

9 July 2011

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ISBN: [978-1-86435-644-1]; Full paper

Recommended Citation

Khatri, Akshat and Kurnia, Sherah, "Mobile Banking Adoption In Australian Rural Areas" (2011). *PACIS 2011 Proceedings*. 95.
<http://aisel.aisnet.org/pacis2011/95>

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MOBILE BANKING ADOPTION IN AUSTRALIAN RURAL AREAS

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Abstract

Improvements in wireless technologies and increased uptake of advanced mobile handsets have led to a growing trend in mobile banking activities on a global scale. However, little is known about the potential of mobile banking for rural areas in developed countries. Prior research suggests some difficulties faced by rural areas in accessing ICT services such as high speed Broadband and Mobile Internet compared to urban areas which resonates the situation in developing countries. This paper explores the viewpoint of service providers regarding the potential of mobile banking for rural areas in Australia as little work has been carried out in this context, particularly from the service provider's perspective. It identifies some key issues in regard to m-banking development in rural areas, which are related to limited network coverage and technology acceptance among rural consumers. It also explains the differences in social context among developing and developed economies. This study enhances the current knowledge within the area of technology adoption in general and mobile commerce adoption specifically.

1 INTRODUCTION

The internet revolution has brought about a dramatic change in Industry. Various businesses are supported by technology like internet communications, IT Infrastructure and online business transactions. One major domain of high growth would be Mobile Commerce (m-commerce) that typically involves online commercial transactions through the use of mobile devices i.e. Smartphones or PDAs (Personal Digital Assistant) over a wireless network (Coursaris and Hassanein 2002; Barnes 2002 ; Gunsakaran and Ngai 2003). Unlike traditional e-commerce, consumers can access services via their mobile devices from any location thereby providing them with more flexible options and personalized services (Varshney 2003). Moreover, current improvements and sophistication in internet enabled communication has accompanied the growth of m-commerce services globally.

Mobile Banking (m-banking) is a type of m-commerce service since it allows consumers to perform services (i.e. banking transactions, balance enquiries and alerts) through their mobile devices (Corbitt and Barnes 2003). It is classified under the Business to Consumer model (B2C) as it involves interaction between the consumer and service provider. Positive gains for consumers such as cost effectiveness, personalisation and convenience has contributed to the increased adoption of m-banking over traditional banking methods. Network connectivity forms the minimum requirements for a mobile device to perform m-banking transactions as it needs to ensure secure communication between the service providers' banking systems and client details. A simple 2G/3G enabled device and more recently Smartphones support these requirements and would be suitable to carry out m-banking services.

M-banking has been taken up rapidly in many developing countries which have experienced a high penetration rate of mobile handsets in the market (Donner 2007; Wray 2008; Cruz and Laukkanen 2010). Service providers in developing economies have emphasized on heavy investment in mobile infrastructure (Banjanovic 2009; Cole 2010) in order to further maximize the potential of m-banking services and improve the service levels for consumers. However, many developed countries appear to lag behind developing countries in general regarding mobile banking adoption (Salz 2004; Lai 2006).

In particular, considering the conditions of the rural areas of developed countries in which banking services are not conveniently accessible as in urban areas, m-banking appears to have a great potential to offer as we have observed in many developing countries (Zhang and Wolff 2004; Islam et al. 2008). At this stage, there has been very limited research conducted to explore the relevance and potential of m-banking for rural areas of developed countries. Hence, the main motivation of our study is to explore whether m-banking has the potential to address the issues faced in rural areas regarding banking services and its technological hurdles, such as access to mobile internet, high speed broadband and infrastructure issues.

Moreover, little research has been done that explores m-banking adoption from the viewpoint of service providers in rural areas of developed countries. Usually, researchers utilize the common theoretical lenses, such as Technology Acceptance Model, Theory of Planned Behaviour and Theory of Reasoned Action to focus on consumer perceptions on m-banking by evaluating individual user perspectives regarding m-banking effectiveness, ease of use and usefulness as well as security and trust using various technology adoption models and frameworks (Yang 2005; Yu 2009).

To have a more complete understanding of m-banking adoption phenomenon and m-banking service development, it is also important to understand the perception of the service providers regarding the relevance and potential of m-banking services for rural areas of developed nations since they are generally more informed about the socio, economic, technical and political situation of the markets served. Therefore, understanding their perception is valuable for many parties including policy makers, government, and telecommunication providers especially at the time where we are seeing a rapid expansion of m-banking services across the globe and an increasing development of rural areas in many developed countries (Strover 2003; Ruiz 2004).

In order to address this gap in literature, this paper aims to explore the perceptions of service providers regarding the relevance and potential of m-banking for rural areas in Australia, as an example of a developed nation. Within the context of this paper, service providers would be the financial institutions that offer m-banking services. Exploring the perceptions of the service provider would also allow us to understand the likely attitude of the consumers towards the provision of m-banking services in rural areas. The following research question is particularly addressed in this study:

What are the perceptions of service providers regarding the potential and relevance of m-banking services for rural areas in Australia?

For the purpose of the study, two Australian financial institutions that offer m-banking services were involved in our case studies. Through semi-structured interviews with the relevant managers from each institution, the overall findings suggest that the current conditions of the rural areas in Australia, in which the population is dominated by aging citizens who do not conduct financial transactions frequently and the mobile and other related infrastructures are generally not well developed to support m-banking services, do not warrant the successful delivery and use of m-banking services. This study serves as a pilot study for this under explored area of m-banking and provides directions for future study and development of m-banking in rural areas of developed countries. The understanding obtained from the perspective of service providers also contributes to the existing literature within the area of m-commerce which has been dominated by studies from consumers' perspective.

The paper is structured as follows. Firstly, a review of existing studies on m-banking adoption is provided. The Entity-Interaction framework proposed by (Al Hinai et al. 2007) is used to guide us in reviewing the existing studies. Then the research method for this study is discussed. A brief description of the case organisations is then provided along with a brief description of the research participants, followed by a discussion of the findings. Lastly, limitations of the study are outlined, followed by possible directions for future studies.

2 M-BANKING ADOPTION STUDIES

To help us structure the review of the existing literature on m-banking adoption, we employ the Entity-Interaction Framework (EIF), as shown in Figure 1. The framework was originally introduced and used by Al Hinai (2009) to review the existing studies of m-commerce adoption in order to identify various adoption factors and highlight the knowledge gap in this area. It involves four main entities, namely the consumer, mobile service, social system and service provider. Focusing on the consumer, there are three groups of inter-entity interactions which are consumer-mobile service, consumer-social system and consumer-service provider. Guided by this framework, Al Hinai (2009) identified that there have been extensive studies that discuss factors affecting adoption which are related to the interactions between consumer and mobile service and between consumer and social system, but studies exploring factors related to the interaction between consumer and service provider are very limited.

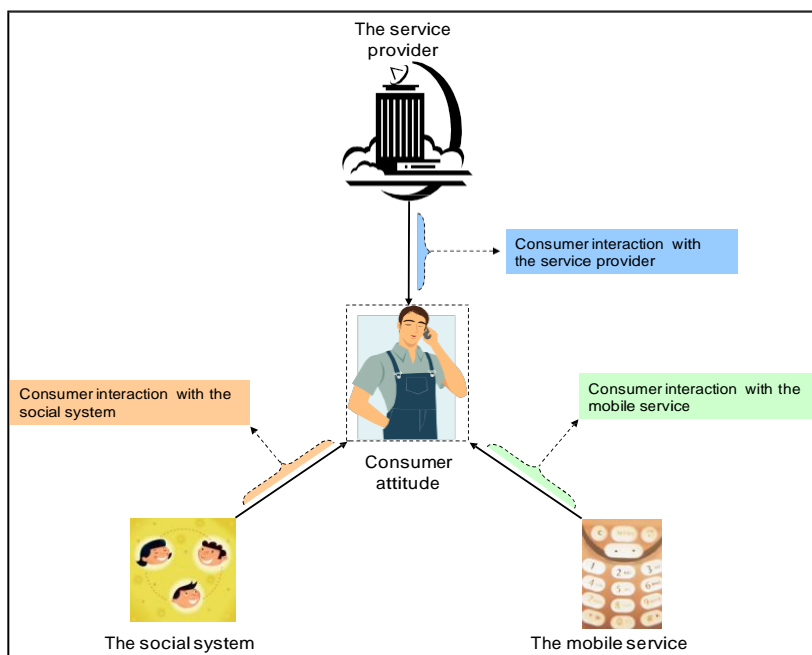


Figure 1. *The Entity-Interaction Framework (Al Hinai 2009)*

Since m-banking is a type of m-commerce service, the EIF would be appropriate to synthesize the existing literature of m-banking. As in the case of m-commerce, m-banking studies have also been dominated by studies from the consumer perspective. A review of the literature is briefly presented below based on the three groups of inter-entity interactions. Table 1 shows a summary of factors affecting m-banking adoption identified from our review of the existing literature. For each group, common factors identified in the previous studies are shown in the table with the frequency counts of each factor to highlight the lack of studies involving service providers. Papers have been selected from online sources through online library catalogues and academic search engines like Google Scholar. Common keywords used were ‘mobile banking/commerce’, ‘rural developed/developing’, ‘m-banking benefits’, ‘m-banking service provider’ and ‘rural internet issues’. The list of papers is not exhaustive as papers are only selected from the year 2006 and onwards. However, this method prevents any discussion & analysis of outdated topics on m-banking and gives a positive outlook on current situations. Only papers ‘solely’ discuss m-banking and have substantial content that address m-banking services.

2.1 Consumer-Mobile Service

Most of the studies of m-banking in this category have identified convenience, relative advantage and location free access to mobile services as factors that have a positive effect on consumer adoption (Brown et al. 2003; Laukkanen and Lauronen 2005). Furthermore, studies that have utilized the Technology Acceptance Model framework (Yang 2005; Mallat 2007; Yu 2009) highlight ease of use, usefulness and benefits of mobile services as important influencing factors for the intention in using m-banking services.

In addition, information layout and navigation influence which can be seen as ease of use factors are important factors that affect the adoption of m-banking by consumers. For example, studies by (Laukkanen and Lauronen 2005) have highlighted issues with small screen sizes and navigation steps while making banking payments. Security and perceived risks of information loss during mobile service transactions are also important factors that consumers consider while accessing mobile based services (Laforet and Li 2005; Luarn and Lin 2005; Mallat 2007; Gu et al. 2009). Finally, studies by (Luarn and Lin 2005; Mallat 2007; Cruz and Laukkanen 2010) have indicated that subscription and service fees for accessing mobile services (e.g. banking, promotional offers, shopping) have a significant influence on user acceptance. Also, studies by (Brown et al. 2003; Lee et al. 2003; Luarn and Lin 2005; Barati and Mohammadi 2009; Yu 2009) have found out that prior knowledge with

mobile handsets and related technologies have a positive influence on the adoption rate. (Brown et al. 2003; Luarn and Lin 2005) have assessed training and demonstrations with m-banking for consumers would increase their familiarity with the service and raise their awareness about the technology.

2.2 Consumer-Social System

Cultural/social influences and resistance to change among different countries also account for different attitudes among consumers towards the adoption of m-commerce services (Laforet and Li 2005; Li and McQueen 2008; Barati and Mohammadi 2009; Crabbe et al. 2009; Laukkanen and Kiviniemi 2010). For example, (Laforet and Li 2005) argue that the collectivism in China influences consumer groups in adopting new technologies like m-banking, unlike other countries like Singapore and Malaysia where consumer groups are not influenced by other people’s decisions.

Furthermore, studies by (Laforet and Li 2005; Barati and Mohammadi 2009) highlight Government efforts and policies to have an influential effect (either negative or positive) on the adoption of m-commerce services. For example, studies by (Yang 2005) shows the positive involvement of the Singapore government in supporting the development of m-commerce/m-banking in the country. However, countries like China have had government restrictions on developing m-banking services/infrastructure in addition to a lack of influence from the mobile market (Laforet and Li 2005).

2.3 Consumer-Service Provider

A very limited number of studies have been identified that assess factors related to the consumer-service provider interactions. In this category, studies by (Crabbe et al. 2009; Yu and Fang 2009) have showed that trust between service providers and consumers have a positive impact on the adoption of m-banking services in Ghana. Effective relationship management also builds upon trust between them. There is no other study we could identify that focuses on factors related to consumer-service provider interactions. Therefore, as shown in table 1, only 2 studies are in this category, compared to 38 studies involving consumer-mobile service entities and 12 studies involving consumer-social system entities.

Selected Research Papers	Consumer-Mobile Service									Consumer-Social System					Consumer-Service Provider		
	Total Count	Demographics (Age)	Gender	Income Level	Convenience (Ease of Use)	Utility (Usefulness)	Perceived Risks\Trust	Pricing & Costs	Interface/Information Layout	Total Count	Cultural/Social Influence	Resistance to Change	Government Campaigns	knowledge with Technology in general	Total Count	Trust	Relationship Management
Frequency	38	5	4	1	7	4	10	3	4	12	2	3	1	6	2	0	2
(Barati and Mohammadi 2009)																	
(Brown et al. 2003)																	
(Crabbe et al. 2009)																	
*****More studies have been omitted due to space considerations*****																	
(Yu and Fang 2009)																	

Table 1. Synthesis of Factors Affecting M-banking Adoption

3 M-BANKING IN RURAL AREAS OF DEVELOPED COUNTRIES

Developed countries, especially those with a large geographic size still contain a large rural population where its inhabitants do not have the privilege of having high speed internet connectivity compared to urban regions. For electronic or mobile commerce to be successful there needs to be an adequate level of internet provision in the relevant areas to offer quality services to customers. However, many rural regions still face a few issues in regard to internet connectivity and access to Information and Communication Technologies (ICTs). Few key issues are discussed below.

Major developed countries have a high urbanization rate whereby the majority of the country's population live in large cities and urban dwellings. Hence, they enjoy the benefits of high speed internet access further allowing them to utilize various e-commerce activities. On the contrary, the quality and availability of infrastructure differ between urban and rural regions i.e. people residing in rural areas are disadvantaged with low quality access to internet services due to lack of infrastructure development (Strover 2003; Van der Meer and Van Winden 2003). A study conducted by a US based provider of m-commerce solutions found that inadequate mobile infrastructure is one of the main issues for the slow pace of m-commerce development in Europe (Salz 2004).

As rural regions have a low population density compared to urban settlements, service providers typically focus on urban settlements in order to serve a larger group of consumers (Tsiligirides 1993; Van der Meer and Van Winden 2003; DeMaagd 2009). As a result of high population densities in urban areas, differences in broadband internet availability are evident between urban and rural areas (Strover 2003). However, this is less evident in the areas where population density is high and comparative country size is small e.g. majority of East Asian countries (i.e. Japan, Singapore, South Korea and Taiwan) and countries with smaller rural populations like Belgium and Netherlands. As a result, lower rural segmentations and a small country size favour service providers to serve more people with relative ease and lesser implementation costs (Preston et al. 2007).

It is quite evident that there is a gap (digital divide) in regard to providing banking and/or internet services between rural and urban regions. For instance, urban areas enjoy high speed internet access and have access to banking facilities via internet banking or ATM visits. However, rural areas have difficulties with obtaining ICT services and banking facilities. Based on an earlier study by (McDonnell and Westbury 2001), for example, because of high operating costs for financial providers in providing ATM services for a large area with low population density, major branches in rural parts of Australia have been closed.

Given these difficulties, m-banking services through a wireless approach could be considered to complement existing banking services. Through wireless internet access, a larger radius of geographic area could be covered through single satellite coverage which might even cater to an entire rural town. Service providers would incur less implementation costs compared to traditional fixed line internet installations which could prove to be challenging to cover a large geographical area (Islam et al. 2008). Moreover, it would be a more convenient solution as consumers could carry out their transactions without physically visiting very limited bank branches in rural areas thereby allowing them more flexibility and personalized services.

Implementation of mobile infrastructure would be more feasible for rural areas compared to traditional fixed line infrastructure implementations as it would better serve a wider community in a more feasible option in terms of cost and maintenance (Liew et al. 2004; Islam et al. 2008; Bazelon 2010). For instance, as rural areas generally contain scattered populations, wireless networks would save on high costs of fixed line implementation services and improve network coverage over a wide area (Liew et al. 2004), thereby making Wi-Fi based broadband internet access a financially viable solution in rural areas (Zhang and Wolff 2004; Islam et al. 2008). Established mobile infrastructure, service quality and service delivery would be important for the success of m-banking development and adoption in rural areas.

In addition, within the context of rural & regional areas, the socio-economic conditions also influence the development and adoption of m-banking. These conditions include geographical size of countries and convenience for consumer groups in obtaining m-banking services. Geographical size would play an important role for service providers in making an informed decision for providing m-banking service. For example, a physically large country like Australia could support the provision of wireless services to serve a wider range of people considering its uneven population distribution in rural areas (Yang et al. 2007).

Lastly, government policies and support also play a key role for successful implementation of m-banking services in rural areas. For instance, one of the reasons for the delay in US banks to embrace m-commerce is strict government regulations that hold back financial institutions from investing in m-commerce services (Lai 2006). On the other hand, South Korea has been the world leader in providing high speed internet access throughout their country due to strong government support and funding to implement their extensive high speed optical fibre networks throughout major cities and business districts (Lee et al. 2003).

4 RESEARCH METHOD

Due to the exploratory nature of this research and the need to have a detailed understanding of the service provider's viewpoint regarding m-banking adoption in rural areas, a case study was the most appropriate research method (Yin 2003; Neuman 2006). To enhance the generalisation of the findings, a multiple case study involving two financial institutions was conducted. The cases are considered revelatory cases since to the best of our knowledge, there has not been any study assessing the phenomenon of m-banking adoption in rural areas of developed countries based on the service provider's view point.

Australia was selected as a suitable country for this study since it represents a developed country with a large geographical size that makes the implementation of ICT infrastructure challenging, particularly in rural areas. For instance, approximately 18 percent of Australians live in rural and remote areas followed by 10 percent living in very remote areas thereby making ICT initiatives difficult as it would serve a minority of the population (Singh et al. 2008). However, there has been a positive direction towards improving mobile services in rural areas like future technological developments such as self-service methods of banking (e-banking/m-banking) and lesser reliance on physical bank branches and ATM visits (McDonnell and Westbury 2001). Telecommunication providers are also stepping forward in offering improved 3G services to rural areas in order to increase mobile coverage around Australia (LeMay 2007).

5 CASE STUDY PARTICIPANTS

As the research focuses on the viewpoint of service providers, financial institutions that currently offer m-banking services in Australia were selected for research participation. Two major Australian banks finally agreed to participate in the research and data was collected through semi-structured interviews with relevant managers. Bank names are referred by pseudonyms (Banks A and B) for confidentiality purposes. Two face-to-face interviews were conducted with senior managers of each bank who have a major role in the decision making process in regard to provision of m-banking services at their respective banks. Also, two telephone interviews were conducted with staff members at local bank branches in rural areas to get an idea about the provision of m-banking services and any issues that might exist. Emails were then used to clarify any ambiguities and incomplete information.

Bank	Participant	Job Description
Bank A	General Manager, Distribution Services	Responsible for all the online banking (Internet, m-banking) functions and distribution channels (Branch networks across the country)
Bank B	Head of Mobile & Emerging Technologies	Responsible for customer interactions in the self service channels covering ATMs and online (Internet, SMS/mobile) channels
Bank B	Assistant Relationship Manager at Rural Bank Branch	Responsible for building strong internal and external relationships with clients and customers at the local branch
Bank B	Assistant Manager-Agribusiness at Rural Bank Branch	Managing relationships with small businesses at the local branch and effectively liaising customer requirements with local bank staff.

Table 2. Overview of Participants

Both of the banks included in this study are two of the largest consumer banks in Australia that are publicly listed in the Australian financial market. They have a large amount of investment in consumer banking services throughout Australia and in global operations. Bank A is one of the four largest banks in Australia in terms of market capitalization with its annual revenue at around US\$ 9.8 billion in 2009. It has been providing m-banking services since 2008 making them the first bank in Australia to offer these services. Bank B is also one of the four largest financial institutions in Australia with its annual revenue at around US\$ 16.7 billion in 2009. It has been offering SMS/m-banking since late 2008 with an aim to match its competitors during the initial exploration of the m-banking market in Australia

6 CASE STUDY FINDINGS

6.1 Bank A

Bank A started to offer m-banking in order to improve their brand image so the bank would be able to capitalize itself in a relatively new market. Furthermore, gaining customer loyalty was also considered as one of the motivating factors behind introducing m-banking services.

“And another benefit would be that customers would just become more loyal to the [Bank A] brand because they got it in their pockets at all times” [General Manager, Distribution Services]

Few issues revolved around the stability of the m-banking platform during the initial stages as well as difficulties in catering to multiple mobile platforms. In order to overcome these issues, Bank A decided to invest heavily in its mobile platform infrastructure to ensure system stability. More recently, given the trends of convergence in mobile handsets to Smartphones, a strategic choice was made to initially develop applications for Smartphones, followed by other mobile operating systems.

In terms of the preferred channel for consumers, internet banking still dominates the online banking presence although the trends for m-banking have been positive due to the increased penetration of 3G capable mobile handsets in developed economies as every individual who owns a 3G capable device or Smartphone would be able to carry out their banking transactions via mobile devices, as mentioned in the interview.

“It’s still not really big...but the projections are that this is going to become one of our biggest channels within the future [General Manager, Distribution Services]”

From the perspective of Bank A, different channels are useful for different purposes as each channel such as ATMs, bank branches and an online presence in rural areas have a certain role depending on the type of service required by consumers. Hence, each channel has the same level of importance and is closely monitored by the bank in order to serve rural customers in an effective way. Bank A does not rely on the government’s effort to improve the ICT infrastructure in rural areas as their

development of m-banking for rural areas is independent of the government effort and their policies regarding establishing ICT infrastructure in these areas. However, the bank does perceive that investments in ICT infrastructure would definitely serve as a positive catalyst by improving the uptake of m-banking services and experience levels for customers.

Lastly, regarding the use of m-banking, developing economies have a different purpose towards m-banking unlike developed economies, where majority of users utilize m-banking for their personal needs. For instance, introduction of m-banking services by Bank A in Vietnam has witnessed a lot of success mainly due to the nature of money transactions, whereby young adults working in cities send money to their parents who live in rural areas. On the other hand, rural areas in developed economies do not transfer money between accounts on a regular basis and it consists of a more stable population where family members live together.

6.2 Bank B

SMS banking was initially launched for consumers to cater to mobile devices with limited technology capabilities. It was not a major success due to two major reasons. Firstly, SMS banking service was not effectively promoted in the market resulting in a lesser impact on its uptake. Secondly, improvements in mobile technologies in recent years towards Smartphones further diverted the focus on developing m-banking applications for 3G capable devices due to the promising growth in the market.

“It’s fair to say that I don’t think we really actively marketed the service (SMS offering) potentially as much as we could have and that would have had an impact on its uptake as well [Head of Mobile & Emerging Technologies]”

Similar to Bank A, internet banking still dominates the online banking presence at Bank B as it accounts for approximately 90% of the bank’s transactions. However, the trends for m-banking are promising in developed economies as the proliferation of sophisticated 3G capable handsets further encourages data usage through mobile internet over traditional SMS transactions.

“I think the benefits of our SMS banking channel are probably diminishing and purely because the channel of preference is more in the mobile web or the app space (client loaded applications) through Smartphones [Head of Mobile & Emerging Technologies]”

Compared to urban areas, rural areas have a variable range of network coverage in certain areas together with internet banking, since it faces similar issues with broadband. Moreover, issues with poor network coverage and access to ICT services in rural areas support the fact that rural areas are disadvantaged in obtaining ICT services, unlike urban areas.

“Yes, in rural areas coverage is one issue because a lot of places don’t have mobile coverage and customers sometimes only have landline connections [Assistant Relationship Manager]”

Lastly, regarding the variations in mobile technologies, developed economies have a high uptake of 3G capable handsets and already have established fixed line connections in place. Hence, improvement in high speed internet services would aim to serve the online presence together, including internet and m-banking services to consumers. On the contrary, developing economies have a very high penetration of simple network enabled mobile devices and currently do not have established fixed line connections. As a result, it leads service providers to purely focus on improving mobile infrastructure rather than investing in fixed-line internet.

“I guess the penetration of a relatively ‘dumb’ handset into those (developing) markets is very high whereas opposed to getting computer equipment (laptops or desktops) to connect to fixed-line internet, where there is no Infrastructure to support and costs much higher...I think the scenarios in

developed countries produces markets that are very different like we are in Australia [Head of Mobile & Emerging Technologies”

7 DISCUSSION

In this section, we summarise and discuss some key points regarding the perceptions of the case study participants of the relevance and potential of m-banking for rural areas in Australia.

M-banking Enhances Existing Banking Channels

Firstly, m-banking is perceived by both service providers to be an additional channel to enhance the existing banking channels. In regard to the most preferred channel of delivery to rural areas, m-banking by itself would not be able to provide optimum services to rural customers as each channel would have a major role to play in rural areas. Although the provision of m-banking services will definitely improve the personal banking needs, such as the online banking presence for customers but it would not replace any existing channels like ATMs and bank branches and it is not considered as a necessity. Particularly in Australia, contrary to the study conducted earlier in 2001 (McDonnell and Westbury 2001), there seems to be no more issues with the availability and accessibility of ATMs as well as the service quality of the rural branches as there is generally no long queue due to a small population.

“So what that means for rural communities is that people would be using different channels for different things...but perhaps for small businesses, they might still prefer to speak to a business specialist instead of using the mobile phone [General Manager (Distribution Services), Bank A]”

Consumers in Rural Areas Lack of Experience with Technology

Consumer’s lack of experience with technology is also seen as a factor that reduces the uptake of m-banking, especially in rural areas. Managers at bank branches in rural areas have acknowledged that certain customers are not comfortable with new technology and would require some initial assistance with these applications, mainly due to an ageing population living in rural areas. This observation has been acknowledged in previous studies (Laforet and Li 2005; Luarn and Lin 2005) whereby age contributes as a factor for the lack of experience with new technologies.

“Secondly (Issue) is customer acceptance. You know, not everyone wants to jump into mobile (technologies) like our age and especially in rural areas, not everyone is familiar or comfortable with these kinds of things [Assistant Relationship Manager, Bank B]”

Hence, consumers would need to be educated with using mobile devices to carry out their banking transactions. Support centres could be established in rural towns and online help could be provided in helping out customers to perform their banking needs.

Rural Areas Have Poor Network Reception

Poor network reception limits service providers in providing effective m-banking services, especially in rural areas. Wireless technologies and mobile internet could possibly complement rural areas in improving its online banking presence through improved broadband connections in rural areas as suggested in previous studies (eg. Liew et al. 2004; Zhang and Wolff 2004; Islam et al. 2008), given the difficulties of implementing fixed line networks in rural areas.

Moreover, although banks realize positive gains for consumers in rural areas, they have certain limitations in promoting m-banking services since they are held back with inadequate ICT infrastructure in rural areas.

“I certainly think it has to do with Broadband. So, the NBN, depending on the political party and their policies would certainly look to address those shortcomings and disadvantages that rural customers

are put at as a result of lack of that infrastructure...but I think investment in wireless technology would help bridge some of that gap [Head of Mobile & Emerging Technologies, Bank B]”

As most of the penetration of mobile handsets and Smartphones in developed economies is 3G enabled, they have the capabilities of carrying out improved services through mobile web banking and banking via client applications onto their devices unlike developing economies where SMS transactions are more dominant through simple SMS-enabled mobile devices. Hence, given the trends of mobile technology growth in developed economies, rural areas would not purely focus on improving mobile infrastructure but rather improve all spheres of ICT investment including fixed line and mobile infrastructure to serve all its possible banking channels.

Lack of Effective Collaboration between Stakeholders

As previously observed from the case study results, lack of collaboration between the banks and telecommunication providers could be a reason as to why implementation of mobile based services has been slow in Australia. Apart from the financial providers, telecommunication providers and mobile phone manufacturers have a role in development of mobile networks and manufacturing of 3G capable handsets (Oh et al. 2005). Consistently, other previous studies (Lee et al. 2003; Yang 2005; Wray 2008) also indicate that key stakeholders such as telecommunication providers and the government need to effectively share their knowledge and expertise to provide effective mobile services to consumers.

Table 3 summarizes the observations from the findings that affect m-banking adoption in rural areas of developed countries according to relevant factors. An indication (positive/negative impact) is also provided for each factor based on the context of rural areas.

Service Provider’s Perception	Likely Impact	Brief Description
M-banking Enhances Existing Banking Channels	Positive	- M-banking complements existing banking channels - M-banking cannot solely provide customers with all their banking needs
Consumers in Rural Areas Lack of Experience with Technology	Negative	- Majority of rural populations in developed countries are elderly people - Uptake would not be rapid as expected in developing countries
Rural Areas Have Poor Network Reception	Negative	- Service providers have limited resources in expanding mobile services - Wireless networks complement fixed line networks in developed countries
Lack of Effective Collaboration between Stakeholders	Negative	Lack of collaboration slows down development of mobile infrastructure and mobile services, especially rural regions of developed countries

Table 3. Summary of the service providers’ of M-Banking Adoption in Rural Areas in Australia

8 CONCLUSION

In this study, we have explored the perception of two service providers regarding m-banking adoption for rural areas of Australia as an example of a developed nation. Our study indicates that the rural areas of Australia have a completely different socio, economic, political and technical conditions from those of developing countries where we have seen a rapid uptake of m-banking services. Therefore it cannot be assumed that rural areas of developed countries would enjoy a high uptake of m-banking services once they become available. In particular, our study suggests that m-banking does not appear to be relevant and offer a high potential for the rural residents in Australia. While the participating financial institutions acknowledge that m-banking complements other banking channels, but it is not superior than the existing, more traditional channels especially in the context of rural areas.

Rural areas of Australia and other countries with a similar condition generally have low population densities whereby residents are retired people who are not technology savvy and financially independent due to strong government support through various superannuation and pension mechanisms. The lifestyle is family oriented as people live together at homes. As a result, the nature of carrying out their banking needs is more personal i.e. balance enquiries and payments that involve less transfer of funds between accounts. In comparison, developing economies have a high density population whereby young adults work in cities and commute back to their homes in rural areas. Therefore, banking transactions happen frequently to transfer money to parents or other family members. Moreover, in the rural areas of developed countries, the banking systems and the landline infrastructure are generally well established as confirmed in this study, while the mobile network is still not well developed. In developing countries, there is typically a high penetration of simple network enabled mobile handsets and no fixed-line infrastructure in place. Hence, service providers would rely on mobile networks and leapfrog fixed line infrastructure to mobile infrastructure.

This study offers contributions to both academic literature and Industry practice. In regard to industry, the findings could assist service providers in evaluating their decision making in regard to m-banking service provision. Furthermore, it increases the awareness of the need for collaboration between financial institutions and other stakeholders in providing effective mobile based financial services to consumers. From an academic perspective, this study contributes to the existing m-commerce literature and adds valuable information concerning rural areas. It may also act as a starting point for future research in a similar area of interest, mainly around m-commerce technologies and its potential in unexplored markets.

Due to the scope and timeframe of this study, there are some limitations of this thesis. Firstly, we have only considered financial institutions as the service provider and have not explored other service providers such as telecommunication providers that are involved with improvements in mobile infrastructure, mobile phone manufacturers and other parties involved in the provision of m-banking services. In addition, the study was conducted within the context of rural areas in Australia which may limit the relevance of the findings for other countries with different geographical, cultural, socio-economic and political conditions. Furthermore, we do not employ a particular theoretical lens in this study since it serves as a preliminary investigation of the potential and relevance of m-banking services for rural areas in Australia.

To address the above limitations, there are a number of possible avenues for future studies. Firstly, to improve the generalisability of the findings, more financial institutions that have offer m-banking services in Australia could be involved in another qualitative study, a quantitative study employing a survey, or a combination of both. Further studies can also explore m-banking adoption from the service provider's perspective involving other developed countries and compare the findings across countries. Other service providers beside financial institutions could also be included to complement the results of this study and the issue of collaboration among stakeholders could be further explored. Appropriate theories such as Hofstede Cross-Cultural Theory and Stakeholder Theory could be employed in the relevant future studies. Finally, studies exploring the integration of microfinance with m-banking could also be carried out in developing economies, in view of the recent growth of Microfinance, supported by the World Bank and Grameen Bank. The growing potential of microfinance in rural areas within developing economies coupled with high growth in mobile penetration could help transform the banking experience through micropayments via mobile devices (WorldBank 2008).

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