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The Role of Social Capital in Cell Phone Adoption Behavior

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ABSTRACT

As advances in cellular phone technology allow for greater functionality, cell phones are beginning to take on much more prominent and multi-faceted roles in our lives. Once viewed simply as a replacement of the landline, cell phones are now used for much more than communicating with friends, family, and coworkers; indeed, they are used to send and receive text-messages, carry out mobile banking services, listen to music, play games, and browse the internet. These advances require the development of more granulated theory in regard to how individuals adopt and use their cell phones, in both work and social contexts. In this research-in-process, we blend social capital theory and media richness theory in an attempt to determine why different individuals use the (common) features of their cell phones differently – why do some people text more than they call, and vice versa? Further, we investigate how individuals cope when they are prohibited from using a technology that they have already adopted for hedonic purposes (e.g. cell phones). To begin answering these questions, we collected and interpreted exploratory data from students, and developed a research model that we intend to test in the future.

Keywords

Cell Phones, Social Capital Theory, Media Richness Theory, Uses and Gratifications Theory, Innovations, Adoption, Mobile Data Services, Social Networks

INTRODUCTION

Cell phones are used for much more than just calling other people; indeed, they also allow their users text messaging, photo messaging, Internet browsing, and schedule management capabilities. Despite the extended use of cell phones in contemporary society, to date, research has largely equated their role in individuals' social and work lives with that of landline phones. While past research has provided valuable insight into the adoption and diffusion of cellular phone technologies, this study suggests that such an approach to examining the role of cell phones in society in the face of unrelenting innovation and advancement in cell phone technology may be naïve. Specifically, most existing IT adoption literature to date either treats adoption decisions in a work-related context or as a black-box, glossing over adoption decisions regarding individual features within a single platform. To address shortcomings in existing cell phone research, this study proposes an alternative, social constructivist approach that, we believe, is more appropriate for examining the changing role cell phones are taking in our lives. Our approach views cell phone use a tool that individuals use to maintain their social capital. Because different types of network ties are optimally maintained through different methods, the nature of one's social network is hypothesized to be a determinant in that individual's cell phone behavior; moreover, the psychological effects of disrupting an individual's use of IT as a social communications medium are hypothesized to stem from the nature of that individual's social network as well. This approach was developed following a preliminary analysis of qualitative data taken from 39 undergraduate students. From this analysis we develop four hypotheses that we intend to test with subsequent data collection.

MOTIVATION

Early research on telephone use, conducted in the 1970's and 1980's, has heavily influenced subsequent studies on landline and cell phone use. For example, O'Keefe and Sulanowski's (1995) examination of individual behavior and phone use utilized earlier studies that categorizing landline phone users as having one of two broad motives: intrinsic or instrumental. Intrinsic motives are those that drive socialization, such as chatting, or keeping in contact with family (Keller, 1979; Noble

1987), as well as fun and entertainment (Williams, Dordick, & Jesuale, 1985), while instrumental motives are oriented toward completion of some task, such as using a phone to order products or make appointments (Wei and Lo, 2006).

More recently, researchers have found evidence that the cell phone is beginning to fulfill the role previously held by the landline phone. Other research involving communication via the cell phone has dealt with its popularity and diffusion in different communities (Ishii, 1996; Puro, 2002; Wei and Lo, 2006), the use of a cell phone to coordinate daily activities (Ling and Haddon, 2003), as well as differences in cell phone use arising due to gender (Ling and Haddon, 2003) and age (Ling and Yttri, 2002).

From an IT adoption standpoint, the services provided to an individual via a cellular phone have been termed "mobile data services", which are defined as "an assortment of digital data services that can be accessed using a mobile device over a wide geographic area" (Hong and Tam, 2006: 164). Traditionally, IS literature has examined technology adoption on an individual level within an organizational setting; these approaches include the technology acceptance model (TAM) (Davis, 1989), TAM 2 (Venkatesh and Davis, 2000), UTAUT (Venkatesh, Morris, Davis, & Davis, 2003), and Rogers' (1995) diffusion of innovations theory. But, as the scope of IT usage began to transverse the boundary between individuals' organizational and social lives, adoption literature broadened its scope as well. Venkatesh and Vitalari (1992) examined individuals' adoption of personal computers; Kraut et al. (1999) studied the patterns of Internet usage among different households; and Kim et al. (2002) observed the manner in which individuals used the Internet to work from home.

All of these studies, however, have approached IT adoption from a work-use, or utilitarian perspective. Individual adoption of IT to enhance one's social life was not studied until Brown and Venkatesh's 2001 article that made the discernment between utilitarian, hedonic, and social drivers of adoption decisions concerning the home use of personal computers. Hong and Tam (2006) incorporated the findings of Venkatesh and Brown (2001) with more traditional technology adoption constructs to better understand individuals' adoption behavior concerning mobile data services. They found that, among other factors, social influence to have both a direct and indirect (mediated by perceived usefulness) to have significant effects on one's intention to adopt mobile data services (Hong and Tam, 2006).

While past research has provided valuable insights into adoption and diffusion of cell phones, this study suggests that, in the face of unrelenting innovation and advancement in cellular phone technologies, current approaches may be limited in their ability to explain the changing role of cell phones in contemporary societies. However valuable, past research has treated IT adoption behavior largely as a "black box", leaving room for a finer grained analysis of the adoption and usage of specific communications innovations that are often bundled together in cellular phone platforms. Further, as IT becomes more and more imbedded in individuals' social lives, this research aims to determine the consequences of suddenly inhibiting individual use of mobile data services.

EXPLORATORY DATA COLLECTION

Because few technological innovations have enjoyed such widespread use and application, or permeated our society, as the cell phone, we intend to pin our analysis of the adoption of IT for social purposes on cellular phone adoption. The ever-increasing ubiquity and utility of cell phones in individuals' work-lives and social-lives across the globe beg investigation into how and why individuals use cell phones in the way they do. To develop understanding of individuals' cell phone use, in the spring of 2010, our research team undertook a student-driven creative inquiry project. The project involved 39 students enrolled in undergraduate level management information systems courses at a large southeastern university. At this university, creative inquiry projects provide undergraduate students with the opportunity to delve deeper into a particular aspect of information technology use and, in particular, to explore questions that the students find interesting.

For this particular project, students were interested to understand more about:

- How the presence of cell phones has changed (or left unchanged) social and work lives.
- How the absence of cell phones has impacts individuals' social and work lives.
- The factors that drive different forms of cell phone use.

To begin answering these questions, participants kept journals documenting three 24-hour periods of cell phone use and non-use. In the first period, participants logged their cell phone usage. In the second period, the students handed their cell phones over to the research team and logged the emotions they experienced when unable to use their cell phones, as well as their use of alternative technologies. Finally, in the third period, the students relayed their reactions to getting their cell phones back.

At first glance the results looked as we expected; however, as we collated data from the journals, certain patterns began to emerge. For example, the number of text messages sent and/or received was consistently several times greater than the number of phone calls sent and/or received. Phone calls were used more to communicate with family than with friends

(when that information was available). The most used feature on a cell phone is its clock, with students reporting checking the time even more than they texted. When we took the cell phones away from the students for a day, many reported anxiety at not being able to communicate with family and friends, saying they felt "naked", "disconnected", "unaware of what was going on", and "frustrated at not being able to talk to friends"1. Others appeared relieved to be free from cell phone communication for a while, e.g., "…going without a cell phone for a day was actually kind of nice". We found that participants who expressed relief had communicated via other media (i.e. email, facebook, etc) or had informed friends and family that they would not be able to communicate that day.

Based on our observations, we were interested to find out whether the patterns of behavior that emerged could be explained by existing approaches to the study of cell phone use, e.g. the uses and gratifications (U&G) theory of mass communications. In the following sections, we review U&G theory and offer a social constructivist approach to examining mass communications that, we believe addresses some of its limitations for investigating contemporary cell phone use. Specifically, using social capital theory and media richness theory as our theoretical bases, we propose that the ways in which individuals use their cell phones is influenced by characteristics of their social networks. For example, a streamlined communication medium will better serve a network consisting of many ties to acquaintances, whereas a richer, more intense communication medium will better serve a network comprised of a few deep connections.

THEORETICAL DEVELOPMENT

Uses and Gratifications

Use and gratification theory (U&G) is a well-established theory of mass communications that explains an individual's choice in communications media as means of gratifying certain social and psychological needs (Rubin, 1983). U&G provides an explanation of why certain media forms and types of content draw and retain certain audiences (Cantril, 1942). Through the 1970's, much of the work rooted in U&G was considered atheoretical and behaviorist (Ruggiero, 2000) because no study had addressed the question "why do we feel these needs for gratifications?" Following Blumler's (1979) identification of three social origins of media gratifications—(1) normative influences; (2) socially distributed life changes, and (3) an individual's subjective reaction to a specific social situation (Blumler, 1979; Ruggiero, 2000)—U&G research became more systematic and theoretical, as researchers began to actively advance theory and develop instruments (Rubin 1983). Nevertheless, the mechanism by which the need for gratifications is generated remains somewhat unexplored.

Later U&G studies provided evidence that one gratification sought from cell phone users was that of status or "being cool" (e.g. Leung and Wei, 2000). Leung and Wei (2000) identified two further gratifications sought by cell phone users: (1) immediate access, and (2) mobility. More recently, Wei and Lo (2006) used a U&G framework to suggest that, in the context of cell phone use, an individual chooses the medium of communication that best suits their particular psychological need (e.g. surveillance, relaxation, para-social interaction, and companionship (Lin, 1993; Wei and Lo, 2006). Pertaining to alternative methods of cell phone communication (i.e. not voice calls), Bryant et al. (2006) found that the breadth of relationships, not depth, in one's social network is correlated with increased rates of texting.

With respect to this exploratory study, U&G theory has one major limitation: individuals in our field study reported low anxiety levels when they informed their friends/family they would be unable to contact them for a day (when we took their cell phones). These individuals did not necessarily attempt to contact their friends/family through other media outlets (although some certainly did), and reported feeling relaxed and relieved at not having to make phone calls or send text messages. This observation suggests that humans do not have inherent needs for communication that they must take steps to gratify, but rather undertake communication as means for maintaining social relationships. In other words, at times people use communications media not to gratify certain social or psychological needs, but rather as mechanism to maintain the fitness of their relationships.

The Social Constructivist Approach

Inspired by Fishbein and Ajzen's theory of reasoned action (1975), the technology acceptance model, or TAM, was developed by Davis et al. (1989) as a tool to examine individual adoption and acceptance of IT. This initial TAM model held that individuals would intend to use IT innovations they perceive as being a) useful and b) easier to use; this intention, then, is manifested in adoption and acceptance behavior. Although the original conceptualization of TAM did not include social factors, TAM 2 included subjective norms as a predictor of usage intentions and perceived usefulness (Venkatesh &

[1] These quotations are from student participants and recorded in the reports generated as part of the creative inquiry project.

Davis, 2000). Apart from Davis and Venkatesh's inclusion of subjective norms in TAM 2, social factors have been included in many IT adoption studies (Hong and Tam, 2006; Rogers, 1995; Salancik and Pfeffer, 1978; Venkatesh et al., 2003; Venkatesh and Vitalari, 1992).

The common theme in IS literature dealing with the social construction of technology is that the nature of interactions between individuals (in either the work or social setting) guides technology and influences the effects of technologies (Fulk, 1993). Moreover, this stream of IS research maintains that an individual's attitude toward and use of technology is dependent on the broader attitude and use of technology by that individual's social network (DeSanctis & Poole, 1990; Fulk, 1993). Finally, the social constructionist approach also suggests that there is interplay between a communication technology and the social network in which it becomes imbedded (DeSanctis & Poole, 1990).

In this study, we take a social constructionist approach, in an IS context, to develop a research model that explains how and why individuals use cell phones the way that they do. We draw on social capital theory to explain the types of ties formed between individuals, and the steps individuals must take to maintain those ties, as well as media richness theory to understand differences between types of communications media and under what circumstances certain media are more appropriate than others. Although a social capital approach towards knowledge sharing and creation in organizations (Bhandar, Pan, Bernard, & Tan, 2007; Chow and Chan, 2008) has been taken, this study differs from those in that we are employing social capital theory to help determine adoption and usage patterns of mobile technologies in individuals' social lives. Following is a review of social capital theory and media richness theory, followed by an integration of the theories into a research model.

Social Capital Theory

The core concept of social capital theory is that relationships held by an individual or contained in a social network represent a valuable and fungible resource that can be mobilized into action and facilitate cooperation and communication (Bourdieu, 1980; Coleman, 1988; Loury, 1977). Bourdieu (1980; 1985) frames social capital as the perceived obligations of social network members due to norms inherent in the social network (e.g. trust, kindness, reciprocation) (Portes, 1998). Loury (1977) defines social capital as "naturally occurring social relationships among persons which promote or assist the acquisition of skills and traits valued in the marketplace" (Loury, 1977: 100). This definition of social capital has been used to explain the variation in earnings of individuals with the same (or similar) skills (Loury, 1977). Loury (1981) suggests that variation in earnings demonstrates that at least some portion of an individual's value is socially constructed rather than determined by that individual's skills and abilities (Loury, 1981; Portes, 1998).

Coleman (1988; 1990) provides a more functional definition of social capital, suggesting that although social capital can take many forms, all of those forms have two shared aspects: a) they are comprised of some form of social structure, and b) they are mobilized to action by those in the structure. Coleman's conceptualization that social capital exists only if it is mobilized to action, ignores the latency of social capital suggested by earlier theorists (e.g. Bourdieu, 1980; Loury, 1977), who consider social capital as present in a network whether or not it is realized in any other form of capital (e.g. money, preferential treatment, etc.) (Portes, 1998).

Coleman's (1988) abstraction of social capital allowed for a wider application of the concept. However, it also created a need to enumerate how social capital is capital if it doesn't exist until it is recognized in some other form. In response to this problem, Adler and Kwon (2002) developed six characteristics of social capital that delineate the boundaries between social capital and other forms of capital. The researchers argue that social capital is a) an asset into which individuals invest resources (e.g. favors, information) and from which they expect certain dividends, b) appropriable into other assets, c) complimentary to other forms of capital (e.g. social capital can reduce transaction costs), e) needs maintenance to retain its value, e) in the form of a collective good that resides in the relationships between individuals, and f) inherently resides in some social structures rather than others (Adler and Kwon, 2002).

Social capital research in IS has underscored the benefit and value inherent in connections between individuals within the firm and between firms as well (Burt, 1992; Nahapiet and Ghoshal, 1998; Tsai and Ghoshal, 1998). These streams of research have shown how the latent value in relationships can facilitate career success (Adler and Kwon, 2002), innovation (Tsai and Ghoshal, 1998), and knowledge acquisition (Yli-Renko, Autio, & Sapienza, 2001). However, these conceptualizations and applications of social capital were conceived of with the firm in mind, a very different environment than that of social interaction. The different applications of social capital theory require researchers to clearly define what they mean when they employ the term. This study will rest on Portes' definition of social capital, that social capital is "primarily the accumulation of obligations from others according to the norm of reciprocity" (Portes, 1998: 7). Portes then goes on to claim that these obligations may be repaid through various means, even "approval or allegiance" (Portes, 1998: 7).

Ties in the social network can be either weak or strong (Granovetter, 1973). Weak ties are characterized by acquaintances while strong ties represent those between close friends and family. Because the information contained in a tightly knit social network is usually redundant (Granovetter, 1973; Burt, 1992), weak ties are the relationships that usually bring new, scarce information into a network (Granovetter, 1973). The weak ties, or bridging relationships, of individuals become a valuable determinant of the social capital in an individual's relationships in that the more access to novel information an individual has, the more valuable that individual becomes to others with whom s/he interacts (Bryant et al., 2006; Granovetter, 1973; Burt, 1992). Because weak ties represent acquaintances rather than close friend and family, they require a lower level of emotional intensity to maintain than do strong ties. Moreover, the lack of emotional intensity required to maintain a weak tie relationship means that an individual could maintain many weak tie relationships (as opposed to the limiting nature of the intensity required to maintain strong tie relationships). Therefore, the communication medium that facilitates a weak tie does not have to convey rich information, but rather it should be able to efficiently convey the minimum amount of necessary information to a wide range of individuals. Conversely, the maintenance of strong tie relationships necessitates a communication medium that allows for the transfer of rich information between two individuals.

Media Richness Theory

Media richness theory was developed in 1986 by Daft and Lengel to describe how certain communication media were more or less appropriate for different amounts of uncertainty and equivocality faced in different organizational contexts. Galbraith frames uncertainty as the information deficit of an organization in facing a particular task (Galbraith, 1974). Equivocality should be thought of as the ambiguity regarding the information required to carry out a task (Daft and Lengel, 1986). Organizations process information in order to reduce uncertainty and equivocality; however, differing levels of uncertainty and equivocality are best-resolved using communication media differing in the level of richness. The richness of media is assessed according to 4 criteria: 1) feedback (the capability of the medium for timely feedback), 2) multiple cues (the amount of information that can simultaneously be conveyed by an information medium), 3) language variety (the range of meaning that the communication language can convey), and 4) personal focus (the degree to which the message can be designated to a single individual) (Daft, Lengel & Trevino, 1987).

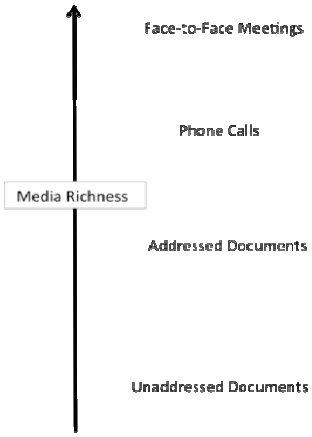

Figure 1. The richness of different forms of communication (Daft, Lengel, Trevino, 1987)

Figure 1 above shows the progression in richness from unaddressed documents, which are impersonal, allow little to no feedback, and convey only 1 set of language cues to face-to-face meeting which allow for instant feedback, multiple communication tools, large language variety, and great capacity for personalization (Daft et al., 1987). Phone calls are considered a richer media than are addressed documents because they allow for multiple cues, such as voice inflection, and provide a mechanism for instant feedback (Daft et al., 1987).

RESEARCH MODEL

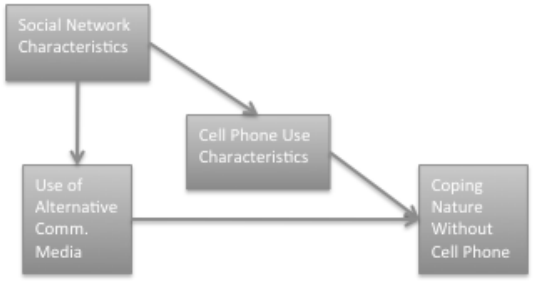

Figure 2. Research Model.

Drawing on the theoretical bases of social capital and media richness theories, we have developed the research model presented in figure 2. The construct, Social Network Characteristics is to be operationalized by the ratio of weak social ties to strong social ties. Cell phone use characteristics will be operationalized by the ratio of the number of text messages sent or received during a given period to the number of phone calls made or received during the same time period. The model suggests that:

> *H1: social network characteristics will have a positive causal impact on cell phone use characteristics in that individuals with a higher number or weak social ties will find text messaging a more appropriate means for maintaining those ties while individuals with a lower number of weak ties (relative to strong ties) will prefer to make calls in order to maintain relationships.*

The use of alternative media will be operationalized by the amount of time spent daily at social networking sites, instant messaging, e-mailing, etc. - all relatively thin communications media. This leads us to the next hypothesis:

> *H2: Individuals with a high ratio of weak social ties to strong social ties will use these alternative forms of communications media more than those individuals with many strong social ties (relative to weak social ties).*

Also, the use of alternative communications media will have a causal impact on an individual's ability to cope when his/her phone is taken away. In our exploratory field study, these emotions ranged from relieved to stressed out and anxious. Individuals who do not rely solely on their telephones for communication will react with more anxiety at the removal of their phones than individuals who use other communication media. Therefore, the next hypothesis is:

> *H3: Individuals with a higher level of alternative communications media use will cope with the loss of their cell phones with less anxiety than those individuals with a lower degree of alternative communications media use.*

Finally, one's social network characteristics are hypothesized to relate causally to cell phone use characteristics, which we also hypothesize will relate to that individual's coping nature without his/her cell phone. This is because weak ties require more frequent maintenance than strong ties (which require more intense forms of maintenance), which will lead to greater employment of texting in cell phone use, which in turn will lead to the perception that an individual is missing more in the absence of his/her cell phone. Therefore, our final hypothesis is:

> *H4: Cell Phone Use Characteristics will mediate the relationship between social network characteristics and coping nature without phone.*

CONCLUSION

This research in process concludes by suggesting that the recent advances in cell phone technology begs us to alter the way in conceptualize how individuals use their cell phones. Instead of thinking about the cell phone simply as a device people use to place calls to one another, we should view them as a platform for mobile data services. This shift in viewpoints should move our thinking about the cellular phone more towards computer-mediated communication theory and away from the antiquated notion of the cell phone as being roughly equivalent to the landline phone. We would like to underscore that this piece is a preliminary analysis of the mostly qualitative data we collected from the undergraduate students who participated our creative inquiry study. While this preliminary analysis aided the development of our social constructivist approach to individual behavior regarding cell phone use, we intend to collect further data to test the hypotheses we put forth in this research-in-process. An additional contribution of this research-in-process is that it begins to address individual reactions to the temporary discontinuance of an already adopted technology. The manner in which individuals cope when they are prohibited from using a (hedonic) technology in the post-adoptive stage is largely unaddressed in the innovation and adoption literature; we hope to advance theory in this area.

REFERENCES

1. Adler, P. S., & Kwon, S.-W. (2002) Social Capital: Prospects for a New Concpet, *Academy of Management Review, 27*, 1, 17-40.
2. Baker, W. (1990). Market Networks and Corporate Behavior, *American Journal of Sociology, 96*, 589-625.
3. Bhandar, M., Pan, S., Bernard, & Tan, C. (2007) Towards Understanding the Roles of Social Capital in Knowledge Integration: A Case Study of a Collaborative Information Systems Project, *Journal of hte American Society for Informaiton Science and Technology, 58*, 2, 263-274.
4. Blau, J. A. (1982) Empowering Nets of Participation, *Administrative Science Quarterly, 27*, 363-379.
5. Blumler, J. (1979) The Role of Theory in Uses and Gratifications Studies, *Communications Research Journal, 6*, 1, 9-36.
6. Bourdieu, P. (1980) Le Capital Social: Notes Provisoires, *Actes Rech. Sci. Soc. , 31*, 2-3.
7. Bourdieu, P. (1985) The Forms of Capital. In J. Richardson (Ed.), *Handbook of Theory and Research for the Sociology of Education* (pp. 241-258), Greenwood, New York.

8. Bryant, J., Sanders-Jackson, A., & Smallwood, A. (2006) IMing, Text Messaging, and Adolescent Social Networks, *Journal of Computer-Mediated Communication, 11*, 577–592.
9. Burt, R. (1992) *Structural Holes, The Social Structure of Competition,* Harvard University Press, Cambridge.
10. Cantril, H. (1942) The Issues - As Seen by the American People, *Public Opinion Quarterly, 8*, 3, 331-347.
11. Chow, W., & Chan, L. (2008) Social Netowrk, Social Trust and Shared Goals in Organziational Knowledge Sharing, *Information and Management, 45*, 7, 458-465.
12. Coleman, J. (1990) *Foundations of Social Theory,* Belknap Press of Harvard Univ. Press, Cambridge.
13. Coleman, J. (1988) Social Capital in the Creation of Human Capital, *American Journal of Sociology, 94*, 95-121.
14. Daft, R., & Lengel, R. (1986) Organizational Information Requirements, Media Richness and Structural Design, *Management Science, 32*, 5, 554-571.
15. Daft, R., Lengel, R., & Trevino, L. (1987) Message Equivocality, Media Selection, and Manager Performance: Implications for Information Systems, *MIS Quarterly, 11*, 3, 355-366.
16. Davis, F. (1989) Perceied Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology, *MIS Quarterly, 13*, 319-3490.
17. DeSanctis, G., & Poole, M. (1990) Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory, *Organziation Science, 5*, 2, 121-147.
18. Fishbein, M., & Ajzen, I. (1975) *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research,* Addison-Wesley, Reading.
19. Fulk, J. (1993) Social Construction of Communication Technology, *Academy of Management Journal, 36*, 5, 921-950.
20. Galbraith, J. (1974) Organization Design: An Information Processing View, *Interfaces, 4*, 3, 28-36.
21. Geser, H. (2004) *Towards a Sociological Theory of the Mobile Phone,* University of Zurich.
22. Granovetter, M. (1973) The Strength of Weak Ties. *American Journal of Sociology, 6*, 1360-1380.
23. Homans, G. C. (1958) Social Behavior as Exchange, *The American Journal of Sociology*, *63*, 6, 597-606.
24. Hong, S., & Tam, K. Y. (2006) Understanding the Adoption of Multipurpose Information Appliances: The Case of Mobile Data Services. *Information Systems Research, 17*, 2, 162-179.
25. Ishii, K. (1996) PHS: Revolutionizing Personal Communication in Japan, *Telecommunications Plicy, 20*, 7, 497-506.
26. Keller, S. (1979) *The Social Impact of the Telephone,* MIT Press, Cambridge.
27. Kemper, T (1981) *A Social Interpersonal Theory of Emotions,* Wiley, New York.
28. Kemper, T. (1990) *Research Agendas in the Sociology of Emotions,* SUNY Press, New York.
29. Kim, N., Han, J., & Srivastava, R. (2002) A Dynamic IT Adoption Model for the SOHO Market: PC Generational Decisions with Technological Expectations, *Management Science, 48*, 2, 222-240.
30. Kraut, R., Mukhopadhyay, T., Szczypula, J., Kiesler, S., & Scherlis, W. (1999) Information and Communication: Alternative Uses of the Internet in Households, *Information Systems Research, 10*, 4, 287-303.
31. Lawler, E., & Thye, S. (1999) Bringing Emotions into Social Exchange Theory, *Annual Review of Psychology, 25*, 217-244.
32. Leung, L., & Wei, R. (2000) The Gratifications of Pager Use: Sociability, Information Seeking, Entertainment, Utility, and Fashion and Status, *Journalism and Mass Communication Quarterly, 77*, 2, 308-320.
33. Lin, C. (1993) Modeling the Gratification-Seeking Process of Television Viewing, *Human Communication Research, 20*, 224-244.

34. Ling, R., & Haddon, L. (2003) Mobile Telephony, Mobility and the Coordination of Everyday Life. In J. Katz, *Machines That Become Us* (pp. 244-266), Transaction Publishers, New Brunswick.
35. Ling, R., & Yttri, B. (2002) *Hyper-Coordination via Mobile Phones in Norway* (J. Katz, & M. Aakhus, Eds.), Cambridge Universtiy Press, Cambridge.
36. Loury, G. (1977) A Dynamic Theory of Racial Income Differences. In A. L. PA Wallace (Ed.), *Women, Minorities, And Employment Discrimination* (pp. 153-186), Heath, Lexington.
37. Loury, G. (1981) Intergenerational Transfers and the Distribution of Earnings, *Econometrica, 49*, 843-867.
38. Meissner, J. (2005) *Relationship Quality in the Context of Computer-Mediated Communication - A Social Constructionist Approach,* Research Paper, University of Basel, Department of Economics.
39. Nahapiet, J., & Ghoshal, S. (1998) Social Capital, Intellectual Capital, and the Organizational Advantage, *The Academy of Management Review, 23*, 2, 242-266.
40. Noble, G. (1987) Discriminating Between the Intrinsic and Instrumental Domestic Telephone User, *Australia Journal of Communication, 11*, 63-85.
41. O'Keefe, G., & Sulanowski, B. (1995) More than Just Talk: Uses, Gratifications, and the Telephone, *Journalism and Mass Communication Quarterly, 72*, 4, 922-933.
42. Portes, A. (1998) Social Capital: Its Origins and Applications in Modern Sociology, *Annual Review of Sociology,* 24, 1-24.
43. Puro, J. (2002) Finland: A Mobile Culture. In J. Katz, & M. Aakhus, *Perpetual Contact: Mobile Communication, Private Talk, Public Performance* (pp. 19-29), Cambridge University Press, New York.
44. Rogers, E. (1995) *Diffusion of Innovations,* 4th Edition Free Press New York.
45. Rubin, A. (1983) Television Use and Gratifications: The Interactions of Viewing Patterns and Motivations, *Journal of Broadcasting, 27*, 1, 37-51.
46. Ruggiero, T. (2000) Uses and Gratifications in teh 21st Century, *Mass Communications and Society, 3*, 1, 3-37.
47. Salancik, G., & Pfeffer, J. (1978) A Social Information Processing Approach to Job Attitudes and Task Design, *Administrative Science Quarterly, 23*, 2, 224-253.
48. Schiff, M. (1992) Social Capital, Labor Mobility, and Welfare, *Rationality and Society, 4*, 157-175.
49. Seibert, S. E., Kraimer, M. L., & Liden, R. C. (2001) A Social Capital Theory of Career Success, *The Academy of Management Journal, 44*, 2, 219-237.
50. Tsai, W., & Ghoshal, S. (1998) Social Capital and Value Creation: The Role of Intrafirm Networks, *The Academy of Management Journal, 41*, 4, 464-476.
51. Venkatesh, V., & Brown, S. (2001) A Longitudinal Investigation of Personal Computers in Homes: Adoption Determinants and Emerging Challenges, *MIS Quarterly, 25*, 1, 71-102.
52. Venkatesh, V., & Davis, F. (2000) A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies, *Management Science, 46*, 2, 186-204.
53. Venkatesh, V., & Vitalari, N. (1992) An Emerging Distributed Work Arrangement: An Investigation of Computer-Based Supplemental Work at Home, *Management Science, 38*, 12, 1687-1706.
54. Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003) User Acceptance of Information Technology: Toward a Unified View, *MIS Quarterly, 27*, 3, 425-478.
55. Wei, R., & Lo, V. (2006) Staying Connected While on the Move: Cell Phone Use and Connectedness, *New Media and Society, 18*, 1, pp. 53-72.
56. Williams, F., Dordick, H., & Jesuale, H. (1985) *Focus Group and Questionnaire Development for Exploring Attitudes towards Telephone Service.* (F. Williams, Ed.), Herbert Dordick and Associates, Los Angeles.
57. Yli-Renko, H., Autio, E., & Sapienza, H. (2001) Social Capital, Knowledge Acquisition, and Knowlede Exploitation in Young Technology-Based Firms, *Strategic Management Journal, 22*, 6-7, 587-613.

APPENDIX A – CONSTRUCT MEASURES

Because the constructs used in this study relate specifically to cell phones, specifically with the decision and implications of individuals' decision on whether to text or call another individual, there is a lack of already developed measurements in the communications literature. Therefore, we will have to either develop our own or adapt others' measures to make them applicable to our study. Therefore, in this appendix, we will outline the parameters of our operationalizations of the constructs.

Social Network Characteristics – To measure social network characteristics, we will ask participants to indicate the number of different individuals with whom they interact via their cell phones, as well as whether each of those ties is close friend/family member or an acquaintance. Using these measures, we will be able to calculate a ratio of strong ties to weak ties for each individual.

Use of Alternative Media – To gage individuals' use of alternative media, we will ask each individual to indicate the frequency and duration with which they use other forms of communication, such as social networking sites, e-mail (not accessed via their cell phones), landline telephones, and face-to-face communications.

Cell Phone Use Characteristics – The operationalization of this construct is to be comprised of a) the frequency with and duration for which the individual makes or receives phones calls, and b) the frequency with which the individual sends or receives text messages and e-mail (via cell phones).

Coping Nature Without Phone – The coping nature without the cell phone will be operationalized by the level of anxiety experienced when the individuals' phones are taken from them.