chi^2(4)=167.69, p<0.001$). Overall, face-to-face was perceived to be richest, followed in decreasing order by telephone, IM, email and SMS, which is consistent with media richness theory.

Dependent Variable	F-t-F	Tel	Email	IM	SMS	F-value
	Mean (S.D.)					
Media Richness	6.4 (.66)	4.86 (.93)	3.55 (.96)	4.13 (.99)	2.59 (.78)	135.10***
	Mean (S.D.)					
Media Preference	4.02 (.64)	3.46 _a (.55)	3.68 _a (.61)	2.34 (.66)	1.51 (.51)	154.95***

Note: _{a,b} the same letter in the subscript within the same row means that the two results are not significantly different from one another. * $p<.05$, ** $p<.01$, *** $p<.001$

Table 1: Means and Difference Tests of Media Richness and Media Preference, across all 6 communication activities

Communication Activity	CA-E	F-t-F	Tel	Email	IM	SMS	F-value
1. Convince group members to support your ideas	3.46	4.94	3.48	2.78 _a	2.62 _a	1.18	183.67***
2. Discuss group problem with Lecturer in Charge (LIC)	4.27	4.74	3.74	3.34	2.02	1.16	250.74***
3. Advise your part of project to group members	2.89	3.48 _a	2.98 _{ab}	4.28	2.54 _b	1.76	34.30***
4. Want clarification from LIC for a critical issue of your group project	3.55	4.53	3.84	3.38	2.06	1.18	175.93***
6. Clarify a procedural matter with your group member	3.31	4.04 _a	3.48 _a	3.6 _a	2.34	1.55	45.07***
6. Schedule a group meeting in two weeks time	2.55	2.68 _{ab}	3.12 _a	4.5	2.46 _b	2.24 _b	29.30***

Note: CA-E: communication activity equivocality. _{a,b,c}: the same letter in the subscript within the same row means that the two results are not significantly different from one another. * $p<.05$, ** $p<.01$, *** $p<.001$.

Table 2: Mean and Difference Tests of Media Preference for 6 Communication Activities with Variety Equivocality

Research question 2, which asked how old and new media were preferred for communication activities theoretically requiring different levels of richness, was examined by a series of ANOVA tests using media as the grouping variable on overall six communication activities (F value in Table 1) and at each individual

communication activity level (F values in Table 2). Further follow-up tests were used to determine how the five media differed in terms of media preference. Table 1 clearly shows the significant mean media preference differences across all six communication activities. The overall ranking of media preference, from highest to lowest, is face-to-face, telephone/email, IM, and SMS, where there was no difference between telephone and email in terms of media preference. Table 2 shows media preference rankings for each of the six communication activities. Face-to-face was ranked first for the first three most equivocal communication activities. Email was ranked first for the two least equivocal communication activities, where face-to-face and telephone were both ranked as the second preferred media. IM was ranked as the second last preferred and significantly different from other media preferences in three out of six communication activities. SMS was always ranked as the last preferred medium across all communication activities although in certain situations SMS was equally preferred with IM, or email, or face-to-face.

DISCUSSION AND CONCLUSION

This study was designed to examine how two new messaging media, IM and SMS, were perceived and preferred, in conjunction with face-to-face, telephone, and email media in university students' learning and group collaborations. The primary interest of this study was to find out how university students perceive IM and SMS and what the students are using the IM and SMS service for in their learning. It aims to contribute to media choice theory by bringing new messaging technologies into consideration.

Research question 1 asked how these two new messaging media were ranked in terms of media richness ranking, compared with face-to-face, telephone and email. The results obtained in this study generally support media richness theory. Face-to-face was ranked highest, followed in decreasing order by telephone, IM, email, and SMS. IM, as a semi-synchronous interaction medium, was perceived higher than email in media richness. Since participants have to be online for communication, the time delay in IM is much less compared to email, and in this respect comes closer to spoken communication. However, it is physically much more of an effort and more time consuming to write than to speak. Thus, IM is less interactive than face-to-face and telephone, while better than email and SMS, which are asynchronous and text-based. Due to the length limit, SMS is unable to provide as much information as email, and thus is perceived as less rich than email.

To assess whether media were preferred differently for fulfilling each specific communication activity, media preference was compared across media at overall and single communication activity levels. The results indicated that the traditional interpersonal communication media (face-to-face and telephone) were overwhelmingly rated the highest or the second highest for communication activities requiring discussing, convincing, and clarifying. Email shows popularity in information exchange or activity arrangement, which are less equivocal. Two other relatively new messaging media, IM and SMS, were rated lowest in all situations, even though the value increased with the decrease of activity equivocality. In general, across media, as equivocality of communication activity decreased, face-to-face ranking generally decreased, the telephone ranking decreased slightly, and three messaging media ranking increased. The results are generally as expected by media richness theory, except IM that had higher media richness ranking and lower preference ranking, compared to email. Consistent with past research and despite a growing number of increasingly complex and powerful media choices, nothing quite compares to face-to-face communication for fulfilling most communication requirements. Previous studies have demonstrated that face-to-face communication is the most preferable medium for communication in wide variety of situations (Flanagin and Metzger, 2001, Guo, 2002, Rice, 1993, Rice et al., 1998).

Messaging media are functionally different to traditional face-to-face and telephone communication and were less preferred, even in less equivocal situations. Among them, email, a medium used widely over the last decade, outperformed the other two newly-adopted messaging media. There are several possible reasons for this result. Firstly, the adoption of technology may change over the diffusion process (Venkatesh and Morris, 2000). Compared to IM and SMS, email is an "old" new communication medium in Australia. It has been adopted widely in Australian organisations and personal life. Unlike past research (Rice, 1993) where email was at an early diffusion stage and was separated from traditional media in terms of preference, in this study overall respondents perceived email to be equivalent with traditional telephone for fulfilling communication requirements. This is consistent with recent research that found new communication technologies to be functionally equivalent with more traditional media (Flanagin and Metzger, 2001). Secondly, compared to email, IM and SMS diffusion is still relatively low. Moreover, compared to email, IM and SMS are still not widely used for non-personal communication. Despite their increasing utility in workplace and personal life, IM and SMS have not been widely adopted by the public at large. Thus, the low ratings for their preference may reflect unfamiliarity and low use of them for communication. This result echoes what happened to email at the time it was introduced (Rice, 1993), when Rice noted that "stable and higher assessments of email might await greater diffusion and familiarity" (p.479). This indicates that the use of new media evolves as users become more familiar with them. This also suggests that future research should consider whether the almost certain increase in use of the technology for communication will influence the use of this medium (Williams and Rice,

1983). Results identified in this study are in line with channel expansion theory, proposed and examined by Carlson and Zmud (1994). They suggest that as users gain experience with the medium, messages, and fellow participants, their perceptions will evolve. In particular, over time, users will likely experience an expansion in channel functionality. Given enough time and ingenuity, distributed interaction may even rival face-to-face interaction in information richness. Their study indicates that the richness of a medium may depend less on the characteristics of the channel, and more on the perceptions of the user, experience and knowledge of the subject topic, and experience with the communication partner(s). This explanation implies that the difference in perceptions of users about acceptable ways of using media can also be explained by an emerging understanding of media use that goes beyond the usual technology adoption period (Poole and DeSanctis, 1990, Orlikowski, 1992)

This study represents a first step toward extending media choice theory by including IM and SMS in examining individuals' media perceptions and preferences within the context of university students. Thus, tradeoffs between internal validity and external validity were made and generalisability was limited so that internal validity would be enhanced. Most people will point first to the small sample size of this study. Indeed, small sample size reduces the external validity of this study. A small sample size provides less statistical power. The data for this research are cross-sectional rather than longitudinal. This study identified that, even for new technologies, new media may become folded in with more traditional media over time. Thus, a longitudinal research design collecting media perception and use data at different media diffusion process stages would further our knowledge toward understanding how uses of new technologies evolve as users become more familiar with them. Nevertheless, this study has identified the importance of media experience, familiarity and frequency of use.

One contribution of this study is to extend media choice theories by including two new messaging media, IM and SMS. This study demonstrates that the media richness ranking across traditional and new media is consistent with media richness theory. This study also provides empirical confirmation that individuals choose media in terms of a matching process of media characteristics and communication activity equivocality, as media richness theory predicts. Meanwhile, this study reveals that even new technology, such as email, shows a tendency to shift over time in terms of user's appropriateness or use ratings of them, supporting Rice's (1993) and Flanagin and Metzger's (2001) findings of new technologies. This indicates that individuals' use of communication technologies may change over the various phases of adoption and different strategies should be employed to manage individuals' use at each stage of the diffusion process. This also suggests that the familiarity and frequency of use of technology would have impact on individuals' perceptions of and preferences for media for communication. This research effort is an initial step in documenting how new technologies are being perceived and preferred, in conjunction with other traditional and new media in university contexts. Future research efforts need to examine individuals' media perceptions and preferences in different organisational contexts and with a wide range of technology, to more fully understand how new technologies are perceived, diffused, and adopted.

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