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Social Context for Mobile Computing Device Adoption: A Proposed Research Model

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Abstract

The primary objective of this research is to investigate how perceptions of the social context of an organization moderate the usage of an innovative technology. In this study we incorporate the social context of an organization into TAM and propose a research model and a set of ten associated propositions that can be used to investigate mobile computing devices for B2B transactions as a technological innovation. We believe that such an extension is necessary and appropriate in light of the fact that various aspects of the social context have been found significant with the introduction of new technologies. In particular, a micro-level analysis of this phenomenon for the introduction of new technologies is not common. Since the technological innovation that we investigate is very much in its nascent stages there may not yet be a large body of users. Therefore, this provides a rich opportunity to conduct academic research. Since empirical validation of the proposed research has not been conducted we conjecture the potential implications of our work for research and practice, limitations of our work, and future directions.

Keywords: Mobile computing devices, innovation, adoption, assimilation, organizational climate/culture, social context

Introduction

What causes individuals to adopt new information technologies (IT)? How much influence do the perceptions of the social context of an organization have on the acceptance of new IT? These questions are significant because systems that are not utilized will not result in expected efficiency and effectiveness gains (Agarwal and Prasad 1999). Academic research consequently has focused on the determinants of computer technology acceptance and utilization among users. Some of this research comes from the literature on adoption and diffusion of innovations (DOI), where individual's perceptions about an innovation's attributes (e.g., compatibility, complexity, relative advantage) are posited to influence adoption behavior (Moore and Benbasat 1991; Rogers 1995). Another stream of research stems from the Technology Acceptance Model (TAM), which has become widely accepted among IS researchers because of its parsimony and empirical support (Agarwal and Prasad 1999; Davis 1989 1993; Davis et al. 1989; Hu et al. 1999; Jackson et al. 1997; Mathieson 1991; Taylor and Todd 1995; Venkatesh 1999 2000; Venkatesh and Davis 1996 2000; Venkatesh and Morris 2000).

Individual differences indeed are believed to be very relevant to information system (IS) success (Zmud 1979). Nelson (1990) also acknowledged the importance of individual differences in affecting the acceptance of new technologies. A variety of research has investigated differences in the perceptions of individuals when using TAM (Harrison and Rainer 1992; Jackson et al. 1997; Venkatesh 1999 2000; Venkatesh and Morris 2000); however, the perceptions of the social context of an organization have not been examined. Hartwick and Barki (1994) suggest that it is imperative to examine the acceptance of new technologies with different user populations in different organizational contexts.

Although mobile computing devices have existed for several years strategic applications of this technology are still in infancy. Mobile computing devices (in the context of business-to-business – B2B) is treated as a technology innovation in this study due to their newness and short history. An investigation into the usage of mobile computing devices within a B2B context, which we define as two or more entities engaged within a business relationship, is of value because of its increasing popularity (March et al. 2000). As an emergent phenomenon, relatively modest academic literature has examined the nature of adoption and use

of this technology. Mobile computing devices, which have been described as ubiquitous (March et al. 2000) and nomadic (Lyytinen and Yoo working paper), offer a stark difference from traditional, static computing environments. A good characterization of these differences is provided in Satyanarayanan (1996). New technology innovations typically require changes in user's existing operating procedures, knowledge bases, or organizational relationships (Van de Ven 1986). Such innovations may even require users to develop new ways of classifying, examining, and understanding problems. The domain of mobile computing devices has the potential to become the dominant paradigm for future computing applications (March et al. 2000), and topics of such contemporary interest are recommended to be pursued in IS research (Benbasat and Zmud 1999; Lyytinen 1999).

The primary objective of this research is to examine whether and how perceptions of the social context of an organization moderate the adoption and use of mobile computing devices for B2B transactions. We extend TAM to include individuals' perceptions of the social context of their organization, which incorporates aspects of both culture and climate research, as recommended in the literature (Denison 1996; Moran and Volkwein 1992). Aspects of the social context of an organization are suggested as having a significant role in the introduction of new technologies (Boudreau et al. 1998; Denison and Mishra 1995; Orlikowski 1993; Zammuto and O'Conner 1992). Only a handful of studies in the past have specifically looked at the micro-level connections of these relationships (Straub 1994). We argue that an organization's social context will have a significant moderating effect on the perceptions of employees.

he paper proceeds as follows: the next section presents the background research in the domains (adoption of technology innovations within the context of TAM and social context) underlying this research. This will be followed by the presentation and discussion of our proposed model and accompanying propositions. A brief discussion of the types of B2B application domains that are relevant to mobile-computing and would be of (future) interest to our investigation is then presented accompanied by one methodological approach to how such research can be conducted. This paper concludes with some potential implications for research and practice, limitations of the study, and potential future directions.

Background Research

In this section, we first discuss the extant research connected with the technology acceptance model (TAM) followed by research related to social context.

Technology Acceptance Model – TAM

The Technology Acceptance Model (TAM) proposed by Davis (1989) has its roots in the Theory of Reasoned Action – TRA (Fishbein and Ajzen 1975) and, as earlier alluded to, is one of the most widely used models of information technology (IT) acceptance. This model accounts for the psychological factors that influence user acceptance, adoption, and usage behavior of new IT (Davis 1989 1993; Davis et al. 1989; Hu et al. 1999; Mathieson 1991; Taylor and Todd 1995). TAM model is displayed in Figure 1.
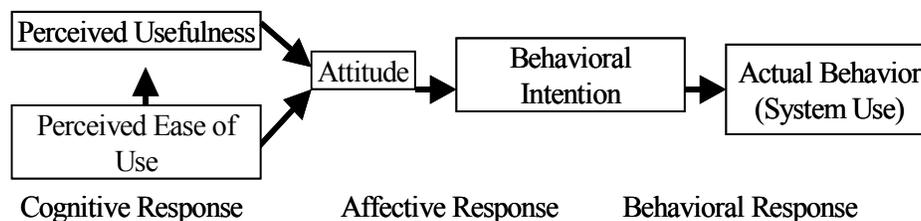

Figure 1. Technology Acceptance Model (Davis 1993: 476)

As is fairly well known in the IT literature, TAM specifies two beliefs, *perceived usefulness* (PU) and *perceived ease of use* (PEOU) to be determinants of IT usage. It incorporates behavioral intention as a mediating variable in the model, which is important for both substantive and sensible reasons. In terms of substantive reasons, the formation of an intention to carry out a behavior is thought to be a necessary precursor to behavior (Fishbein and Ajzen 1975). In terms of sensible reasons, the inclusion of intention is found to increase the predictive power of models such as TAM and TRA, relative to models that do not

include intention (Fishbein and Ajzen 1975). Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance her/his job performance"; and perceived ease of use is defined as, "the degree to which a person believes that using a particular system would be free of effort" (Davis 1989:320). Since these two key determinants of behavioral intention (to use the IT system) from TAM are users' *a priori* assessments/perceptions of usefulness and ease of use of the IT in question, as displayed in Figure 1, these perceptions fall into the category of cognitive responses; behavioral intention equates to affective response and actual system use is a behavioral response.

Recent research employing the TAM model had identified individual differences as a major external variable (Agarwal and Prasad 1999; Jackson et al. 1997; Venkatesh 2000; Venkatesh and Morris 2000). Individual differences are any forms of dissimilarity across people, including differences in perceptions and behavior (Agarwal and Prasad 1999). For example, Agarwal and Prasad (1999) found that an individual's role (provider or user) with regard to a technology innovation, level of education, and previous experiences with similar technology were significantly related to their beliefs about the ease of use of a technology innovation. Agarwal and Prasad also found a significant relationship between an individual's participation in training and their beliefs about the usefulness of a technology innovation. Jackson et al. (1997) examined variables such as situational involvement, intrinsic involvement, and prior use of IT by users and Venkatesh (2000) considered individual specific variables such as beliefs about computers and computer usage, and beliefs shaped by experiences with the technology in the traditional TAM. Both these studies found significant relationships among these individual differences and TAM constructs. Further, Venkatesh and Morris (2000) argue from their findings that "men are more driven by instrumental factors (i.e., perceived usefulness) while women are more motivated by process (perceived ease of use) and social (subjective norm) factors (p. 129)". Thus, while the various above-noted research studies have investigated the differences in the perceptions of individuals using TAM, as noted earlier, perceptions of the social context of an organization has not been examined thus far.

Social Context of an Organization and Innovativeness

As noted in the introduction, in light of the fact that social context of an organization has been suggested as having a significant role in the introduction of new technologies (Boudreau et al. 1998; Denison and Mishra 1995; Orlikowski 1993; Zammuto and O'Conner 1992), we extend TAM in this research to incorporate an individual's perceptions of the social context of their organization. As recommended in the literature, we examine the social context of an organization to incorporate aspects of both culture and climate (Denison 1996; Moran and Volkwein 1992). We take the stand that a study of culture and organizational climate actually examines the same phenomenon, namely, the creation and influence of social contexts in organizations, but from different perspectives (Denison 1996). Following the recommendation of prior research, we examine the broader social context in order to improve our understanding of the organizational phenomenon (Astley and Van de Ven 1983; Denison 1996; Moran and Volkwein 1992; Pfeffer 1982).

Organizational climate can be described as the shared perceptions of organizational members who are exposed to the same organizational structure (Schneider 1990). Zmud (1982) suggests that it is not the structure of the organization that triggers innovation; rather, innovation emerges from the organizational climate within which members recognize the desirability of innovation, and within which opportunities for innovation arise and efforts toward innovation are supported. As summarized in Schneider (1990) and in Moran and Volkwein (1992), a number of different conceptualizations of organizational climate have been suggested over the years. Pareek (1987) advanced the idea that climate and culture can only be discussed in terms of how it is perceived and felt by individual members/ employees of the organization. Thus, we are interested in capturing the perceptions of individuals within organizations. Since the unit of analysis (during empirical evaluation) of our research is the individual employees within organizations, appropriate measures of examining social context can be derived from psychological climate literature.

Rather than how the psychological climate of an organization gets formed, of interest in this study is how the prevailing climate of an organization moderates the relationship between individuals' perceptions of an innovation's usefulness and ease of use and their intentions to adopt and use the innovation. Psychological climate is a multi-dimensional construct that can be conceptualized and operationalized at the individual level (Glick 1985). In an attempt to integrate several different measures of psychological climate, Koys and DeCotiis (1991) derived eight summary dimensions – *autonomy*, *cohesiveness*, *fairness*, *innovation*, *pressure*, *recognition*, *support*, and *trust*. A brief definition/ description of each of these dimensions is provided in Table 1.

Table 1. Dimensions of Psychological Climate (Adapted from Koys and DeCotiis 1991)

Dimension Name	Definition
Autonomy	Employee's perception of their own sovereignty with respect to work procedures, goals and priorities.
Cohesion	Employee's perception of sharing and togetherness within their organization.
Trust	Employee's perception of freedom to communicate openly with members at higher organizational levels about sensitive or personal issues with the expectation that the integrity of such communications will not be violated.
Pressure	Employee's perception that time demands are incongruent with respect to task completion and performance standards.
Support	Employee's perception of the tolerance of their behavior by superiors, including the willingness to let employees learn from their mistakes without fear of reprisal.
Recognition	Employee's perception that their contributions to their organization are acknowledged.
Fairness	Employees' perception that their organization's practices are equitable and non-arbitrary.
Innovation	Employee's perception that change and originality are encouraged and valued within their organization, including risk-taking in domains where the individual may have little to no prior experience.

In the next section, while presenting our research model and associated propositions, we will discuss how each of these dimensions is expected to moderate the relationship between an individual's perceptions (of an innovation) and behavioral intention (to adopt and use it). Briefly, however, we will take a couple of these climate dimensions (*support* and *autonomy*) and discuss the relevance of these dimensions of organizational climate for the adoption of technological innovations.

Senior management's attitude toward change (consequential to the introduction of technology innovations) and thus the extent of their *support* impacts the adoption of these technology innovations (Damanpour 1991). Senior management teams may be very conservative, preferring the status quo and using current or time-tested methods innovating only when they are seriously challenged by their competition or by shifting consumer preferences (Miller and Friesen 1982). By contrast, they may be risk prone, actually encouraging and actively supporting the use of innovative techniques to move the organization forward, usually trying to obtain a competitive advantage by routinely making dramatic innovative changes and taking the inherent risks associated with those innovations (Litwin and Stringer 1968). The potentially disruptive features typically associated with the adoption of (radical) innovations require an organization context where managers encourage individual members of the organization to take (prudent levels of) risk, support adoption of technology innovations, and be supportive of changes in their organizations (Dewar and Dutton 1986).

Organizational context/climate also reflects the extent of focus on autonomy/empowerment versus control of its members. An organic organization as contrasted with mechanistic organization is typically associated with open, free-flowing communication, sharing of necessary information, flexibility and absence of rigid rules and regulations; such an organization context is usually positively related to innovation (Aiken and Hage 1971; Kimberly and Evanisko 1981). Furthermore, an organizational climate that is geared toward and has in-built expectation of high levels of achievement and high standards of excellence nurtures a vibrant base of challenges posed to its members who have the freedom to apply innovative technologies, techniques, and procedures to effectively accomplish the tasks (Rosenthal and Craine 1963). Such an organizational context will be more prone to encouraging its members to adopt technology innovations to accomplish high levels of performance.

Research Model and Tentative Propositions

Based on the foregoing brief discussion of the extant research we extend the standard TAM model with social context dimensions as shown in Figure 2.
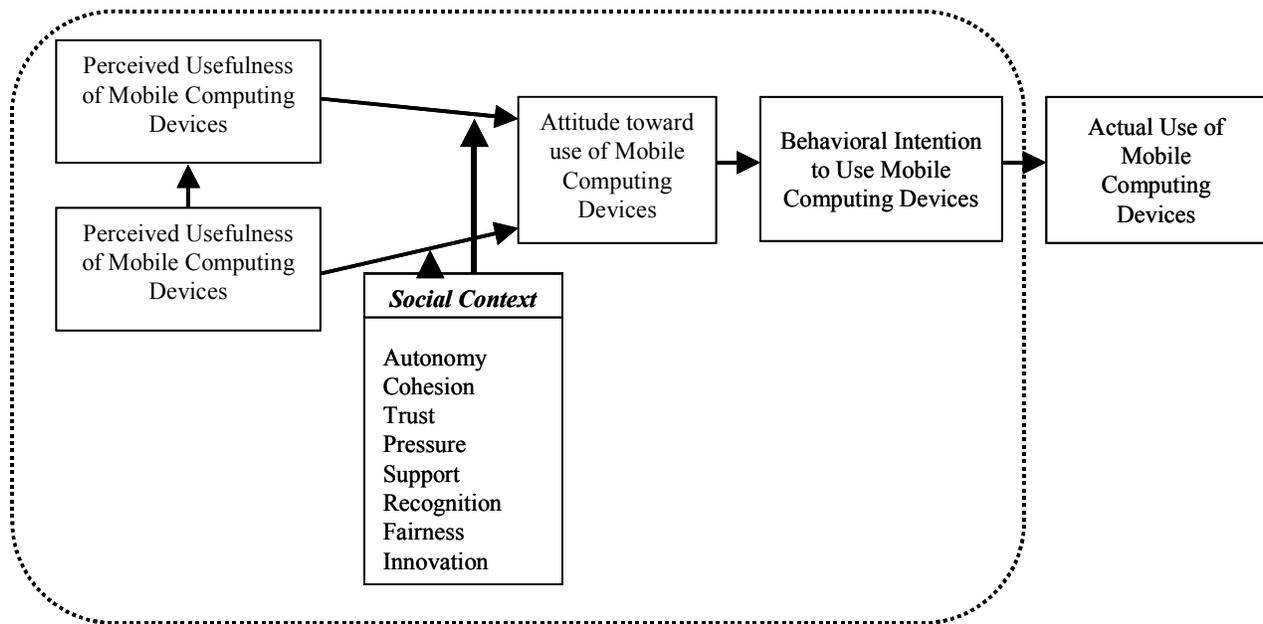
Figure 2. Research Model

Traditional TAM Propositions

As noted earlier, TAM (and, thus, our research model) incorporates behavioral intention as a mediating variable in the model. However, in light of the fact that usage occurs after a technology innovation is adopted and since the thrust of this study is on the adoption (rather than the use) stage we confine ourselves to examining only the "behavioral intentions" – the intentions of the organizational members to adopt (and later make use of) the technology innovation.

An individuals' intention to adopt/use technology is driven by their perceptions of the usefulness of the technology (Davis et al. 1989). This contention, as noted in the background research section, has been supported extensively in previous research (Agarwal and Prasad 1999; Davis et al. 1989; Hu et al. 1999; Jackson et al. 1997; Venkatesh 1999 2000; Venkatesh and Davis 1996 2000; Venkatesh and Morris 2000). A primary reason why individuals would intend to adopt/use mobile computing devices for B2B transactions is that they believe that this technology will provide them the flexibility to perform their job and enable their job performance enhancement. Thus, in line with previous TAM studies, we propose:

> *Proposition 1:*   *Perceived usefulness will have a positive effect on organizational members' intention to adopt/use mobile computing devices for B2B transactions.*

As noted earlier, the second major determinant of behavioral intentions in the TAM model, *perceived ease of use*, has been observed to have both a direct influence on behavioral intention as well as an indirect influence through its effect on perceived usefulness (Davis 1989; Davis et al. 1989; Hu et al. 1999; Jackson et al. 1997). This is understandable since a person who believes that a technology innovation is (relatively) easy to understand and use, and is less demanding of efforts would likely believe that using such a technology is also more useful. Hence, we propose the two following propositions:

> *Proposition 2a:*   *Perceived ease of use will have a positive effect on organizational members' intention to adopt/use mobile computing devices for B2B transactions.*

> *Proposition 2b:*   *Perceived ease of use will positively influence organizational members' perceptions of the usefulness of mobile computing devices for B2B transactions.*

Extended TAM Propositions

One of the key objectives of this study was to examine what role if any social context plays in the link between individuals' perceptions of usefulness and ease-of-use and behavioral intentions of the TAM model. We also pointed out that social context, when conceptualized in terms of climate/culture, is a multi-dimensional construct composed of eight dimensions (Koys and DeCotiis 1991). Since there has been no attempt to examine this additional set of dimensions within the context of TAM much of the arguments and rationale that we provide in the rest of this section while developing the propositions are likely to be tentative.

Autonomy

At one end of the spectrum, an organization can be extremely control and compliance oriented (*mechanistic* organizational context) formulating, administering, and closely monitoring and enforcing a set of policies and procedures that guide employee work activities. At the opposite end of the spectrum, an organization can be performance and achievement oriented (*organic* organizational context) by empowering their employees to determine their task priorities and schedule, providing them the autonomy to make use of any and all techniques, tools and technologies that they deem best for getting the work done, and being flexible with respect to adherence on the standard policies and procedures. Thus, in organizations where the members perceive greater *autonomy* and flexibility being provided to them in making decisions and choices on their task-related activities are likely to more quickly exploit (any) opportunity that technology innovations offer. While this is fairly obvious when the technology is perceived to be useful and easy-to-use, even in instances where such perceptions may not be completely true the organizational members may still be more willing to make informed decisions that they are responsible and accountable for (Aiken and Hage 1971; Kimberly and Evanisko 1981). Therefore:

> *Proposition 3:*   *The relationship between employees' perceptions (of usefulness and ease-of-use of the technology) and their intentions to adopt/use mobile computing devices for B2B transactions will be stronger in organizational contexts that provide greater autonomy to their employees.*

Cohesion

As would be noted (from the brief description provided in Table 1) *cohesion* refers to an organizational context/climate that fosters a sense of sharing, caring, accommodation and togetherness among the members/employees (Koys and DeCotiis 1991). Communication, sharing and exchange of information and knowledge amongst the members is bound to be much more open in such a context. Employees would more willingly share their experiences and support one another when attempting to make decisions on complex and unknown topic areas (e.g., relevance and mastery of new technologies). It is, therefore, reasonable to expect that potential adopters of new technology innovations (mobile computing devices) would be more willing and prepared to assume any challenges posed by the new technology environment in view of the potential support that they can expect from their colleagues in their work environment. Therefore, we propose the following:

> *Proposition 4:*   *The relationship between employees' perceptions (of usefulness and ease-of-use of the technology) and their intentions to adopt/use mobile computing devices for B2B transactions will be stronger in organizational contexts that foster a greater sense of cohesion/ cohesiveness among their employees.*

Trust

The third dimension of organizational climate, *trust*, refers to the extent to which employees within the organization can openly communicate with their superiors, seek their guidance and expertise, and be confident that the integrity of sensitive information will not be compromised (Koys and DeCotiis 1991). It is easy to visualize that such expectations of trust work in both directions – from subordinate to superiors and vice versa. Trust also involves an expectation of confidence in the goodwill of others in the organizational context/environment as well as the prospects for continuity of the relationship entered into (Hart and Saunders 1997). It is normal to expect that these trusting organizational contexts employees will be more prepared to share their difficulties and concerns (work-related and even personal), propose potential technology-based solutions and seek approval/guidance/advice from their superiors. This can be quite important as in the case of introduction of mobile computing devices where the work arrangements and workflows are bound to be disrupted and changed quite radically. Therefore, we propose that:

> *Proposition 5:* *The relationship between employees' perceptions (of usefulness and ease-of-use of the technology) and their intentions to adopt/use mobile computing devices for B2B transactions will be stronger in organizational contexts that promote and reinforce trust between employees and the organization.*

Pressure

The fourth dimension of organizational climate, *pressure*, refers to the fact that the work context may not provide adequate time for the employees to accomplish their task-related activities and achieve the required standards of performance and goals (Koys and DeCotiis 1991). Typically, it would be reflective of a situation of significant stress, hasty decisions and actions resulting in suboptimal results, and generally chaos. This stressful environment may indeed be one that could spur the organizational members to creatively look for (technologically) innovative solutions to alleviate the difficulties and infuse some order. To the extent that the performance of tasks is not geographically constrained (e.g., assembly-line work in automotive manufacturing) it is possible that mobile computing devices may indeed alleviate the time pressure that is so rampant in the work context. Therefore, we propose that:

> *Proposition 6:* *The relationship between employees' perceptions (of usefulness and ease-of-use of the technology) and their intentions to adopt/use mobile computing devices for B2B transactions is likely to be stronger in organizational contexts that reflects one of (time) pressure for employees to accomplish their task and realize the set performance standards.*

Support

The fifth dimension of organizational climate, *support*, reflects an organizational context that is tolerant of errors and mistakes that employees may commit and is supportive of them as long as they learn from these (Koys and DeCotiis 1991). An environment that is permissive and lets their members learn from mistakes without fear of punishments and reprisals could engender deep-rooted learning, a "can-do" attitude to problem solving, and (reasonable) risk-taking orientation (Litwin and Stringer 1968). As noted earlier, management's attitude toward change (often triggered by introduction of technology innovations) and thus the extent of their support impacts the adoption and successful implementation of these technology innovations (Damanpour 1991; Sanders and Courtney 1985). The potentially disruptive features typically associated with the adoption of (radical technology) innovations require an organization context where managers encourage individual members of the organization to take (prudent levels of) risk, support adoption of technology innovations, and be supportive of changes in their organizations (Dewar and Dutton 1986). Supportive organizational context is also conducive to successful IT implementation (Ramamurthy and Premkumar 1999). Therefore, we propose that:

> *Proposition 7:* *The relationship between employees' perceptions (of usefulness and ease-of-use of the technology) and their intentions to adopt/use mobile computing devices for B2B transactions is likely to be stronger in organizational contexts that are tolerant and supportive of employees in accomplishing their work.*

Recognition

The sixth dimension of organizational climate, *recognition*, reflects an organizational context where employee achievements and accomplishment are acknowledged and recognized (Koys and DeCotiis 1991). *Human relations management* and *job enrichment* literatures (Hackman and Oldham 1980) point out that intrinsic rewards (e.g., employee of the month recognition) at times are more important than extrinsic rewards (e.g., salary raises, promotion). Resource-based theory also acknowledges the vital role human assets/resources play in contemporary hyper-competitive external environments where progressive organizations strive to keep their employees satisfied and thus retain top talent. It is, therefore, natural to expect that organizations should strive to create a climate that spurs their employees to constantly look out for creative solutions (including new technology innovations) that fosters excellence in achievement. Obviously, this is unlikely when such efforts and accomplishments go unrecognized. Thus, we would propose that:

> *Proposition 8:* *The relationship between employees' perceptions (of usefulness and ease-of-use of the technology) and their intentions to adopt/use mobile computing devices for B2B transactions is likely to be stronger in organizational contexts that are open to acknowledge and recognize the accomplishments of their employees.*

Fairness

The seventh dimension of organizational climate, *fairness*, reflects an organizational context where employees believe in equitable and non-arbitrary treatment (Koys and DeCotiis 1991). This reinforces the notion that hard, sincere and smart work pays off. Clearly an organization that does not design its work-place context with work/job assignment that are perceived to be fair and rewards that are perceived to be equitable for similar accomplishments would trigger significant discontent and distrust. Such an environment is hardly likely to evoke any voluntary or enthusiastic response to organizational challenges including searching for new technology innovations. Therefore, we would propose that:

> *Proposition 9:* *The relationship between employees' perceptions (of usefulness and ease-of-use of the technology) and their intentions to adopt/use mobile computing devices for B2B transactions is likely to be stronger in organizational contexts that are deemed to be fair in the treatment of their employees.*

Innovation

The last (eighth) dimension of organizational climate, *innovation*, reflects an organizational context where employees believe change from status-quo can be good, that originality is valued, and risk-taking will be encouraged (Koys and DeCotiis 1991). As noted earlier, management's attitude toward change (often triggered by introduction of technology innovations) impacts the adoption of these technology innovations (Damanpour 1991). Some senior management teams may have conservative attitudes toward innovation and associated risk, preferring the status quo and using current or time-tested methods; such organizations innovate only when they are seriously challenged by their competition or by shifting consumer preferences (Miller and Friesen 1982). By contrast, other senior management teams may be risk prone, actually encouraging and actively supporting the use of innovative techniques to move the organization forward. Such organizations usually try to obtain a competitive advantage by routinely making dramatic innovative changes and taking the inherent risks associated with those innovations. The potentially disruptive features typically associated with the adoption of (radical technology) innovations require an organization context where managers encourage individual members of the organization to take prudent levels of risk, support adoption of technology innovations, and be supportive of changes in their organizations (Dewar and Dutton 1986). Thus, we would propose that:

> *Proposition 10:* *The relationship between employees' perceptions (of usefulness and ease-of-use of the technology) and their intentions to adopt/use mobile computing devices for B2B transactions is likely to be stronger in progressive/innovative organizational contexts.*

B2B Application Domain and Suggested Research Methodology

Some of the broad domains of B2B application areas that are relevant for mobile-computing and of interest to us for this study would be inventory management, customer relationship and service management, sales force automation, product locating and purchasing, dispatching and diagnosis support to, say, technicians in remote locations, mobile shop-floor quality control systems, as well as those applications and transactions in supply chain management (SCM) that facilitate the integration of business processes along the supply chain (Turban et al. 2002; Varshney and Vetter 2001). An example of B2B transactions in the SCM context includes data transmission from one business partner to another through the typical enterprise resource planning (ERP) interactions. In light of the fact that a number of these application domains have preexisted the Internet, the choice of applications areas could be Internet- or non-Internet-based.

As noted before, mobile computing is still in a very early stage of its evolution and use within organizations in a B2B context. Although a large-scale field survey would be required to test the research model that we presented, such an approach may not be appropriate in this context due to the exploratory nature of this inquiry. Therefore, the research methodology that we suggest and propose to use at this stage is a combination of both qualitative and quantitative research for data collection. Rather than a large

national random sample, we propose a purposive convenience-based sample of a few (say, 8-12) large and medium sized corporations with almost equal composition of manufacturing and service sectors. Furthermore, based on secondary information and personal contacts, we would prefer to select an equal mix of corporations that do not (yet) use and those that currently use mobile computing so that we can capture their "intention" and subsequently their "actual use". Although the "social context" or "climate" prevailing within each of these organizations may be a "given reality" at least at a point in time, as observed in most past research, it is the interpretations of this social context/climate that would drive individual actions especially when the intended/actual behavior (in this case, adoption and use of mobile computing) is not mandatory (Moran and Volkwein 1992). Thus, in-depth interviews coupled with a questionnaire survey from a number of focal members (about 20 to 25) sampled from multiple functional areas (that are amenable for use of mobile computing devices such as sales and marketing, purchasing, and operations) within participant organizations will be used to capture individual perceptions of the mobile computing devices and their organization's social context. As argued above, since the rate of diffusion for mobile computing devices for B2B transactions is still relatively small, a convenient sampling approach among organizations that have and have yet to adopt these technologies is appropriate. To ensure relevance and reasonable generalizability of the study findings of our convenient sampling, participants from each organization will be chosen randomly. A number of statistical techniques such as logistic regression and structural equation modeling would be candidates for data analyses.

Conclusions

In this study we incorporated the social context of an organization into TAM and proposed an extended model to investigate adoption/use of mobile computing devices for B2B transactions as a technological innovation. We believe that such an extension is appropriate because aspects of social context have in general been found significant with the introduction of new technologies. In particular, a micro-level analysis of this phenomenon for the introduction of new technologies is rare. Since the unit of analysis of our research is the individual, we utilized dimensions of psychological climate to represent the social context of an organization. The primary objective of this research was to posit how perceptions of the social context of an organization would moderate the intention to adopt/use a technology innovation.

A key feature of this study is that we examine an information technology that has the potential of becoming a dominant paradigm and platform for future computing applications. Mobile computing devices have existed for several years, but its usage for business-to-business (B2B) transactions has hardly been explored in academic research. Mobile computing devices, therefore, is an ideal topic for IS research. We drew upon theories from information systems and organizational behavior literature, among others, to develop our research model and associated ten propositions. Since the empirical segment of this research has not yet been conducted, we can only conjecture several potential research contributions for researchers and practitioners.

The potential implication that this work has for research is that it explores how the social context of an organization may influence the acceptance of an information technology innovation. The social context of an organization has not been applied to TAM, and an extension focusing on the micro-level aspects of the social context has been neglected while examining the introduction of new technologies. The primary objective of our research of investigating the social context of an organization consequently extends the innovation adoption and TAM literature base. Utilizing a (valid and popular base) model and measures that have become widely accepted among IS researchers allows for researchers to replicate our study and examine other factors of interest in future research. This research also addresses the need to explore technology that is close to the "leading edge" (Lyytinen 1999:26), which is recommended for maintaining the relevance of IS research (Benbasat and Zmud 1999; Lyytinen 1999; Orlikowski and Iacono 2001). Obviously, considerable care and precautions (in the design of the study, operationalization and evaluation of the measurement properties) will be needed in translating the theoretical model proposed in this study into a large scale empirical investigation that can establish validity and reliability of its results.

The potential implication that this work has for IS practice is that it identifies a number of contextual factors that may influence the acceptance of a technological innovation that an organization wishes to introduce. Given the large investments at stake when implementing an IT innovation, it is desirable to understand the influence that the social context of an organization plays. Moran and Volkwein (1992) state that focusing on the micro-level aspect of the social context is appealing because it is relatively accessible, more malleable, and the appropriate level to target short-term interventions aimed at producing positive organizational change. Since the domain of mobile computing devices has the potential to become the dominant paradigm for future computing applications (March et al. 2000), this research may uncover several future opportunities for organizations.

Although this research offers several potential contributions, several limitations exist. The social context of an organization is operationalized through psychological climate dimensions. The definition of social context that we adopted for this research takes

a much broader view than focusing on the individual incorporating traditions from research in the organizational culture literature as well. We felt that it was appropriate to use the social context of the organization to begin the integration of culture and climate literature. It was our opinion that the psychological climate research was most appropriate theory to support their research model, which presents opportunities in future work to examine other aspects of the social context of an organization that may be influential in the acceptance of a technological innovation. Another limitation of this research (when empirical investigation is conducted) is that it may obtain retrospective accounts/information from (current) users of mobile computing devices for B2B transactions. Retrospective accounts are an issue because individuals may not be able to accurately recall the past. It would be necessary to consider preventive measures on this front to ensure validity and reliability of the results.

There are several directions that our study can take in the future beyond the work discussed in this research. Koys and DeCotiis (1991) identify eight dimensions for capturing the psychological climate of an organization, but acknowledge that other salient dimensions are also possible to consider. One future direction may be to examine other dimensions that were not identified in this research, which may be of particular importance for the acceptance of a technological innovation.

References

References are available upon request.