

AN EXPLORATORY STUDY ON THE FACTORS INFLUENCING MANAGERS' USE OF MOBILE TABLETS

Edgar Kautzner, Faculty of Information Technology, Monash University, Melbourne, VIC,
Australia, ekautzner@gmail.com

Shijia Gao, Faculty of Information Technology, Monash University, Melbourne, VIC,
Australia, caddie.gao@monash.edu

William Yeoh, Department of Information Systems and Business Analytics, Deakin
University, Melbourne, VIC, Australia, william.yeoh@deakin.edu.au

Siew Fan Wong, Department of Computing and Information Systems, Sunway University,
Petaling Jaya, Malaysia, siewfanw@sunway.edu.my

Abstract

Although mobile tablets such as iPads are being used by many managers, there has been a relative dearth of research on the managerial use of the mobile technology. This exploratory study aims to identify and understand the factors influencing the use of mobile tablets by managers. Semi-structured interviews were conducted with a panel of seven managers who had incorporated mobile tablets into their work routine. The study has found that the mobile tablet is a suitable device for managerial tasks due to these nine main factors: non-routineness, collaborative nature, time-critical, information-centric, mobility, user friendliness of the interface, reliability, connectivity, and autonomy. This exploratory study fills in the research gap and provides a basis to help managers establish a business case for or against mobile tablets adoption.

Keywords: Mobile technology, Mobile tablet, Managerial use, Manager, Interview.

1 INTRODUCTION

In recent years, mobile technology such as iPads tablets has become increasingly popular with overwhelming sales success (Gartner 2014; Hughes 2013). According to Gartner (2014), the worldwide sales of mobile tablets to end users reached 195.4 million units at the end of 2013. The mobile technology permeates not only personal routines, but also the work practices. In fact, the popularity of mobile tablets in workplaces has led to an emerging and profitable enterprise tablet market (Endler 2014). More importantly, contemporary managers are no longer tied to stagnant, heavy-duty desktop computers or laptops; instead they are on-the-go with light-weight handheld tablets that contain necessary work information at finger-tips.

While some see the mobile technology as a transformational technology, others call it a disruptive tool (Prentice 2010). Even though many managers are current business users of mobile tablets, the role of the device within the managerial technology portfolio is still largely unknown. While prior studies (e.g. Gebauer & Shaw 2004; Ioimo & Aronson 2004; Liang et al. 2007) have investigated the use and impacts of conventional mobile technologies such as laptops, smartphones and personal digital assistants (PDA), there has been a relative dearth of research on the managerial use of mobile tablets by managers. In response, due to the widespread managerial use of tablets in workplace (Endler 2014), it is indeed important to understand to what extent these mobile devices fit into managers' work routine. Therefore, this research aims to identify and understand the underlying factors for the adoption of the mobile tablets by managers. In doing so, this study employs exploratory qualitative approach and conducts semi-structured interviews with a panel of mid to high-level managers who are adopting mobile tablets into their work routine.

This exploratory research represents the first academic study on this topic and is important because it provides a better understanding of the factors influencing the managerial use of this mobile technology. Another contribution of the study is that it focuses on mid to high-level managers, and there is a potential value in this aspect because the nature of managerial work differs substantially from other employees, for example, operational staff. Also, this research contributes to practice by offering a basis to help managers establish a business case for or against mobile tablets adoption. Additionally, it is expected that the results will be useful for future research in this largely unexplored area.

2 LITERATURE REVIEW

A number of existing studies have investigated the use and impacts of mobile technology in various domains. For example, Gebauer and Shaw (2004) investigated the success factors and impacts of mobile business applications using an exploratory case study in a Fortune 100 company. They found that unsuitable technology has a negative effect on application usage. The managers studied are more concerned about technology-specific factors including screen size, keyboard size, and device setup compared to other staff. The task characteristics that were valued by the users include notification, tracking, ad-hoc information, reachability, and urgency.

Ioimo and Aronson (2004) evaluated the effectiveness of field mobile computing in a law enforcement context. They assessed whether mobile technology was suited to the tasks undertaken by police officers in the field. It was found that field personnel recognize the potential benefits from mobile computing, and inquiries increased as a result of the technology. Another major finding is that there was statistically significant evidence that while the use of mobile devices decreases the efficiency of field personnel, it increases the efficiency of other personnel in roles including administrators and detectives who use the system. In a later study, Lee et al. (2005) studied the suitability of a personal digital assistant (PDA) based mobile commerce system in the insurance industry. As both the tasks that were to be undertaken and the utilized technology were constant, the main factor that was being measured was the level of cognitive fit of the individuals in using the mobile technology. The research concluded that factors including position experience, cognitive style, and computer self-efficiency were the main predictors of technology fit for insurance tasks. Besides

that, Junglas et al. (2008) included locatability considerations in studying the mobile device use. Their results showed that for the case of non-location sensitive tasks such as browsing for information and creating e-mails, mobile devices were not found to be better suited compared to desktop computers when considering the total time taken to complete the task. Comparatively, mobile devices with location-tracking capabilities were found to be much better for location-sensitive tasks.

In another study, Junglas et al. (2009) investigated the benefits of using mobile technologies in patient care settings by nurses. The study focused on not only the fit between technology and task, but also on the preferences, past experience, fit perceptions of the individual, and individual characteristics including basic human drives such as the drive to acquire, bond, defend, and learn. Liu et al. (2010) conducted a study into the Mobile Securities Management System (MSMS) usage in China and found that fit has a positive impact on the usage of the system. They also identified that self-efficiency and experience are factors that jointly have an effect on fit. Liang et al. (2007) studied the adoption of mobile technology in organizations and developed a diagnostic tool to assess whether a technology should be adopted. In addition, Pagani (2006) conducted an explorative survey of twelve companies in Europe and the USA and identified a set of antecedents for business acceptance of wireless high-speed data service adoption. In brief, these prior studies are interesting and do contribute to the general knowledge of mobile technology use. However, they fail to address the research gap on the managerial use of mobile tablets. Most of the extant studies do not specifically focus on the modern mobile technology in workplace, that is, the mobile tablets such as iPads. Moreover, the research target in the existing literature comprises either general end users, specific professionals like police officers or nurses, but not managerial level users. Thus, this research directly fills in the literature gap by investigating the factors influencing the use of tablets by managers.

3 METHODOLOGY

Exploratory semi-structured interviews were used to collect data since this technique enables detailed information to be gathered about the tablets usage habits of managers and allows follow-up questions to be asked for participants to elaborate on responses. The interview participants were recruited via the professional links of the researchers. The interviewee selection criteria were: (1) The participant is a manager who gets work done through others (Kotter 1982); and (2) The participant is currently using an iPad as part of their work routine. iPad was chosen as the technology-in-use example in this study due to its dominance in enterprise tablet market (Endler 2014). While the recruitments of the interview participants were opportunistic, care was taken to select a sample that represented a broad spectrum of industries, organization sizes and managerial roles. A total of seven mid to high-level managers in Australia were included in the sample. As shown in the participant demographic information in Table 1, there was a fairly even spread of public and private institutions (three and four respectively) and representation of a variety of industry sectors including retail, IT, advertising, education, professional services, and government. Additionally, there was a rather even spread of small and large organizations represented in the sample. An interview protocol (see Appendix) was developed for guiding the interview process to ensure each interview session follows a consistent structure and format; and hence, increase the reliability of the data collected.

The interviews strictly complied with the university and national guidelines for ethical conduct of research involving humans. A condition of the university ethics committee approval for the interviews was anonymity for the individuals involved; accordingly identities have been disguised. A face-to-face interview was conducted with each interview lasted approximately an hour. With the permission of the participants, all interviews were recorded using an audio recording device. Hand-written notes were also taken to record the content of the interviews.

At the conclusion of each interview, the audio recording was transcribed verbatim into texts, and the notes taken were also typed into texts. The texts were loaded into NVivo, a qualitative data management and analysis software package designed to aid users in handling unstructured and semi-structured qualitative data, by supporting coding and analysis (Neuman 2011). A thematic approach was employed to analyze the data. The process started with two researchers independently reading through each transcript and assigning codes to represent ideas that were found to be common amongst

the research participants. Then discussions took place where the two coders were able to challenge or confirm any questions or issues as they arose. The ability to frequently discuss during the data analysis process improved the consistency and reliability of the coding.

Identifier	Gender	Sector	Industry	Occupation	Organizational Size
U1	Female	Private	Fashion / Retail	Director / Owner	Small
U2	Male	Private	IT	Sales Executive	Small
U3	Male	Private	Advertising	Group Manager	Large
U4	Male	Public	Education	Manager	Large
U5	Male	Public	Education	Director	Large
U6	Female	Private	Professional Services	Principal Consultant	Small
U7	Male	Public	Government	Director	Large

Table 1. Demographics of the Research Participants

4 FINDINGS

The following presents the major influential factors that emerged from the data covering the nature of managerial work and the characteristics of mobile tablet that contribute to its use in managers' daily work.

1. Non-Routineness. The managers interviewed tended to display a fairly high level of non-routineness in their work activities. The structure of their day would be determined by numerous factors including opportunities, action items, issues, projects, and the general strategic direction of the organization. One manager mentioned that *"on a day-by-day basis, I don't really have a very regular schedule...and they change daily and weekly depending on what's going on"* (U3). Even the participant who could be described as more of an administrative manager and regularly performed tasks that were more routine in nature (e.g. order processing, e-mails) would adapt their routine depending on the staff present and their information requirements at a given point in time.

2. Collaborative nature. The majority of the managers interviewed indicated that they work with a large number of people (including subordinates, peers, and partners) during the course of their work activities. Collaborative and interdependent work was often required to complete a task. This collaboration involved discussions, contributing to or providing feedback on documents, and sharing of general responsibilities. The participants also undertook tasks that required managing, maintaining, and nurturing relationships with a large number of people. Mobile tablets with the relevant applications supported all these collaborative work. The device gives managers quick access to information and allows them to connect seamlessly with colleagues and customers.

3. Time-Critical. All participants interviewed indicated a high degree of urgency in their work tasks because completing certain tasks in a timely manner was of critical importance. An example of such a task is responding to a client or business partner. All respondents mentioned that they dealt with large volumes of e-mail on a daily basis, and they needed to manage this constantly to avoid it from *"getting out of hand"*. In addition, some managers cited that work from subordinates and colleagues may require attention by the managers and therefore they needed to take actions quickly to avoid delay. One participant highlighted that *"the speed in which I can provide responses is critical"* (U7). Therefore, these managers depended heavily on mobile tablets to obtain the latest information and to respond accordingly.

4. Information-Centric. The tasks that the managers undertook as part of their work routine were information-centric such as presenting, exchanging, and consuming information. A significant amount of information gathering and research tasks were undertaken by all managers interviewed. Examples of these tasks were reading various documents, monitoring websites, and sourcing market and competitor information. In fact, significant preparation in the form of information gathering was required prior to undertaking business tasks including meetings. The high information-centricity of managerial tasks was also reflected in the amount of time the managers spent on communicating with others, either face to face, via e-mails, or in other forms. One manager commented, *"My pre-work and*

post-work engagement is around information. So I spend my life online and it's always looking at twitter and reading and picking up signals about what's going on in the world around us. The more I can do that, the better I can do my job" (U3).

5. Mobility. The managers indicated that a fairly high degree of mobility was required in the process of carrying out their work duties. They spent considerable amount of time working away from their primary work location (i.e. work desk) in places such as meeting rooms, boardrooms, and offices of other staff. The managers also did work from their home, other offices, while commuting, and in public locations such as cafés. So, mobile tablets, being extremely lightweight and portable, provide them with the mobility they needed. One participant mentioned that the advantage of the mobile tablet is that it is "*convenient, compact, [and] not heavy to hold*" (U1). They added that the device is smaller and more compatible with their lifestyle. One participant mentioned "*you can sit with your feet up on the lounge and you can really grasp it. The laptop is not like that*" (U1). Another participant (U2) likened the device to a clipboard, mentioning that it is "more natural" to grasp, carry around, and easy to show others. Other comments include that it is more discreet and can be used in more situations than a laptop.

6. User friendliness of the interface. The user interface of the mobile tablets was an important attribute that increases its user friendliness, particularly its large screen, on-screen keyboard, and touch interface. One participant (U1) referred to the touch screen as "*fantastic*" and "*much better than the mouse*". They mentioned that they were happy to forego a keyboard in place of the touch interface. Another participant added that the mobile tablet is "*more physical and controlled*". When compared with other devices with a keyboard, a number of participants indicated that the mobile tablet was arduous and not as user-friendly to type large amounts of text such as documents or long e-mails. The ability to easily scroll through documents was indicated by one participant: "*it's an easy interface to scroll through pages and work more fluidly*" and "*it's easier than having to go through a scroll down scroll up type [interface] (using the iMac)*" (U2). They agreed that the mobile tablet is superior simply because it is easier to use.

7. Reliability. The mobile tablet was referred to as a reliable device by a number of participants. An attribute of the mobile tablet that was mentioned by most participants was the 'instant-on' feature with minimal time required for start-up of the device. In the words of one participant: "*It's just there. You want it, you press the button, and it's on. And that's what people want*" (U1). They also said that "*it doesn't go into any kind of sleep mode that takes another half an hour to get out of it*". Another participant outlined a practical example to illustrate this: "*for instance, I was in a car with a guy and we were trying to do something and he was able to get information very quickly whereas with the laptop, you have to open it up, boot it up. There's a delay. Whereas with the iPad, like a phone, the information is instant*" (U2). The reliability of the device was also mentioned in reference to the battery life, which was referred to as "*superior*" and "*incomparable*" to a laptop. The perceived reliability of the device in terms of reducing threats from viruses and malware was also mentioned. One participant perceived that there were "*no threats of viruses whatsoever, no threat of malware*" and that it "*doesn't slow your system down*" (U1).

8. Connectivity. The ability to connect to networks and the cloud capability of the mobile tablets allow the managers to access information from any location which facilitates the forming of a truly mobile office. This feature is extremely helpful because the majority of the tasks the managers did such as searching the Internet, e-mailing, and video conferencing required network connection. Also, the remote access of information also meant that there is less to lose if the device is damaged or lost.

9. Autonomy. The managers had a high level of autonomy and flexibility in the allocation of their time. They often arranged and prioritized their work activities depending on action items and issues that may arise during the course of their duties. According to a participant, "*so much stuff comes up on the moment in these sorts of roles that you have to shift things, shift priorities, rearrange your diary. Because there's an opportunity, or there's a fire going that you need to get on top of and resolve as quickly as you can before it turns into something disastrous*" (U7).

5 DISCUSSION

This exploratory study investigated the factors influencing managerial use of mobile tablets at work. It makes two important contributions. First, it enriches our understanding of a new type of mobile technology use behavior in organizations. The existing literature examines only conventional mobile devices such as laptops, PDAs and smart phones. Mobile tablets are relatively new and carry distinct features, thus requiring studies to understand their usage. This study contributes to technology use theory by focusing on this new type of technology. Second, this study focuses on mid to high-level managers - a group that is seldom the target of study in researching technology use. In fact, the literature focuses only on individuals such as students, general household users and workers below the managerial level. While comparing to other user groups, managers may not be a large user group, but they represent an important party with the power to influence usage and selection of technology among workers in organizations. Bagozzi and Dholakia's (2006) concept of group norm in their goal-directed behavior model can explain the phenomenon where influential people such as managers can affect new technology selection among the subordinates. Therefore, by focusing on managers and mobile tablets, this study addresses two research gaps in the literature for mobile technology use.

The findings showed that managerial tasks involved a high degree of non-routineness where the work undertaken was largely determined by priority and urgency. Many tasks were also time-critical, thus requiring immediate actions. Additionally, the tasks were information-centric and required collaboration with others. The most significant tasks managers undertook using the mobile tablets are document access and viewing, web surfing and consuming online content, e-mail access, note-taking, and calendar and contact management. To a lesser extent, the managers also used mobile tablets to perform social networking and presentations. Besides that, the mobile tablet has high degree of mobility and portability due to its size, form factor, and weight. The user-friendliness of the tablet interface was also a key aspect, especially the large screen, on-screen keyboard, and touch interface. Reliability considerations including the battery life, minimal start-up time required, and resistance to viruses were also taken into account by managers. Furthermore, its' general functionalities such as the applications ('apps') available for use, and the network connectivity were important to managers.

Overall, the mobile tablets are suitable for managerial task due to the features of high mobility, easy accessibility, reliability, and abundance of available applications. The compact form factor and intuitive user interface were perceived by participants to be 'natural', comfortable to use, and less intrusive when used in the presence of others. In comparison to other devices, mobile tablets are more likely to be used by managers in a wider variety of situations, leading to greater utility and higher overall value to the managers. The characteristics of the device are a close fit with managers and the nature of the tasks they undertake when away from their primary work location.

The high level of mobile tablets use among managers has led to the 'disruption' of devices, especially laptops, when managers are away from their primary work location. While away, the mobile tablets are used for content consumption and presentation as well as viewing and responding to e-mails. However, when managers are at their primary work location, they revert to desktops or laptops as the main device. The reasons being mobile tablets lack suitable applications to create, edit and manipulate business documents, and it is inconvenient to use the on-screen keyboards for large-scale text input. When managers do work from home, they also choose suitable devices depending on the tasks they want to perform. Adoption of mobile tablets also disrupts manual tasks using pens and papers such as taking notes, and organizing calendar and contact information. In short, there is a set of factors influencing managers' usage patterns of mobile tablets.

A main limitation of this study is that only a panel of seven managers were interviewed. However, since this is an exploratory qualitative study that emphasizes 'depth' rather than 'breadth', the depth of the interview contents supersedes the number of participants (Neuman 2011). Indeed, the factors identified serve as a good foundation for future studies into managerial use of mobile technology. Also, while the focus of iPads is limited, this study represents an important effort to explore a mobile technology that is most popular in the workplace (Endler 2014).

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Appendix: Interview Protocol

Icebreaker

Include approximately two minutes of 'small talk' to develop a rapport with the participant.

- I am not planning to mention iPads at this point as I feel that this will distract the participant when answering the questions in the next section.

Background information

Aim of questioning: to gain important information about the current role and responsibilities of the respondent.

- Can you please describe your role in your organization? In your answer you can discuss your areas of responsibility and accountability.
- Can you please describe the hierarchy / chain of command in your organization? You can talk about staff you manage, who you report to, and the tasks you undertake during your work activities.
- What would be a typical day at work for you? Do you work out of the office? From home?

Transitional question

- How do you use information technology in your role? What business tasks do you use technology to complete?

Acquisition

Aim of questioning: To gain data to answer the following question: Are iPads replacing pre-existing personal computers, or simply adding to the devices at a manager's disposal?

- What devices do you currently use as part of your work routine? (Please consider Desktop PCs, Laptops, Netbooks, Tablets and Smartphones). How many of each device do you have?
- Tell me about your iPad. Please discuss the model, length of use, etc.
- What were the circumstances surrounding you acquiring the iPad? What would you say was the main reason you came to use the device?
- What were your first impressions of the device? When and why did you consider using the device for business?
- Do any of your managers, colleagues, subordinates, or business contacts use iPads to carry out business tasks? Is there any distinct resistance or support from others in the organization towards iPads?

Utilization

Aim of questioning: To gain data to answer the following research question: What tasks are managers using iPads for? Why?

- What would you say are the main business tasks for which you use your iPad to complete?
- For what tasks do you favor iPads over other devices? Why?
- How have your usage habits changed since acquisition of the iPad? Are you currently using the device differently to how you initially utilized it?
- What tasks do you feel are unsuitable for iPads?
- What would be the main situations (or locations) where you use your iPad?

Aim of questioning: To gain data to answer the following research question: Are iPads more suited for certain tasks undertaken by managers than other technologies such as laptops, netbooks and smartphones?

- Before you acquired your iPad, what devices were you using to complete business tasks? Please consider devices you use at work *and* at home that you use for work. Describe how and why you used each device.
- How have you changed your daily work routine since acquiring an iPad?
- What devices are you using less or have you ceased to use since the acquisition of the iPad?

Aim of questioning: To gain data to answer the following research question: Where do iPads fit into the current managerial technology portfolio?

- Do you feel that iPads enable you to perform your job more efficiently or effectively? What tasks do you feel that you are able to perform better with the use of an iPad? Do you feel that you are able to make better use of your time?
- How would you like to / do you intend to use iPads in the future for work-related tasks?
- Are you using the iPad differently to how you originally expected?
- What non-work tasks do you use your iPad for? Does anyone else use your iPad for non-work tasks?