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User Perceived Requirements for a Mobile Accounting Information System

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Abstract

Mobile technologies are giving rise to significant changes in the way that organisations operate and conduct business. However, up to now no existing online accounting service has been delivered via a mobile channel. While there is a business interest in extending online accounting to mobile devices there is scarce empirical research examining the user requirements of mobile accounting services. Using user requirements elicitation techniques, this research investigated the mobility requirements of customers of an online accounting system offered by a New Zealand based firm. The findings illustrate end-users' mobility requirements as well as their perceptions of which key accounting software functionalities should be extended and adapted to a mobile channel. The paper concludes with a summary of the findings and recommendations for future research.

Keywords
Mobile service, accounting, system requirements, mobile channel, mobile accounting system

INTRODUCTION

Traditionally, accounting was organized in a paper-based manner to "*identify, measure, and communicate economic information to permit informed judgement and decisions by users of the information*" (Bazley et al. 2004). Accounting is now an essential function in any organisation (Hussain 2006; Yasin et al. 2005).

Since the late 1960s, Accounting Information Systems have been used by organizations to streamline their accounting functions (Johnson and Kaplan 1991). The first-generation of Accounting Information Systems enabled accountants to record, store and process data electronically on stationary computers (Needle and Hunt 1985). Most recently, online Accounting Information Systems services have allowed accountants to manage financial information from any networked computer. This is impacting accounting practices tremendously as accountants are no longer dependent on physical data transmissions in form of diskettes or magnetic tapes (Scott 2006).

In parallel, many industries have developed applications tailored specifically for internet enabled mobile devices such as the iPhone or Blackberry handhelds (Barnes and Scornavacca 2006). Particularly the financial industry has recognized this trend and nowadays most banks offer Internet banking applications adapted specifically for mobile devices (Scornavacca and Hoehle 2007).

Accountants rely heavily on time-sensitive financial information (Gelinas and Sutton 2002). Therefore, it seems reasonable to believe that accountants would appreciate a mobile extension of Internet based accounting services (Lin, 2004). Extending Internet based accounting systems could help practitioners to stay informed on their accounting activities while performing other business activities on the move (Scornavacca and Hoehle 2007).

Not surprisingly, many businesses have started to consider expanding their existing online accounting information systems to a mobile channel. Despite ongoing discussions within the industry, so far no

organisation has yet officially offered an accounting service that operates through a mobile channel. Figure 1 illustrates the next challenge for Accounting Information Systems: can online accounting systems be extended to a mobile channel?

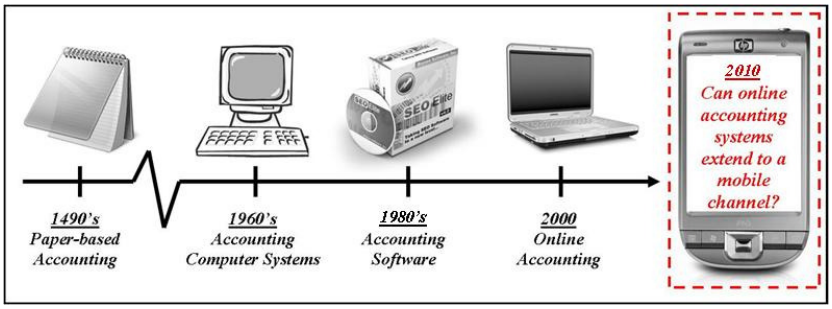


Figure 1: From online accounting to a mobile extension

This paper aims to provide preliminary insights on the perceived mobility requirements of users of an online accounting system in New Zealand. Using system requirement elicitation techniques, semi-structured interviews were conducted with users of an online accounting information systems. It is hoped that understanding user mobility requirements of online accounting software will assist future developments in accounting services.

The paper is structured as follows: the next section discusses the literature on accounting services and mobile information systems. Then, the research methodology used for this research is explained. Next, the findings are discussed before the paper rounds off with a summary and conclusions.

LITERATURE REVIEW

Initially, an intensive literature review on mobile information systems (mobile IS) was conducted (Scornavacca et al. 2006). None of the 1200 articles identified has investigated the perceived mobility requirements of users of an online accounting system. Due to the interdisciplinary character of this topic, an additional keyword search was executed in accounting and business related bibliographic databases such as Proquest and Scopus which did not find any research articles regarding mobile accounting information systems. Therefore, it is believed that the existing literature on accounting services in combination with extant research on mobile IS / mobile services provides a good foundation for this research.

The Evolution of Accounting

The history of accounting starts more than 500 years ago with the publication of Luca Pacioli's "*Summa de Arithmetica, Geometria, Proportioni et Proportionalita*" in 1494 (Fischer, 2000). For the first 400 years, accountants relied on paper and ink as the key tolls for undertaking their jobs (Gelinas and Sutton 2002).

As technology evolved, accounting services have appeared to profit from it (Michaud and Niles 1991). Starting in the mid-1960's, system designers automated the manual process of accounting and introduced accounting computer systems (Johnson and Kaplan 1991). Later in the 1980's, the release of IBM's Business Management series introduced accounting software. These accounting information systems achieved new levels of effectiveness and efficiency as they were introduced to record, store, and process data to produce information for decision makers (Romney and Steinbart 2006).

Most recently, the emergence of the Internet has provided a platform for software as a service such as online accounting systems. This allows individuals to update and retrieve accounting related information from any internet enabled computer systems without having to worry about software installations or data management (Lin 2004). Online accounting services have quickly changed the way by which organizations communicate their financial performance to stakeholders (Debreceny and Gray 2001).

Mobile Information Systems

During the past fifteen years, the convergence of the Internet and mobile communications have nurtured the development of mobile IS (Munterman 2005; Scornavacca and Hoehle 2007; Sharma and Kitchens 2003; Siau and Shen 2003). The rapid adoption of mobile devices by consumer markets sparked the development of a series of mobile services such as mobile marketing, entertainment and information services (Gelinas and Sutton 2002; McIntosh and Baron 2005; Scheepers and Scheepers 2004; Naismith et al. 2006).

Financial institutions were one of the first industries to successfully extend their internet banking applications to a mobile channel (Ondrus and Pigneur 2006). Nowadays, most banks offer Internet banking applications adapted specifically to mobile devices (Mallat and Tuunainen 2005; Scornavacca and Hoehle 2007). From a consumer perspective, mobile financial applications are convenient since they allow access to banking services and financial information while being on the move (Herzberg 2003). Organizations appreciate mobile services as they lead to cost reduction, competitive advantage, and allow them to retain or expand the existing customer base (Herzberg 2003; Saxena et al. 2005).

It is important to note that academic research and practitioners alike have frequently pointed out the limited input and display capabilities, perceived financial cost, usability and security issues as being the greatest barriers for the adoption of mobile services (Andreou et al. 2005; Hoehle and Scornavacca 2008; Jarvenpaa 2003; Sarker and Wells 2003; Tarasewich 2003). These barriers are important to consider before developing new mobile services.

The following section discusses the methodology taken to collate data for this research.

RESEARCH METHODOLOGY

The sample was composed by existing users of an online accounting system - for the purposes of the paper it will be called 'AccyPlus'. It was required that each participant had a minimum of 6 months experience with AccyPlus in order to make sure they were confident using the product and were aware of its key functionalities (Hebler et al. 2007). Users from different industries and roles were conveniently selected in order to represent the population using AccyPlus and to be able to evaluate to what extent requirements changed according to individuals' backgrounds (Myers 2008).

Following the criteria described above, a list of 28 Wellington based clients of small to medium enterprises was provided by a partner company. Initially each of these selected clients was invited to participate in this research via email. Follow up phone calls were used to contact clients who had not responded within one week from the initial invitation. As a result, 12 clients agreed to participate in the research. Table 1 summarises participants' industry, current business role, and how long they have been using the product. All names in this research have been replaced with an alias to keep each participant anonymous.

Table 1. Research Participants

Participant	Industry	Role in Business	Product Experience
1	Manufacturing	Chief Executive Officer	19 months
2	Retail	Business Owner	18 months
3	IT - development	Business Analyst	18 months
4	Design	Managing director	12 months
5	Mobile Media	Managing director	12 months
6	Photography	Business Owner	10 months
7	IT - development	Accountant	20 months
8	IT - development	Business Owner	19 months
9	Education	Treasurer	6 months
10	Design	Managing Director	18 months
11	Meteorology	Chief Executive Officer	12 months
12	IT	Consultant	9 months

On order to elicit user requirements, data collection was achieved in a qualitative manner using face-to-face, semi-structured interviews (Fouskas et al. 2002; Hengst et al. 2004; Myers 2008; Peffers et al. 2005).

To help gather insights, a questionnaire was designed based on user requirements elicitation techniques (Hengst et al. 2004; Majchrzak et al. 2005; Peffers et al. 2005). Since this research explored the mobility requirements of a non-established mobile service, it seemed appropriate to borrow the 'scenario-envisioning' element from the BURE model (Hebler et al. 2007). At the interview, participants were asked to picture using AccyPlus via their favoured mobile device and to specify their requirements accordingly.

Another method of user requirements elicitation that guided this research questionnaire was developed by Gerlach and Kuo (1991). The authors proposed a metaphorical procedure where system users identify metaphors to describe the tasks involved to provide the designer with building blocks for constructing a consistent system model. Similarly, to elicit a sharper understanding of requirements (Gerlach and Kuo 1991), the research participants for this study were asked to explain their perceptions in a metaphorical manner.

Each interview was recorded and lasted on average 30 minutes. Interviews were subsequently transcribed and put into a matrix for analysis (Miles and Hubermann 1994). Sentences or keywords were highlighted to enable data comparison and development of conceptual categories - open coding. Accordingly, the data later went through the process of axial coding to discover any connections between these previously formed groups (Punch 2005).

RESULTS

The purpose of this section is to establish and define the mobility requirements of users of an online accounting service. The research participants were asked to imagine they would be able to access AccyPlus via mobile devices such as the iPhone and Blackberries. Laptop computers, tablet PC's and net-books were specifically excluded from this investigation.

The Required Behaviours of a Mobile Accounting Information System

When participants were solicited to state the accounting functionalities they would perform via a mobile device, they sought after both application requirements and existing AccyPlus accounting functionalities. Table 2 below illustrates these requirements.

Table 2. Desired Functionalities for Mobile Accounting Information Systems

Application Requirements
Easy Navigation
Personalized
Simple Tasks
Retrievable Information
Desired Accounting Functionalities
Accounts Receivable
Dashboard – overview of financial position and transactions
Bank Reconciliation
Bank Details
Contacts
Accounts Payable
Reports

Application Requirements

In general, users suggested the implementation of accounting tasks that were easy and simple to perform. For instance, Participant 11 commented that it should only be a snapshot of what they can access via a computer: "*Mobile is an efficiency tool, it's a snapshot of what I can do on my laptop* [online accounting]*, I don't want to do complex invoicing and price lists…If I'm mobile I'm going to be sitting somewhere cramped, going to be moving, and not going to be there long."*

Similarly, another participant thought that mobile accounting services should be used simply for the retrieval of information: *"I think the mobile platform at the moment should only look at existing*

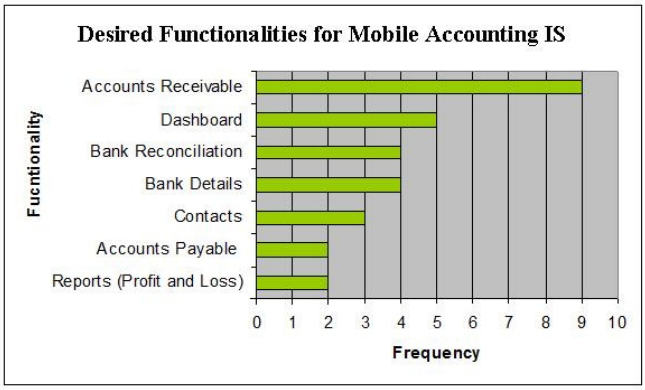
information rather than creating information." This was also stressed by another participant emphasising that applications should follow a simple, logical flow: *"I want to know who owes me money, click on that, find out who owes you money, click on that, they owe you this much, from what invoice? Click on that, cool, would you like to send it to them? No I'd like to call them – that would be it. It's making the mobile experience do what it has to do."* Likewise, Sarker and Wells (2003) found that mobile devices require simple menus where navigation is not cumbersome.

Users also revealed the need for personalization of the mobile accounting application. Participant 11 wanted an application customized to his needs: *"You could almost have it into a set of tasks of what you want to do in a mobile, so it's my menu."* Siau and Shen (2003) also suggested that mobile services should be personalised to filter information or provide services in ways appropriate to tailor each individual user. In additional, one participant mentioned that the application to perform *"Smart tasks...instead of just a number of links that you would click. I might log in to the home page and click on one link to go and see what needs to be reconciled."* Similarly, Pousttchi and Schurig (2004) found that users of mobile services required 'One-Click Requests'.

Desired Accounting Functionalities

Participants were also able to state existing accounting functionalities that they would exploit via this mobile service of accounting. These desired existing accounting functionalities are summarised in Table 3 below.

Table 3. The Desired Existing Functionalities for Mobile Accounting Information Systems



Users were interested in viewing view who owed the business money. As a result Accounts Receivable was commonly selected as a desired functionality while being mobile. Nine out of ten participants recommended that this feature would be essential for mobile accounting information systems.

On the other hand, only two participants regarded Accounts Payable as a desired functionality of mobile accounting systems. Users were generally not interested in finding out who the business owed money to while being mobile. In line with Accounts Payable, reporting (profit and loss statements) was only desired by two participants.

Business owners specifically asked for a 'dashboard' function which should give them an overview of the business financial information simply illustrated in graphs and tables. Participant 5 suggested: *"A Dashboard type functionality just to give you an overview of AR/AP, bank account balances, and also the ability to review an invoice either payable or receivable and make a payment to that or forward it on via email would be really useful."* Participant 8 added: *"I mean it could be a mobile Dashboard which you could pre-configure, and you say these are the things I want to appear here. That would be handy."* Users found that this will help them *"keep an eye on things"* while on the move.

Bank reconciliation was another desired feature of mobile accounting information systems as the participants wished to compare and match figures from the accounting records against those recorded in their bank accounts. Banking details such as account balances and statements were something that participants thought they would also want to check via their handheld device.

Lastly, AccyPlus has a 'contacts' feature which allows its users to save a list of their business contacts. Some participants found that having access to those contacts while on the go is important as it would enable them to be in touch with their business networks anytime.

Possible Constraints of Mobile Accounting Information Systems

The research respondents also mentioned several factors that could potentially constrain the use of mobile accounting systems. Four participants thought that accounting tasks requiring the input of large amounts of information would be difficult to perform on a mobile device. A participant stated: *"It's anything that requires big lists or undue amounts of data."* Therefore, mobile accounting systems should display a reduced set of information to account for the hardware limitations of mobile IS (Hoehle and Scornavacca 2008).

Two participants found that any task that required swapping between pages would be challenging to perform via a portable handheld device. Participant 5 articulated: *"I think things where you have to swap back between pages, or any detailed information...I mean it could be done but this* [mobile] *is probably not the right channel to do it in."* This is in line with Sarker and Wells' (2003) suggestion that mobile applications should avoid cumbersome navigation.

It seemed that certain characteristics of mobile IS could form a constraint for mobile AccyPlus due to the existing features in the product. Four participants thought physical characteristics of mobile technologies such as screen size and graphical interface would form a constraint on extending key functionalities of the existing AccyPlus online product to a mobile channel. Consequently, AccyPlus' features (such as the Dashboard and Bank Reconciliation) illustrating data in large amounts of graphs and tables would be challenging to be adapted to mobile devices. One participant argued: *"Anything that requires decent screen real estate, so for instance the Dashboard it has fancy graphs. These things I would want to see on my big screen for interest but I would not want to see them cluttering my mobile real estate, my mobile real estate is not going to allow me to do stuff."*

Data transmission speed and security were equally thought of as constraints when implementing mobile accounting as a service. Participants did not discuss the issue of security in detail, however they stressed that the speed of the product or application in particular would raise a challenge in mobile accounting. According to Pousttchi and Schurig (2004), security requirements such as encrypted data transmission, authorization of access, and simple authorization were also requested by users for mobile banking services. Security was also a key mobile IS characteristic found by Hoehle and Scornavacca (2008).

Required Device Properties for Mobile Accounting Information Systems

In this research, participants were asked to identify mobile device properties required for a mobile accounting system. These are demonstrated in Table 4 along with their level of importance. The level of importance for each device property was determined by the number of times it was mentioned by users. Traits chosen by five or more participants were indicated with a high level of importance; traits suggested by 3-4 users were given a medium level of importance; and traits selected by less than three users were minimally signified with a low level of importance.

Table 4. Key Device Properties for Mobile Accounting Information Systems

Required Technical Traits	Level of Importance
High Speed/Connectivity	High
Low Network Costs	Low
High Screen Resolution	Low
Required Physical Traits	**Level of Importance**
Usability	High
Large Screen Size	High

Easy Input Interface	Medium

The usability of the mobile device was a critical factor sought after by half the participants. Participant 3 suggested that it needs to be easy to use: *"I expect the mobile device to be as easy as my computer."* Similarly with mobile services, Pousttchi and Schurig (2004) found that usability requirements included simple and easy tasks carried out by users. Also, Sarker and Wells (2003) propose that manageable navigation and simple menus are more tailored for the uptake of mobile technologies.

Five users perceived that a large screen size was required in order to perform certain functionalities. For instance, one participant thought: *"For entering an invoice for example then ideally you'd want a larger screen."* The constraint of screen real estate has been known to be an issue with mobile technologies (Andreou et al. 2005). Screens were also expected to be of a high resolution to successfully render content and media rich accounting functionalities. Interestingly, graphical limitations have earlier been thought to be a constraint of mobile IS (Andreou et al. 2005).

Although users suggested they would try to avoid accounting functionalities with high input of data, they still thought the mobile IS would require an 'easy-to-use' input interface. Consequently, a large enough keypad that can be easily used to type with is required. One user stressed that: *"I guess having the ability to easily type, that's reasonably important."* Participant 3 suggested the use of *"a little soft keyboard that comes off the screen."* The miniscule structure of portable handheld devices was also earlier perceived as a challenge (Andreou et al. 2005).

Noticeably, a connection to a network is required to enable access to online accounting from a mobile device. One participant argued that network providers needed *"a good range"*. The device speed was purely dependent on the network connectivity and the content of information. Users were concerned that the slow data connection would lead to delays in performing their day-to-day accounting tasks including downloading and uploading accounting / financial/account statement: *"It would have to be fast enough because I just get frustrated if it's not fast enough…when things are difficult to find or takes ages to dial up or get internet connection"*.

Coming with connectivity is the issue of cost. One participant found the cost of being connected with a mobile IS is very expensive: *"Some of my friends they've been on the net on their phone for 3 minutes and it cost $17. I mean it's the affordability that you need."* Hoehle and Scornavacca (2008) also found high costs were also depicted by to be associated with mobile IS.

Perceptions towards the need for Mobile Accounting Information Systems

When participants were asked to explain how a mobile accounting service would benefit them in their role, both negative and positive perceptions towards the product were expressed.

Participants with a more mobile role, such as consulting and photography, thought mobile accounting would create a positive impact on their job since it would save time and increase productivity. Essentially, efficiency gains would be a benefit from mobile accounting services. One participant thought that: *"It means I can do it* [accounting] *from anywhere. If I'm catching the train, and it takes half an hour…It would be quite good if I had that kind of waiting time."* On a similar note, Participant 12 stated: *"It will let me keep up to date with my accounts…So therefore it will make me generally more flexible and productive."* This finding is in line with the current literature where several studies found that the use of mobile IS enables efficiency gains to the workforce (Barnes 2003; Barnes and Scornavacca 2006; Hoehle and Scornavacca 2008; Scheepers and Scheepers 2004).

Mobile accounting was specifically appealing to small business owners. Participant 11 stressed: *"Will it benefit me? I think so…being a small business owner you're always under pressure, you always get a lot on your plate, you're always fighting about who owes you money…so I see a real benefit to know where I'm at.*" Another participant also found that being a business owner, finding time was a difficulty and therefore being able to *"do things here and there and keeping a general eye on things"* would require less time.

In general, participants with a more stationary role (developers and accountants) in the organisation were not very enthusiastic about this mobile extension. They perceived that while mobile accounting is innovative and cutting edge, it would still not improve their job performance. Some suggested that this type

of application would be more tailored for individuals who were self-employed, or whose role required a lot of travelling between places such as sales people and property managers. One participant stated: *"It might be of use for people who are out of the office and not so connected. It might be the sort of thing that catches on in time, maybe the next generation because everyone just uses mobile devices now."* In addition, some participants were unsure if there is a need to extend the access to AccyPlus to portable handheld devices. For instance a participant questioned: *"Why would I want to do it* [accounting] *on my mobile while on a bus or at the pub?"*

Finally, lack of previous experience and negative attitudes towards mobile technologies had impact on the way users perceived the need for mobile accounting. For instance, Participant 3 stated that he did not have enough experience with mobile technologies, and therefore felt: *"I just can't see myself right now moving towards a mobile version of AccyPlus."* Participant 2 discouraged mobile technologies as a whole, noting: *"a lot of people think that mobile technology's going to be huge within e-commerce – I don't believe that for a second."* Similarly, a more senior participant thought *"it's bad enough for a cell phone, I can't even see the screen because of sunlight. I mean the next generation that's coming through will accept these charges, but we don't as older people."*

CONCLUSION

Although academic research on mobile IS has produced over a thousand peer-reviewed papers, to the best of the authors' knowledge, this is the first empirical study exploring user requirements for a mobile accounting software service.

This paper aimed to present an initial point of discussion for system development in this area by combining an extensive literature review with an empirical investigation of end-users' perceptions towards the characteristics of mobile accounting systems. The contribution of twelve participants representing distinct stakeholders in the client base allowed us to capture different views regarding the specificities of such systems.

This study was able to consolidate some key required characteristics of a mobile accounting system: easy navigation, personalized, simple tasks, retrievable information, and seven key accounting functionalities. Some of the characteristics identified in this research such as easy navigation, personalized and simple tasks are also commonly found throughout the literature on mobile IS (Pousttchi and Schurig 2004; Sarker and Wells 2003; Siau and Shen 2003). On the other hand accounting functionalities such as a Dashboard for an overview of accounts' behaviours, and business Contacts are not normally present in ordinary accounting practice (Bazley et al. 2010; Fischer 2000; Johnson and Kaplan 1991).

Similarly to the literature, the perceptions captured in this research regarding the possible constrains associated to a mobile accounting service included: input of large amounts of data, cumbersome navigation, screen size and graphical interface (Gelinas and Sutton 2002; Hoehle and Scornavacca 2008; Romney and Steinbart 2006; Sarker and Wells 2003). It seemed that accounting tasks such as viewing and uploading invoices as well as spreadsheets would be constrained by physical limitations of the devices. It was interesting that data security was not mentioned by any of the users, whereas previous literature considers it a key limiting component of mobile technologies (Hoehle and Scornavacca 2008; Pousttchi and Schurig 2004).

The device properties required for the mobile accounting information system included: high speed/connectivity, low network costs, high screen resolution, usability, large screen, and easy input interface – all characteristics are similarly found in literature (Andreou et al. 2005; Jarvenpaa 2003; Sarker and Wells 2003; Tarasewich 2003).

Regarding the need for mobile accounting, individuals who were from a mobile working environment or were small business owners appeared to be ready for this evolutionary step for accounting services. They were interested in viewing snapshots of accounting information rather than retrieving complex details. They perceived a Mobile Accounting Information System would benefit them in terms of efficiency gains and increased flexibility – likewise the benefits found in the wider mobile IS literature (Barnes 2003; Hoehle and Scornavacca 2008; McIntosh and Baron 2005). On the other hand, employees who were more stationary, most of the time working near a computer, perceived that mobile accounting information

systems would not bring much value to them. Thus, it seems fair to conclude that a mobile accounting service should be tailored for the needs of "nomad" workers.

As a result, the findings of this paper were used as an initial guide by the developers of 'Mobile AccyPlus' - which is currently available for its users. The findings described in this research, while generalizable to its peculiar context, must be closely scrutinized in their application to other situations. The research was conducted at a singular point in time and consisted of only one round of data collection with twelve participants. The results were drawn solely from the interviewees' perspectives and thoughts.

While providing an initial point of discussion for the development of a mobile accounting system, future research should aim on broadening the scope of this study in order to provide results that are indicative of a broader range of online accounting users, and of other accounting systems. Researchers should specifically approach users of a mobile role to gain a better understanding of the mobility requirements. This research was solely qualitative; therefore a quantitative approach is suggested for testing and validating some of the findings here described (Alreck and Settle 2004). If further investigation on this topic was to continue, this study could be of value and considered a starting base for researchers and particularly for practitioners in the accounting systems development industry.

REFERENCES

Alreck, P. L., and Settle, R. B. 2004. *The Survey Research Handbook* (3rd ed.). New York: McGraw-Hill/Irwin.

Andreou, A. S., Leonidou, C., Chrysostomou, C., Pitsillides, A., Samaras, G., and Schizas, C. N. 2005. "Key issues for the design and development of mobile commerce services and applications," *International Journal of Mobile Communications,* (3:3), pp 303-323.

Barnes, S. 2003. *In MBusiness: The Strategic Implications of Wireless Communications*. Oxford: Butterwoth-Heinemann.

Barnes, S. J., and Scornavacca, S. 2006. "Wireless applications in New Zealand Business: A strategic assessment," *The Journal of Computer Information Systems,* (47:1), pp 46-55.

Bazley, M., Hancock, P., Berry, A. and Jarvis, R. 2004. *Contemporary accounting: a conceptual approach* (5th ed). Melbourne: Thomson.

Debreceny, R. and Gray, G. L. 2001. "The production and use of semantically rich accounting reports on the Internet: XML and XBRL," *International Journal of Accounting Information Systems*, (2:1), pp 47-74.

Fischer, M. J. 2000. "Luca Pacioli on Business Profits." *Journal of Business Ethics,*(25:4), pp 299-312.

Fouskas, K., Pateli, A., Spinellis, D., and Virola, H. 2002. "Applying Contextual Inquiry for Capturing End-Users Behaviour Requirements for Mobile Exhibition Services," *Paper presented at the 1st International Conference on Mobile Business*, July.

Gelinas, U. J., and Sutton, S. G. 2002. *Accounting Information Systems* (5th ed.). Ohio: South-Western.

Gerlach, J. H., and Kuo, F.-Y. 1991. "Understanding Human-Computer Interaction for Information Systems Design," *MIS Quarterly,* (15:4), pp 527-549.

Hebler, S., Tuunanen, T., and Peffers, K. 2007. "Blind User Requirements Engineering for Mobile Services," *Paper presented at 15th IEEE International Requirements Engineering Conference*, October.

Hengst, M., Van de Kar, E., and Appelman, J. 2004. "Designing Mobile Information Services: User Requirements Elicitation with GSS Design and Application of a Repeatable Process," *Paper presented at 37th Hawaii International Conference on System Sciences*, January.

Herzberg, A. 2003. "Payments and banking with mobile personal devices," *Communications of the ACM,* (46:5), pp 53-58.

Hoehle, H., and Scornavacca, E. 2008. "Unveiling experts' perceptions towards the characteristics and value propositions of mobile information systems," *Paper presented at the 7th International Conference on Mobile Business*, July.

Hussain, M. M. 2006. "The role of management accounting in corporate social responsibility measures: experience with the financial services industry, " *International Journal of Business Governance and Ethics,* (2:1), pp 129-144.

Jarvenpaa, S. L., Lang, K. R., Takeda, Y., and Tuunainen, V. K. 2003. "Mobile Commerce at Crossroads," *Communications of the ACM,* (46:12), pp 41-44.

Johnson, H., and Kaplan, R. S. 1991. *Relevance Lost: The Rise and Fall of Management Accounting*. Boston: Harvard Business Press.

Lin, P. P. 2004. "Web-based Accounting Systems," *The CPA Journal,* (74:10), pp 68-69.

Majchrzak, A., Beath, C. M., Lim, R. A., and Chin, W. W. 2005. "Managing Client Dialogues During Information Systems Design to Facilitate Client Learning," *MIS Quarterly,* (29:4), pp 653-672.

Mallat, N. and Tuunainen, V. K. 2005. "Merchant Adoption of Mobile Payment Systems, in Proceedings of the Fourth International Conference on Mobile Business," *IEEE Computer Society: Sydney, Australia,* pp 347-353.

McIntosh, J. C., and Baron, J. P. 2005. "Mobile commerce's impact on today's workforce: issues, impacts and implications," *International Journal Mobile Communications,* (3:2), pp 99 - 113.

Michaud, E. R. and Niles, W. J. 1991. "Software that makes computers easier to use," *Journal of Accountancy,* (172:4), pp 85-90.

Miles, M.B., and Huberman, A.M. 1994. *An Expanded Sourcebook-Qualitative Data Analysis.* Thousand Oaks, California: Sage Publications.

Munterman, J. 2005. "Automated Mobile Alerting Services - Towards a Level Playing Field in the Financial Community," *Journal of Electronic Commerce Research,* (6:3), pp 241-250.

Myers, M. D. 2008. "Qualitative Research in Information Systems". Retrieved March 11th, 2008 from http://www.qual.auckland.ac.nz/

Naismith, L., Lonsdale, P., Vavoula, G., and Sharples, M. 2006. *Literature Review in Mobile Technologies and Learning*. Bristol: Future Lab.

Needle, S. and Hunt, D. 1985. "Micros in Accounting," *The Journal of Accountancy*, (162:1), pp 86-102.

Ondrus, J. and Pigneur, Y. 2006. "Towards a holistic analysis of mobile payments: A multiple perspectives approach," *Electronic Commerce Research and Applications*, (5:3), pp 246-257.

Peffers, K., and Tuunanen, T. 2005. "Planning for IS applications: a practical, information theoretical method and case study in mobile financial services," *Information and Management,* (42:3), pp 483-501.

Pousttchi, K., and Schurig, M. 2004. "Assessment of Today's Mobile Banking Applications from the View of Customer Requirements," *Paper presented at the 37th Hawaii International Conference on System Sciences*, January.

Punch, K. F. 2005. *Introduction to Social Research Quantitative and Qualitative Approaches* (2nd ed.). London: Sage.

Romney, M. B., and Steinbart, P. J. 2006. *Accounting Information Systems* (10th ed.). New Jersey: Pearson Education.

Sarker, S., and Wells, J. D. 2003. "Understanding Mobile Handheld Device Use and Adoption," *Communications of the ACM,* (46:12), pp 35-40.

Saxena, A., Das, M. L., and Gupta, A. 2005. "MMPS: A Versatile Mobile-to-Mobile Payment System, in Proceedings of the Fourth International Conference on Mobile Business," *IEEE Computer Society: Sydney, Australia.* pp 400-405.

Scheepers, H., and Scheepers, R. 2004. "Implementing Mobile Technology in Organizations," *Paper presented at the Twenty-Fifth International Conference on Information Systems,* December.

Scornavacca, E., Barnes, S. J., and Huff, S. 2006. "Mobile Business Research Published in 2000-2004: Emergence, Current Status, and Future Opportunities," *Communications of the Association for Information System,* (17), pp 635-646.

Scornavacca, E., and Hoehle, H. 2007. "Mobile Banking in Germany: a strategic perspective," *International Journal of Electronic Finance,* (1:3), pp 304-320.

Scott, R. W. 2006. "Life on the Web," *Accounting Technology,* (22:2), pp 16-20.

Sharma, S. K., and Kitchens, F. L. 2003. "A new approach for mobile communication: web services using flexible services architecture," *International Journal of Mobile Communications,* (1:3), pp 301-311.

Siau, K., and Shen, Z. 2003. "Mobile communications and mobile services," *International Journal of Mobile Communications,* (1:1/2), pp 3-14.

Tarasewich, P. 2003. "Designing Mobile Commerce Applications," *Communications of the ACM,* (46:12), pp 57-60.

Yasin, M. M., Bayes, P. E., and Czuchry, A. J. 2005. "The Changing Role of Accounting in Supporting the Quality and Customer Goals of Organizations: An Open System Perspective," *International Journal of Management,* (22:3), pp 323-331.

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