The Implementation of Mobile Technology in Organizations: Expanding Individual Use Contexts

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THE IMPLEMENTATION OF MOBILE TECHNOLOGY IN ORGANIZATIONS: EXPANDING INDIVIDUAL USE CONTEXTS

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Abstract

Mobile computing devices such as personal digital assistants, smart mobile phones, and other handheld computing devices hold much promise in terms of their organizational application. Many existing models of the individual acceptance and implementation of information technology in organizational contexts have been developed in the era of “at the office” computing such as MIS, office automation, groupware, and so forth. We conducted two in-depth case studies of the implementation of mobile technology in healthcare organizations. The studies highlight interrelated individual use contexts due to the mobility of the technology: the individual as employee, as professional, as private user, and as member of society. The cases show that influences emanating from these use contexts impacted on the individual adoption of the technology within the organization. While broad extra-organizational influences are incorporated in some existing individual technology adoption models, we show that it becomes relevant to accommodate these influences more specifically in research models of mobile computing in organizations. Based on the extant literature and the case study data we pave the way toward more comprehensive models of the adoption and implementation of mobile technologies in organizations.

Keywords: Use contexts, IT adoption, mobile technology, IT implementation in organizations, individual IT acceptance

Introduction

Mobile computing devices such as personal digital assistants (PDAs), “smart” mobile phones (with computing capabilities), and other handheld computing devices have become very popular. It was estimated that 20 million PDAs were sold in 2002 in the United States alone (Kelsey 2002). In Europe, sales of mobile devices (especially smart mobile phones) grew significantly between 2003 and 2004 (Smith 2004).

To date, the majority of buyers of these devices have been individual users, but many organizations are also considering ways to harness these technologies as part of their computing infrastructure. Mobile computing holds much promise for organizations; the small size and wireless connectivity associated with some of these devices introduce new flexibility in terms of when, where, and how these technologies can be applied (Varshney 2003).

The implementation of information technology in organizational contexts has been widely studied at different levels of analysis. In this paper, we explore the acceptance of mobile computing technology by individual users following an organizational decision to implement the technology. When the use of a specific information technology is mandated (e.g., by management) via a primary
adoption decision to implement the technology, individuals (e.g., employees) within the organization are typically required to make a secondary adoption decision to accept the technology (Gallivan 2001; Venkatesh et al. 2003).

Many existing individual acceptance models in the literature stem from uses within the organizational context. The emergence of nomadic work (Lyytinen and Yoo 2002b) enabled by technologies such as mobile computing suggested the need to revisit the applicability of individual technology acceptance models as a result of extended use of the technology beyond the organizational context. In this research, therefore, we questioned which use contexts have an influence on the individual acceptance of mobile technology within organizational contexts.

We explored this question in the case of mobile technology implementation in the health sector. We examined two contrasting cases: one in which a rather classical IT implementation approach was followed and one case in which individual use contexts beyond the organizational environment were leveraged as part of the organizational implementation process.

We found that in the case of mobile technology implementation in organizations, influences resulting from private and professional use contexts can impact on individual acceptance of technology within the organizational context. This suggests the need for richer models of the individual acceptance of information technology. We also found that mandatory and voluntary use contexts coexist in some mobile technology implementations. In fact, organizations may find it beneficial to allow private and professional individual use of the technology during implementation.

The paper is structured as follows. First we highlight perspectives from the literature that focus on the individual adoption of information technology innovations in organizational contexts. We then present the two case studies highlighting the individual acceptance of the technology during the organizational implementation process. We conclude with the contributions of our study for research and practice.

Literature Review: Adoption Contexts

The adoption and implementation of information technology in organizational contexts have been widely studied at different levels of analysis. A wealth of literature exists in both the factor-based and process-based traditions of studying IT implementation (Markus and Robey 1988).

Within organizational contexts, both voluntary and mandatory individual adoption scenarios could exist. When the use of a specific information technology is mandated (e.g., by management) via a primary adoption decision, the secondary adoption decisions of individuals (e.g., employees) within the organization are commonly referred to as acceptance decisions (Fichman 1992; Gallivan 2001; Lucas et al. 1990).

At the organizational level of analysis, various factors related to IT implementation process have been identified that impact on individual acceptance of the technology. These include management support, user training, involvement of users in the process, conceptualization of the implementation processes itself, subunit power and political motives of stakeholders in the implementation of IT (e.g., Cavaye and Christiansen 1996; Ginzberg 1981; Ives and Olson 1984; Markus 1983; Nolan 1973; Swanson 1987).

In addition, process-based studies typically model IT implementation as a series of stages and associated managerial actions that impact on individual acceptance of technology in the organization (e.g., Cooper and Zmud 1990; Damsgaard and Scheepers 2000; Galliers and Sutherland 1991; Lytinen 1991; Kwon and Zmud 1987; Rogers 1995; Sabherwal and Robey 1993). In seeking to combine the organizational-level implementation perspectives (process-based views) with factors that influence the individual acceptance of technology (factor-based views), some hybrid models have been proposed (e.g., Gallivan 2001; Lucas et al. 1990). The focal information technologies for many of the abovementioned studies typically reflect the era of “at the office” computing such as MIS, office automation, groupware, intranets, and so forth. In addition, the individual acceptance of the technology is often related to aspects such as the individual’s job performance within the organizational-use context.

At the individual level of analysis, the adoption of new information technology by users is considered one of the most established areas of research in information systems (Venkatesh et al. 2003). Many of the prior research models developed at the individual level of analysis have been criticized for their limitations when applied to mandatory contexts (Gallivan 2001). The recently published unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al. 2003) claims to overcome such limitations.
The UTAUT combines eight prior competing models of individual acceptance of IT with different sets of determinants to explain the acceptance of IT by individuals. The eight models are theory of reasoned action, (Ajzen and Fishbein 1980); technology acceptance model (TAM) (Davis 1989); motivational model (Davis et al. 1992); theory of planned behavior (TPB) (Ajzen 1987); combined TAM and TPB (Taylor and Todd 1995); model of PC utilization (Thompson et al. 1991); innovation diffusion theory (Moore and Benbasat 1991; Rogers 1995); and social cognitive theory (Compeau and Higgins 1995). Venkatesh et al. aimed to develop a unified model that integrates fragmented theory and alleviate the shortcomings in previous research.

Venkatesh et al., however, noted a limitation in the sense that their empirical base did not include e-commerce or m-commerce technologies. Hence the authors have called for the testing of the findings for these types of technologies. The empirical base for developing the UTAUT model mostly encompasses individual acceptance of information technology within organizational contexts. For example, one of the determinants in UTAUT, social influence, describes the way in which important role players (such as managers) within the organization judge that the individual (e.g., employee) should use the new system (pp. 427, 437). The social influence is only relevant when such parties can reward conformity or punish nonconformity of the individual (p. 453).

In summary, many of the models of individual acceptance of technology discussed in this review have been developed or tested to explain individual use of information technology, often within organizational contexts. Some models also accommodate influences emanating from society-at-large (e.g., Gallivan 2001; Rogers 1995). In addition, the empirical base for many of these models’ development comprised of computing technologies that are primarily intended for organizational uses (by employees in mandatory or voluntary use scenarios). The contexts of these implementation models are summarized in Figure 1.

The importance of being cognizant of the attributes of the focal technology in theorizing about the computing artifact is well documented (e.g., Kling 1991; Monteiro and Hanseth 1995; Orlikowski and Iacono 2001). Mobile computing technology suggests that individual use of these technologies transcends the organizational context (Davis 2002; Lyytinen and Yoo 2002a; Scheepers and Scheepers 2003), and call upon us to revisit assumptions about use contexts that underpin existing individual acceptance models.

We now examine two cases of mandatory implementation of mobile technology in organizations. The two cases highlight the need to revisit assumptions about use contexts in current theoretical frameworks of the individual acceptance of information technology in organizational contexts.

Two Cases of Mobile Technology Implementation

The following case studies illustrate the influence of private and professional use contexts on the individual acceptance of mobile technology within the organizational implementation process. In both case organizations, use of the technology was mandated by the management.

Case study research is especially appropriate in new topic areas (Eisenhardt 1989) and is a research strategy that allows for an in-depth description of the relationships in a particular situation (Benbasat et al. 1987; Galliers 1991). The case research strategy
was chosen here due to the novelty of mobile technology applications within organizations and to examine individual use contexts in depth (Dube and Pare 2003; Yin 2003). In addition, these two cases illustrate contrasting approaches in terms of the individual use contexts addressed in their implementation process. In many instances, the two case organizations are quite similar. Both are Australian service-based organizations that operate in the healthcare sector. Both organizations rely on personal relationships in their service delivery and, in this respect, both organizations have similar objectives in seeking to harness mobile computing to enhance the delivery of these services. Although the organizations applied different mobile computing devices, the software applications on these devices provide essentially the same functionality, both supporting users’ personal productivity and communication with the office while workers are off-site. We use the names NurseCo and SlimCo (both pseudonyms) for the case organizations.

Data Collection for the Case Studies

The data for the study were collected between 2000 and 2003. Formal and intensive rounds of data collection were interspersed with periods of informal data collection. An initial pilot study followed by a formal baseline study was conducted in July 2000. The first round of formal interviews was held in September-October 2000 at SlimCo and April-May 2001 at NurseCo, prior to the implementation of the mobile technology. Follow-up interviews (mostly with the same interviewees) where held between December 2000 and February 2001 at SlimCo and between September and December 2001 at NurseCo, after the mobile technology had been implemented and used for some months. Apart from the interviews, data were also collected on an informal basis by means of regular e-mail and phone contact, lunch meetings, discussions, and by attending implementation meetings at the organizations. Brief informal follow-up interviews were conducted in 2003. A diary of field notes was developed in which the various interactions with the case organizations were detailed.

Mostly qualitative (and some quantitative) data were collected from a range of actors who were involved in the implementation of the technology in these organizations. After gaining initial access to the organization, the interviewees were identified with the help of the managers in the organization. The managers identified interviewees in three categories: those who were indifferent to the implementation; those who did not want the implementation to take place; and those who “could not wait” for the new technology. The number and range of the interviews conducted appears in Table 1.

Table 1. Data Collected in the Cases

<table>
<thead>
<tr>
<th>Interview details</th>
<th>NurseCo</th>
<th>SlimCo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of interviews:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(pre-implementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>interviews)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[post implementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>interviews]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal interviews</td>
<td>(38) [34] *</td>
<td>(5) [7] *</td>
</tr>
<tr>
<td>Informal interactions</td>
<td>(3) [4]</td>
<td>(5) [5]</td>
</tr>
<tr>
<td>Range of interviewees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managerial level</td>
<td>Executives of the</td>
<td>Managing director</td>
</tr>
<tr>
<td></td>
<td>organization,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>middle managers,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>project leaders</td>
<td></td>
</tr>
<tr>
<td>Individual users</td>
<td>Nurses and health</td>
<td>Health consultants using mobile</td>
</tr>
<tr>
<td></td>
<td>assistants using</td>
<td>device</td>
</tr>
<tr>
<td></td>
<td>the mobile device</td>
<td></td>
</tr>
<tr>
<td>Administrative personnel</td>
<td>Personnel affected</td>
<td>Personnel affected</td>
</tr>
<tr>
<td></td>
<td>by the technology,</td>
<td>by the technology,</td>
</tr>
<tr>
<td></td>
<td>even though they</td>
<td>even though they</td>
</tr>
<tr>
<td></td>
<td>did not use the</td>
<td>did not use the</td>
</tr>
<tr>
<td></td>
<td>devices directly</td>
<td>devices directly</td>
</tr>
</tbody>
</table>

*The number of interviews reflects a percentage sample of mobile technology users in the organization, given resource and access constraints. For NurseCo, this reflects 19 percent of the approximately 200 staff affected by the mobile technology in the northern region that was studied. For SlimCo, the number of interviews represents 13 percent of the 55 staff affected by the technology.
The interviews were semi-structured and comprised of open-ended questions derived from the implementation literature and prior research studies. Pilot interview questionnaires were developed based on a number of macro change perspectives (e.g., Leavitt 1964), the information systems implementation literature, individual acceptance of information technology (e.g., Davis 1989), data collection instruments of similar prior investigations, mechanisms for assessing the organizational culture (e.g., Robbins 1983; Schein 1992), and the unique technological aspects related to mobile technology (such as the wireless infrastructure and organizational support for mobile computing applications). The initial pilot questionnaires were tested in a number of interviews in one of the case study organizations and were subsequently refined to improve understandability and comprehension. A pre-implementation questionnaire guide was used for the initial formal baseline study and served as a basis for reference in the post-implementation interviews. In most cases, interviews were transcribed and shared with the interviewees to correct possible errors and omissions and to evaluate the validity of the interpretation of their “story” (Benbasat et al. 1987; Klein and Myers 1999). Based on all of the data and transcripts, rich descriptions of the implementation processes and individual perceptions of mobile technology were obtained at each case organization.

The following two sections contain a description of the case organizations and an outline of the functionality and implementation process followed by each organization. An account of the process of data analysis follows after the description of the case organizations.

**NurseCo**

NurseCo is a non-profit organization located in Melbourne, Australia. The organization has 1,200 employees and operates in Melbourne and the surrounding suburbs. NurseCo provides home health services to the community such as aged care, wound care, and assisting patients suffering from cystic fibrosis. At the time, NurseCo was investing heavily in mobile infrastructure. This case concerned one of the centers in NurseCo that implemented mobile technology.

In early 1999, NurseCo investigated the possibility of using mobile devices to replace paper-based processes. A pilot project was run and a decision made that handheld wireless computing devices would be implemented. A formal requirements specification and systems development process followed. During late 2000, the first NurseCo center started with the implementation process.

The wireless handheld system allows patient appointment schedules together with clinical data to be downloaded to the handheld computer. The system also allows updates to this information to a central patient information system. The information provided to the nursing staff on the handheld is more comprehensive than the previous paper-based system. In addition, the turnaround time for changes to the patient information and the scheduling time of consultations were reduced.

NurseCo has opted for a rather traditional IT implementation approach reminiscent of the office-based computing paradigm. NurseCo’s approach emphasizes implementation issues such as formal user training, change management, and a gradual changeover. A three-month period was used to implement the mobile system in the center; this includes the time from a series of initial change management workshops until the whole center went live with the mobile system. NurseCo embarked on a month of formal training to introduce the nurses to the new mobile system and the changeover to the new system took two months.

NurseCo decided to restrict all personal use of the mobile device by ensuring that the device can only access information in the organizational use context. All software and hardware that would enable the downloading of private information were removed from the mobile device. NurseCo supported e-mail but placed a strict two-week limit on the retention of messages.

**SlimCo**

SlimCo is a small organization based in Melbourne, Australia, specializing in weight loss. SlimCo’s aim is to provide doctors with a weight loss program that allows them to retain a supervisory role over each patient’s weight loss program. At the same time, SlimCo supports clients (doctors’ patients) who want to lose weight by way of a healthy program based on nutrition education. SlimCo consultants visit clients at their home for consultation.

In early 2000, SlimCo decided to implement mobile devices to support their consultants during consultations, for their weekly and monthly reporting, and also for invoicing. In October 2000, they embarked on a training program where the device was introduced to the consultants.
SlimCo implemented the necessary central mobile computing infrastructure and mobile devices for each of their consultants. The mobile system could record all transactions done by consultants. On a daily basis, these transactions were synchronized with the central database at head office. Information about marketing activities during the week was synchronized on a weekly basis through e-mail.

Compared to the previous paper-based system, a number of tasks have been eliminated with the introduction of mobile computing. SlimCo consultants reported savings on time and other costs such as postage and printing. In addition to the savings, credit card transactions are processed on a daily basis instead of a weekly basis. Before the mobile system, the consultants spent approximately 2 hours per week to develop a weekly report, listing which transactions took place. All consultants had to phone head office on a Friday afternoon to report verbally on their marketing activities during the week. On a monthly basis, the consultants reported on the progress of their clients. All of these tedious reporting activities have largely been eliminated by the mobile system.

SlimCo implemented the new mobile system after two half-day training seminars were held to introduce the mobile device to consultants. Thereafter consultants were encouraged to “play” with the device at their own leisure. Following the half-day training seminars, one month was allowed for all consultants to become operational. The managing director of SlimCo actively encouraged private use of the mobile device. In this respect he allowed consultants to use the software on the device and to load any other application on their mobile device as long as it had been virus checked.

Analysis of the Data Collected

The following steps directed the analysis. First, the evidence of the implementation process was organized chronologically by event sequences and episodes (Robey and Newman 1996; Sabherwal and Robey 1993) as the implementation processes unfolded in the cases. Second, individual responses were analyzed in two phases (as discussed below). Subsequent to such within-case analyses, the occurrence of some themes was analyzed across the cases (Eisenhardt 1989).

Phase 1 of the analysis consisted of an evaluation of individual responses based on specific themes (Miles and Huberman 1984). The themes were developed from the extant literature (examples included use experiences with the mobile technology, experiences of the implementation, and satisfaction statements). The initial contexts of use that were utilized for coding of the interviewees responses were individual-as-employee, organizational context, and society at large (see Figure 1). Upon closer inspection of the data, it became apparent that the mobile computing phenomenon drifted over additional use contexts.

For example, when asked about the advantages of the mobile system, responses from some individuals did not seem to correlate. The same respondent would indicate that she believed that the system was satisfactory, but at the same time describe many negative aspects of the system. In following up on these apparent contradictions, it became clear that respondents were referring interchangeably to use experiences within their particular organizational context and their private or professional use of the device. Users also compared their actual experiences with the mobile system to expectations created via “professional folklore” (communication within the profession) and mobile computing success stories publicized in the media and popular IT press.

In both cases the influence of the professional context on adoption and use in the organization was evident. In SlimCo, the managing director was inspired by the health profession’s adoption of mobile technology, prompting the implementation. In NurseCo, communication in the nursing profession influenced individual expectations about the inevitability of the technology in transforming ways of working. Many nurses reported that the implementation of mobile technology was “part of being professional.” In both cases we also identified broad societal influences on the adoption and assimilation processes in “keeping up with the technological age” and following suit with other organizations in using technology to improve service delivery.

The conclusion drawn after the phase 1 analysis was that the same individual operates in various contexts: the individual within the organizational context, the same individual within a private use context, the individual as part of a professional context, and as member of society. We depict these related individual contexts in Figure 2. In Table 2 we provide examples of contextual themes from our case study data (with reference to use contexts, labeled A, B, C, and D, in Figure 2).
Table 2. Examples of Contextual Themes in the Mobile Case Study Data

<table>
<thead>
<tr>
<th>Contextual Theme (With Reference to Figure 2)</th>
<th>Case Source</th>
<th>Illustrative Statements in Interview Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual use within the organizational context (A)</td>
<td>NurseCo</td>
<td>“The system is clever…we can book appointments at the house [of the patient] instead of coming back to the center, and also add visit notes for advice to other nurses [about the patient].” (Nurse, September 2001)</td>
</tr>
<tr>
<td></td>
<td>SlimCo</td>
<td>“I think it is a brilliant little machine, absolutely brilliant because it saves me a lot of book work time.” (Consultant, December 2000)</td>
</tr>
<tr>
<td>Private use of mobile technology (outside organizational context) (B)</td>
<td>SlimCo</td>
<td>“I cannot have two diaries one for work and one for private life….My nails appointments are in there…all my family’s birthdays are in there. I don’t just use it for work.” (Consultant, December 2000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“When we go somewhere, my husband would say, ‘Have you got your device? You can’t go without your device.’ I take it with me everywhere.” (Consultant, December 2000)</td>
</tr>
<tr>
<td>Influence of professional use context on individual acceptance of technology (C)</td>
<td>NurseCo</td>
<td>“One of the main reasons for introducing [the mobile device] was that they wanted nurses to keep up with the technological age, to be able to let health professionals have access to e-mail and all the rest.” (Nurse, September 2001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“[This is] part of being professional.” (Nurse, April 2001)</td>
</tr>
<tr>
<td>Societal influence on individual acceptance (D)</td>
<td>NurseCo</td>
<td>“[It] is the way the world is going, everything is computer oriented, so [the organization] is just following a trend” (Nurse, September 2001)</td>
</tr>
<tr>
<td></td>
<td>SlimCo</td>
<td>“I think the clients are always very impressed when I use [the device].” (Consultant, February 2001)</td>
</tr>
</tbody>
</table>

Figure 2. Relevant Contexts in the Mobile Computing Cases
Reanalyzing the data against these different, but related, contexts (even beyond the organizational context) better explained individual responses of acceptance with the mobile system and clarified the initial inconsistencies in the data. The role of the individual as part of a profession and societal influences were more predominant in responses from individuals in NurseCo. In the case of SlimCo, the role of private use and the overlap between private and organizational use were prominent in responses from interviewees. In SlimCo, the management actively encouraged private use of the mobile device to leverage the overall adoption of the technology within the organization. This stood in contrast to the NurseCo case where a more traditional implementation approach was followed, focusing only on the organizational use of the technology.

It should be stressed that the distinction between these different contexts are only of relevance analytically; from the viewpoint of the individual respondent, the different use contexts were typically conflated, even within the same interview.

**Discussion**

In this section we first compare and contrast the implementation approaches in the two cases and the results in terms of individual acceptance. From this we highlight some practical advice for mobile technology implementation. We then examine the findings in terms of individual use contexts, given the extant literature on adoption and implementation in organizational settings.

As indicated previously the two case organizations are similar in many respects. However, we see marked differences between the implementation approaches followed in the two cases (as summarized in Table 3). NurseCo opted for a more traditional IT implementation approach while SlimCo has leveraged private use during the implementation process. SlimCo harnessed the learning associated with the new technology with individuals’ own private use, which was not perceived to be training, but play associated with enjoyable private leisure activities. The positive effect that play has during training has previously been documented in the introduction of desktop technologies (e.g., Webster 1990, 1992). The formal training with comparable mobile technology and applications in the two cases was significantly less in SlimCo than in NurseCo. The practical effects private use had on the implementation included less formal training, improved time to operation, and a broader scope of usage.

In comparing the individual responses to the implementation process, the two implementation processes drew on different use contexts during the implementation process. SlimCo focused on extended use contexts to enhance and support the organizational implementation of the technology. As such, SlimCo users’ reported a broader scope of use (including voluntary private use) than only the mandated use reported by NurseCo interviewees.

The cases suggest there is a need to approach mobile technology implementation differently than traditional business computing. Due to the mobility of the technology, the individuals recognize the potential of use in contexts beyond the organization (irrespective of the implementation process followed). From the viewpoint of the individual, these two different use contexts (individual and organizational) are conflated.

From a research perspective, the cases highlight the need to accommodate extended use contexts in models of organizational IT implementation. In terms of influences, most traditional models only accommodate the scenario depicted in Figure 1. This corresponds to the classical implementation approach utilized in NurseCo, with an emphasis on the individual-as-employee in either mandatory or voluntary organizational use scenarios.

**Table 3. Comparing the Implementation Approaches in the Case Organizations**

<table>
<thead>
<tr>
<th>Implementation Details</th>
<th>NurseCo</th>
<th>SlimCo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall objectives</td>
<td>Greater efficiency</td>
<td>Greater efficiency</td>
</tr>
<tr>
<td></td>
<td>Improved service</td>
<td>Improved service</td>
</tr>
<tr>
<td>Lead-up to implementation and main implementation activities</td>
<td>Included a month of formal training; focus groups; change management, testing period Two-month changeover period to the new system</td>
<td>Two morning training workshops Users encouraged to play with device at their leisure</td>
</tr>
<tr>
<td>Duration of implementation</td>
<td>One NurseCo center operational after three months</td>
<td>All consultants operational after one month</td>
</tr>
</tbody>
</table>
As information technology becomes more mobile, different influences and use contexts come to the forefront. As such, we raise the need for adoption and implementation models that can accommodate more complex contexts associated with mobile technology. As the SlimCo case illustrates, such models need to encompass the use contexts of the individual as employee and as private user. Our study also confirms the powerful influence of the healthcare profession (and loyalty to the profession) on individuals’ attitudes toward the technology in the organization (see Gallivan 2001). For example, Burley and Scheepers (2003) found that healthcare professionals exchange “their own” PDA software applications within the profession through peer networks. As such, we foresee the need also to accommodate an individual-as-professional use context in acceptance models. These three individual use contexts are depicted in Figure 2.

Research attention to private and professional use contexts outside the organization can help explain user responses in the organizational context such as the situation reported in the NurseCo case, where a user seemed at the same time to be satisfied with the technology yet critical of its use in the organizational context. Extended use contexts are not easily accommodated in models (e.g., UTAUT) that exclusively focus on the organizational use context.

Conclusion

During the organizational implementation of mobile computing, influences emanating from the organizational context, society-at-large, the profession, and private use impacted on the individual acceptance of the technology in the cases we studied.

Our study makes three main contributions. First, we have shown that in the case of mobile technology implementation in organizations, influences resulting from private and professional use can impact on individual acceptance of technology within the organizational context. While current models of individual acceptance of information technology (e.g., UTAUT) do not specifically cater for a range of use contexts, our findings do not imply a wholesale rejection of such models. Rather we have demonstrated the need to revisit the measures of determinants (i.e. the specific questions to assess social influence and performance expectation in models such as UTAUT) in organizational contexts. Additional questions to accommodate potential influences emanating from contexts beyond the organization (private and professional use contexts) should be considered in the case of mobile technology. As the use of mobile technologies increases, it will likely become more pertinent to address extended-use contexts specifically in future information technology acceptance models.

Second, as Figure 2 illustrates, our findings show that rigid delineations between mandatory and voluntary use contexts should be questioned in research models of mobile computing. Even in a mandatory use scenario in the organizational context, nuances may exist in terms of voluntary (private) use. In this respect, the influence of voluntary use outside the organization can help explain seemingly contradictory individual responses during mobile technology implementation in organizations when respondents refer interchangeably to different use contexts.

Third, from a practical viewpoint, our findings indicate that in the case of mobile computing it can be fruitful for organizations to consider (and even leverage) other individual use contexts during the organizational implementation of the technology. Expanded uses of the technology can enhance the individual acceptance of the technology and even accelerate the overall implementation process. The benefits of allowing private and professional use of organizational mobile devices should, however, be considered against the potential drawbacks in the long term. Costs such as increased wear-and-tear on the device, higher insurance costs, the risks of viruses, and information security concerns all need to be factored in.

The study has the following limitations. First, we have focused only on mobile computing devices that have the potential for extended use. Mobile devices such as portable barcode scanners and some wearable devices do not offer the option of use outside the organizational context. Second, the two cases incorporate influences that pertain to healthcare professionals. Further research is needed to assess extra-organizational influences on the attitudes of individuals toward mobile technologies in other sectors.

References


