A Comparison of Four New Communication Technologies

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Abstract

This paper describes a study of four new communication channels: Instant Messenger, email, text messages and mobile phones. The research develops a new model of communication channel choice in which media richness and social presence are important factors, but the core concept is channel-connectedness. The channels studied facilitate different levels of connectedness and this helps to explain usage. The degree of connection desired varies by both participant and occasion, and channels are chosen accordingly. The four channels play different communication roles, consequently, despite convergence of their technologies, the different formats will persist.

1   Introduction

Venkatesh (1998, p 670) writes, "the recent convergence of communication and information technologies has created possibilities unthinkable only a few years ago". Mobile phones, email, SMS (Short Message Service) messages and IM (Instant Messenger) are new communication technologies, which all contribute to the 'death of distance' (Cairncross, 2001). This research explores and compares consumer usage and attitudes to the four technologies, developing a new communication choice model. Although the research focuses on leisure use among young people, the model should be more generally applicable.

2   Literature Review

2.1   Media Communication Theory

Social presence (Short, Williams and Christie, 1976) and media richness (Daft and Lengel, 1986) help to explain media choice. Social presence is the extent to which a medium conveys the actual presence of participants. The 'richness' of a medium is measured by its capacity for multiple cues and immediate feedback. Computer-mediated communication (CMC) is low in social presence (Rice and Love, 1987) and lean in media richness (Walther, 1992). Flaherty, Pearce and Rubin (1998) found that face-to-face communication was rated higher than CMC for all motives, including social ones, such as, inclusion and affection. Clark and Brennan (1990) identify eight factors that constrain media choice: co-presence, visibility, audibility, co-temporality, simultaneity, sequentiality, review-ability and revisability.

2.2   The Four Communication Channels

2.2.1   Instant Messenger

Instant Messenger (IM) is a proprietary, simplified version of Internet Relay Chat, which allows two or more people to carry on a conversation, in real-time, using text based messages with context awareness. In the U.S. 40% of Internet users use messenger (Nielsen NetRatings, 2002). IM is used to avoid boredom, to socialise (Schiano et al. (2002), Leung 2001), and to maintain contact with casual acquaintances (Lenhart et. al. 2001). Leung (2001) found seven motives for messenger use among college students: affection, inclusion, sociability, entertainment, relaxation, escape and fashion. Nardi, Whittaker and Bradner (2000), found that in the inactive state IM participants sometimes monitor the presence of others, and use the medium to sustain a sense of connection.

2.2.2   Text Messages

Short Message Service (SMS) or text messages were introduced in 1992. GSM (Global System for Mobile communication) estimates that 250 billion SMS messages were sent through their networks in 2002. (http://www.gsmworld.com/news/statistics/index.shtml). SMS messages are quick, cheap, convenient and discrete (Eldridge and Grinter, 2001), less formal and more private than email (Clarke and Strong, 2000), and used socially for networking, co-ordination, and managing relationships (Döring, 2002). Grinter and Eldridge (2001) found that 63% of UK messages are sent from home; they identify the 'goodnight ' text as a new type of message content.

2.2.3   Mobile Phone Calls

Globally, the number of mobile subscribers is estimated at 1 billion (Gibney, Swain and Hooper, 2002). Research on mobiles has found they are useful for hyper-coordination, security, socializing, relieving boredom and as a vehicle for parental control (Baursch et al., 2001; Ling and Helmersen, 1999) and to express identity (Alexander, 2000). For some, the mobile becomes almost a body part, an extension of the hand (Hulme and Peters, 2001).

2.2.4   Email

The number of email messages sent daily, worldwide, is expected to increase from 31 billion in 2002 to 60 billion in 2006 (Levitt & Mahowald, 2002). Lee (1996) described email as a hybrid medium combining elements of the phone and letter, i.e. conversational informality in text format. Research on email has found that people are more uninhibited, non-conformist and conflictual when using email, and that email broadens communication circles (Ducheneaut, 2002). Although the primary use is communication, use includes socializing and developing relationships (Finholt and Sproull, 1990). Schiano et al. (2002) found that teenagers mainly use email for non-personal communication.

3   Methodology

The objective of the research was to understand and explore communication channel choice and therefore, qualitative research was used. Six (three male/three female) 1½-hour focus groups were held, with four groups of university students and two groups of teenagers. Respondents were all users of mobile, email, text messages and IM. The groups were analyzed using grounded theory.

4   Results

Respondents frequently had all four technologies available and so channel choice was often pertinent. Respondents were aware of the advantage of near-synchronicity afforded by SMS and IM. These technologies provided 'thinking time' without the disruption and discontinuity of asynchronous communication such as email. Less socially confident, or time-pressured participants, sometimes chose leaner media with low social presence to avoid social embarrassment, or to save time through quicker communication or multi-tasking. Channels are not exclusive and can be complementary; simultaneous and sequential use were both common.

Media choice depended on functional factors, communication motives, relationship between the participants, personal preference and 'connection need'. Functional aspects include: cost, availability, time, typing proficiency, and message-specific characteristics such as sensitivity, confidentiality, quantity and urgency. Email, IM and text are less appropriate for personally sensitive communication: respondents were also conscious of the ease with which email and IM can be forwarded. Preference or predisposition for visual, auditory or kinaesthetic cognitive style (Sarasin, 1998) will also influence choice of communication channel.

Communication motives were intrinsic or instrumental, and included relaxation, entertainment, social, and affection. The main motivation for mobile use was affection, for email it was social, and for IM it was entertainment. Text message motives were usually either social or affection.

The most important, and least obvious choice factor, was the need for connection, a concept which emerged from the research. The need for connection varied, sometimes respondents just wanted connection without conversation, which IM could provide, at other times there was no desire for connection, and they would just send an email. Although mobiles had higher connectedness they could generate anxiety and feelings of social inadequacy, therefore less connected channels were sometimes preferred. Respondents agreed that they generally felt most connected when using mobiles, followed by IM and text, with email providing least connection.

The perceived connectedness of a medium appeared to be a function of media richness, social presence, interactivity, duration, and information processing mode. Media richness affects the quantity and quality of cues, e.g. voice tone; social presence creates awareness of the other party in the connection. Interactivity creates the experience of connection through two-way communication, and is facilitated by synchronicity and near-synchronicity. A longer duration of communication increases the experience of connectedness. Audio information processing has to be cotemporaneous with audio source, which prevents scanning, discourages multi-tasking, increases focus and generates a greater sense of connectedness.

5   Discussion

To ensure experience with all four technologies all respondents were under 25 and therefore the findings of this research may be specific to this age group. For older people social confidence could be less relevant and time pressure may be more important. Although IM and text are increasingly used in the work place, lack of typing skill inhibits the adoption of text-based communication, especially among older, non-working, women.

Channel connectedness can be defined as the extent to which a channel enables the participants to feel connected. The concept of channel-connectedness is similar to social presence but it is not

equivalent. Social presence relates to the perception of the other participant while connectedness is an emotional experience. The difference between the social presence and connectedness of a channel is illustrated by IM and text messaging; there is virtually no social presence, but used interactively in a 'conversation' IM conveys connectedness, as does an exchange of 'goodnight' text messages. On the other hand an Internet web-cam conveys social presence but not connectedness.

Previous research has suggested the superiority of richer media with more social presence for gratifying communication needs (Flaherty, Pearce and Rubin, 1998); however, the young people in this study often preferred less rich media. Each of the four technologies researched has its own inherent advantages and different degrees of connection; these create specific roles and gratify different communication needs. These roles derive from communication norms (such as use of abbreviation, absence of social niceties, length, etc) as well as from the intrinsic characteristics of the original technology (e.g. word limit, synchronicity, sensory type). Contrary to predictions, as technologies converge, with email and messaging being available on mobiles, and SMS and VOIP available on PCs, the different formats are likely to be retained because of their specific roles.

There is scope for interfaces that extend the advantages of the different channels, for instance, the use of context awareness technology for telephony, and the development of email-style storage, organisation and subject notification on SMS. User penetration could be increased by voice to text conversion for non-typists, and text to voice for those intimidated by text interfaces. To increase user choice, design for convergent personal communication devices should focus on enabling multiple formats, for instance enabling SMS messages from email interfaces. Designers could also develop new formats, for example, mobiles with simultaneous text conversion, or context awareness channels designed to provide connection rather than communication.

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