Review on the Implementation of Mobile Commerce in Malaysia

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Abstract

Malaysia is the second highest mobile penetration in South East Asia after Singapore. Although M-Commerce still at infancy stage, Malaysia has already embarked on the adoption of M-Commerce. As the communications and multimedia industry evolves towards convergence, licences under the Communications and Multimedia Act 1998 are formulated to be both technology and service neutral. This creates opportunities for expansion into the industry particularly in the area of applications service providers and provides for a more effective utilisation of network infrastructure. To help future applications and technologies handle M-Commerce, Varshney and Vetter (2002) proposed four levels of M-Commerce framework: M-Commerce applications, user infrastructure, middleware, and network infrastructure. Mohd and Osman (2005) have adapting this model into M-Commerce applications in Malaysia. M-Commerce does have a bright future in Malaysia. To achieve this objective, mobile users expect an improvement in charges access fee, network quality, accessibility and speed. Other issues need to be considered are security and customer customisation. With government support, M-Commerce in Malaysia has a very promising future and moves forward in sectors that are clearly going to be the engines of growth worldwide over the next few years.

INTRODUCTION

With the introduction of the World Wide Web (WWW), E-Commerce has revolutionised traditional commerce and boosted sales and exchanges of merchandise and information (Mohd and Osman, 2005). Popular mobile computing technology began in the 1960s and 1970s with digital watches and calculators. Currently, the most popular mobile computing device by far is the mobile phone (Hart and Hannan, 2004) with teenagers, known as the text generation (Liu, 2002). The emergence of wireless and mobile networks has made possible the admission of E-Commerce to a new application and research subject, called Mobile Commerce (M-Commerce) (Mohd and Osman, 2005).

In the era of improved mobile communication technologies, vast amount of changes are generated in facilitating communication, transfer of information and providing added value services (Steenderen, 2002; Abdul Karim et. al, 2006). M-Commerce was coined in the late 1990s during the dot-com boom. The idea that highly profitable M-Commerce applications would be possible though the broadband mobile telephony provided by 2.5G and 3G cell phone services was one of the main reasons for hundreds of billions of dollars in licensing fees paid by European telecommunications companies for UMTS and other 3G licenses in 2000 and 2001 (Wikipedia, 2006). By June 2004 active users of wireless data applications exceeded 115 million worldwide (Smith, 2004; Okazaki, 2005). By 2000, Japan's NTT DoCoMo had already established a huge network of M-Commerce service providers and users that relied on that company's iMode platform (Bradley and Sandoval 2002; Dholakia and Dholakia, 2004). Towards the end of 2002, the 3G of mobile telecommunication networks was being deployed in many global locations, paving the way for many new M-Commerce products and services (Dholakia and Dholakia, 2004).

The integration of mobile computing devices into business processes is the simple definition of M-Commerce (Snowden et. al, 2006). Various applications can be observed among the users, which ranged from telephone conversation and simple text messages (SMS), to multimedia messaging services (MMS) and Internet access, depending on the capability of each mobile phone technology and services rendered. These applications have been made possible through various developments in the mobile telephone technology such as GPRS, WAP and the 3G standard (Abdul Karim et. al, 2006). Olla et al. (2003) stated that M-business is mobile Internet applications on ubiquitous mobile networks allowing real-time, anywhere, anytime connectivity to services.

Mobile telephones will no longer be used just for transmitting voice. The 3G of mobile technology will revolutionise the whole communication marketplace. The utility of mobile communications is rapidly becoming a must-have trend. The penetration of cellular and the innovative ways, in which it is reaching consumers, may make the region ground zero for the coming third generation of mobile technology (Ministry of Energy, Water and Communications, 2001).

Industries affected by M-Commerce include (Andam, 2003):

- **Financial services**, including mobile banking and brokerage services;
- **Telecommunications,** in which service changes, bill payment and account reviews can all be conducted from the same handheld device;
- **Service/retail,** as consumers are given the ability to place and pay for orders on-the-fly; and
- **Information services**, which include the delivery of entertainment, financial news, sports figures and traffic updates to a single mobile device (whatis.com, n.d).

Ring tones were the most common mobile commerce purchases made by consumers. Other popular items were information services, such as weather forecasts and traffic information, interactive services such as games and chats, music and video content, paid for tickets to events, bought screensavers, and paid for parking (TACD, 2006).

FRAMEWORK OF M-COMMERCE IN MALAYSIA

Rules and Regulations

As the communications and multimedia industry evolves towards convergence, licences under the Communications and Multimedia Act 1998 are formulated to be both technology and service neutral. The licensing regime as provided for under the Communications and Multimedia Act 1998 allows a licensee to undertake activities that are market specific. This creates opportunities for expansion into the industry particularly in the area of Applications Service Providers and provides for a more effective utilisation of Network Infrastructure. Under the Communications and Multimedia Act 1998, there are four categories of licensable activities (MCMC, n.d):

- Network Facilities Providers - who are the owners of facilities such as satellite earth stations, broadband fibre optic cables, telecommunications lines and exchanges, radio communications transmission equipment, mobile communications base stations, and broadcasting transmission towers and equipment. They are the fundamental building block of the convergence model upon which network, applications and content services are provided.

- Network Services Providers - who provide the basic connectivity and bandwidth to support a variety of applications. Network services enable connectivity or transport between different networks. A network service provider is typically also the owner of the network facilities. However, a connectivity service may be provided by a person using network facilities owned by another.

- Applications Service Providers - who provide particular functions such as voice services, data services, content-based services, electronic commerce and other transmission services. Applications services are essentially the functions or capabilities, which are delivered to end-users.

- Content Applications Service Providers - who are special subset of applications service providers including traditional broadcast services and newer services such as online publishing and information services.

The Architecture Framework of M-Commerce

To help future applications and technologies handle M-Commerce, Varshney and Vetter (2002) proposed four levels of M-Commerce framework: M-Commerce applications, user infrastructure, middleware, and network infrastructure (Figure 1). The framework shows that the design of new M-Commerce applications should take into consideration the general capabilities of user infrastructure (mobile devices), and not the individual devices. With its ability to hide details of underlying wireless and mobile networks from applications while at the same time providing a uniform and easy to use interface, mobile middleware clearly is an extremely important component in developing new M-Commerce applications. The network infrastructure also plays an important role in mobile commerce, as the user perceived service quality depends on available resources and capabilities of wireless and mobile networks. Mohd and Osman (2005) adapting the Varshney and Vetter into some of M-Commerce applications in Malaysia (Table 1).

Figure 1: Framework of M-Commerce
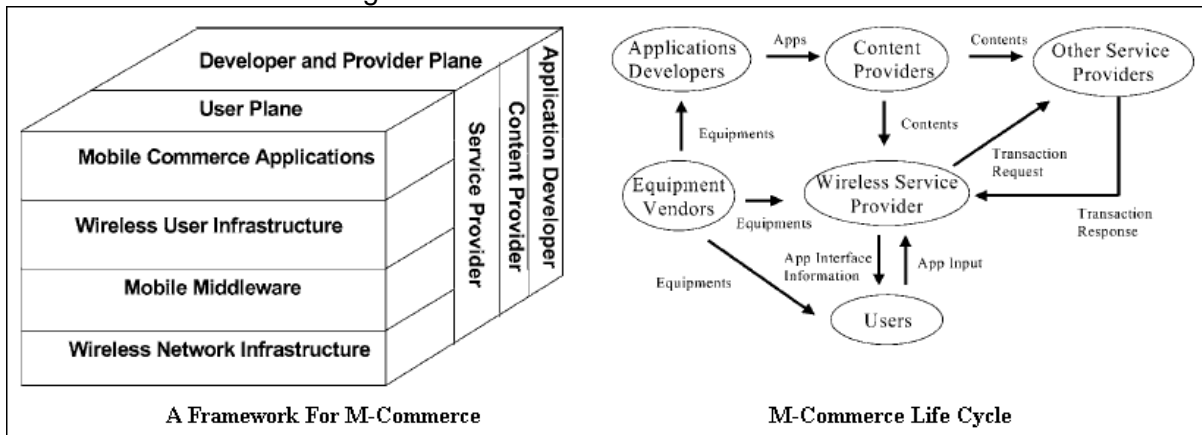
Source: Varshney and Vetter (2002)

Table 1: M-Commerce Application in Malaysia

Component	M-Commerce application in Malaysia					
M-Commerce Application	Mobile Banking	Multimedia Messaging Service	M-Commerce Portal	Telemoney (Mobile Payment Service)	Ring-a-coke	Purchasing ring-tones / mobile screensavers
Mobile Devices/ Infrastructure	GSM Hand Phone with 64K browser SIMS					
Mobile Middleware	WAP					
Wireless Network Infrastructure	Wireless Application Protocol (WAP) technology General Packet Radio Services (GPRS)					
Developer and Provider Plane	TM Cellular Sdn Bhd	TM Cellular Sdn Bhd	Telco's	CELCOM	CELCOM	Telco's

Service Provider	TMNET / JARING					
User Plane	TM TOUCH subscribers +BCB account holders	TMTOUCH subscribers	Telco's Subscribers	Hong Leong Bank + Celcom subscribers	Celcom Subscribers	Telco's Subscribers
Content Provider	BCB	Telco's provider company	Telco's	Hong Leong Bank	F&N Coca Cola	Telco's
Application Developer	TM TOUCH	TMTOUCH	Telcos	Celcom	Celcom	Telco

Source: Mohd and Osman (2005)

CONCLUSION

Malaysia has the second highest mobile penetration in South East Asia after Singapore (ChinaCCM, 2006). The total of cellular phone subscribers in Malaysia is 21.52 million (Q2 2006), increased 4.5% compared to Q1 2006 (Table 2). This was up from only 2 million subscribers in 1998 (MCMC, 2006). The country's mobile users have also been enthusiastic in their adoption of SMS, with the regulator reporting that Malaysians sent more than nine billion SMS during 2005 (ChinaCCM, 2006). Even, an article by Yapp and Khalid (2006) mentioned that "SMS still king", because Malaysians still prefer the SMS over the more advanced mobile communication services that are available in the market. Another service that Malaysians will be interested in include accessing email, wireless gaming, downloading music, information services, directory services, banking or investment related activities, location based services, video-conferencing and streaming video (Ravendran, 2002).

Table 2: Cellular Phone Subscribers in Malaysia

Telefon selular *Cellular phones*						
Tahun	Suku	Pasca bayar	Pra bayar	Jumlah ('000)	Kadar pertumbuhan (%)	Kadar penembusan
2005	1	2,628	13,201	15,829	8.3	60.9
	2	2,787	13,764	16,551	4.6	63.3
	3	2,896	14,655	17,551	6.0	66.8
	4	2,925	16,620	19,545	11.4	74.1
2006	1	2,983	17,607	20,590	5.3	77.7
	2	3,162	18,358	21,520	4.5	80.8
Unjuran *Forecast* 2006	3					82.6
Year	Qtr	Postpaid	Prepaid	Total ('000)	Growth rate (%)	Penetration rate

Source: MCMC (2006)

3G still considered underway in Malaysia. Several major telecommunication operators such as Maxis Communication Bhd., Celcom Malaysia, and Digi Telecommunication have been granted the license to operate the new 3G standard (Abdul Karim et. al, 2006). Broadband ISPs are now moving into a second phase of the market development, from marketing broadband as a high-speed Internet access services to an enabler of higher end services such as triple play and digital home concept (Lee and Lee, 2006).

Even the Internet economy in Malaysia continues its rise from the ashes, with strong spending growth in the E-Commerce market (IDC, 2005), but M-Commerce in Malaysia is still very much in an infancy stage. Although it is still at its infancy stage, Malaysia has already embarked on the adoption of M-Commerce. Maxis Communication Berhad has begun for offering rudimentary services based on M-Commerce. Maxis mobile commerce service subscribers may now check news and stock quotes via their mobile phones. Ericsson and Nokia are contributing to M-Commerce development in the country. Ericsson developed a testbed for M-Commerce applications, and its role is to provide a focal point where all M-Commerce applications are developed and tested. Nokia is also helping by continuously providing more and more advanced mobile commerce enabled phones into the country. Because of the M-Commerce is still at its early stage in Malaysia, its customer applications are confined to services such as email, mobile information provisioning, mobile ticketing, mobile advertising and mobile music (New Straits Times, 2002; Haque, 2004).

Currently the only available 'real' M-Commerce services are the purchase of Coke drinks from selected vending machines with that functionality. This service is provided via a partnership between F&N Coca Cola in Malaysia and Celcom called 'ring-a-coke'. The current business model of this partnership is that a toll-free number is used therefore the user is only billed for the drink but not phone charges and the mobile operator gets 10% for each successful transaction made. Another form of M-Commerce that some mobile operators are offering is the purchasing ring-tones or mobile screensavers over the mobile phone. This does not require any physical receipts or goods and users are billed for the service in their monthly mobile statements. This is currently seen as the more popular M-Commerce application as it is cheap, as low as RM1 per transaction, and there is a low risk of not receiving the purchase (IDC, 2004).

Another few companies, e.g AirAsia and Pos Malaysia also started to offer M-Commerce to their customers. Budget carrier AirAsia Bhd has added another feather to its cap by being the first airline company in the world to offer a comprehensive booking system via mobile phone and wireless devices (Samsudin, 2005). RMEX Payment Services Sdn Bhd, a subsidiary of Pos Malaysia Bhd is targeting to secure some 500,000 active account holders for its mobile and Internet payment services called PosPay by the end of 2007 (Yunus, 2006).

FUTURE OF M-COMMERCE

M-Commerce does have a bright future in Malaysia. "Mobile technology is something which people get used to in the long run" (Berg et. al, 2005). Even M-Commerce in Malaysia is still very much in an infancy stage; there is much room for improvement. The biggest hurdle for providers may be convincing potential customers to give M-Commerce

a try.

Consumer Satisfaction Survey conducted by MCMC (2004) found that Overall industry mobile telephone services performed at the average level. Mobile users expect an improvement in the following priority areas, which will contribute to higher satisfaction levels in the future.

- Charges for monthly access fee
- Network geographical coverage
- Charges for other services, other than for calls
- Network quality
- Quality of other services
- Attractiveness of promotion
- Promptness of getting answers from customer services
- Getting satisfactory solution from customer services
- Speed of handling complaints
- Speed of restoring service disruptions
- Effectiveness of handling complaints
- Accessibility to customer service

Security is another critical issue for successful adoption of M-Commerce. With the innate portability of mobile devices, a higher level of security is required if stolen devices are not to be used to purchase goods or send fraudulent messages. In time, it is expected that the mobile device will support payments; hence the need for security is significant. "The security of a payment method is undoubtedly crucial if the payment method is to gain widespread acceptance" (Mohd and Osman, 2005). Security as a whole can be viewed from few angles:

- Confidentiality: How will the payment method protect against passive monitoring of payment details?
- Authentication: How will the payment method ensure that the consumer and content provider are who they really claim to be?
- Integrity: To what extents can the payment method protect payment details from being modified from the time they are sent to the time they are received?
- Authorisation: How will the payment method ensure that only authorised consumers are allowed to purchase content? This is a separate concern from just authenticating the identity of the consumer. What are the procedures required to authorise a consumer?
- Non-repudiation: How will the payment method guarantee that a consumer cannot falsely claim that they did not participate in the transaction?
- Accessibility: A combination of convenience, speed, and ease of use.

Another issue is the need of mass customisation practices in mobile phone services (Sigala, 2002; Pura, 2005; Sigala, 2006):

- Technological advances enabling information personalisation and customisation;
- The maturity of the mobile market and so the need of individual mobile phone operators to gain customer loyalty and increase transaction values of existing customers;

- Increased competition in the mobile phone service sector through the entrance of new mobile no-frill operators, e.g. ones that do not carry mobile network infrastructure costs; and
- The increased mobility of customers and their increased expectations for ubiquitous personalised services.

The wireless industry is rapidly transitioning from proprietary architecture to more flexible, cost effective open architecture systems. This transition is creating interesting challenges for developers, manufacturers, integrators, operators and end-users as they wrestle with complexities of open wireless systems. The world is at the edge to define such 4G mobile technology to liberate the whole wireless industry (4GMF, 2006).

The MyICMS 886 blueprint is a concerted effort by the government to galvanise the nation and move it forward in sectors that are clearly going to be the engines of growth worldwide over the next few years. The plan has correctly identified worldwide trends that will dominate the world and lays out just where Malaysia ought to be by 2010 (Mobile World Magazine, 2006). With government support, Malaysia has a very promising future both for online advertising opportunities as well as mobile marketing. Malaysia is becoming a major player in these industries and will grow dramatically in the foreseeable future. Not only do the number of Internet and mobile users increase daily, but the many initiatives that are taking place to penetrate this market are incredible (Lloyd, 2005).

CONCLUSION

A strong emphasis has been put on the expansion of telecommunications infrastructure and the telephone penetration rate as a measurement of the ICT readiness of the country. Beyond infrastructure, the Malaysian government provides attractive tax incentives for world-class technology-led companies to participate in the MSC initiative. The most importantly, it has launched actions to provide a well-educated work force with relevant skill levels ranging from technical to research since the MSC implies an enormous demand for IT skills that the Malaysian society is currently unable to provide (Accenture, 2001). Malaysia is becoming a major player in these industries and will grow dramatically in the foreseeable future. Not only do the number of Internet and mobile users increase daily, but the many initiatives that are taking place to penetrate this market are incredible (Lloyd, 2005).

REFERENCES

Abdul Karim, N.S., Darus, S.H. and Hussin, R. (2006). Mobile Phone Applications in Academic Library Services: A Students' Feedback Survey. Campus-Wide Information Systems, 23(1), 35-51.

Accenture (2001). Creating A Development Dynamic - Final Report of the Digital Opportunity Initiative, http://www.opt-init.org/framework/pages/2.3.2.html.

Andam, Z.R. (2003). E-Commerce and E-Business, E-ASEAN Task Force UNDP-APDIP.

Berg, E., Mörtberg, C. and Jansson, M. (2005). Emphasizing Technology: Socio-Technical Implications. Information Technology & People, 18(4), 343-358.

Hart, J. and Hannan, M. (2004). The Future of Mobile Technology and Mobile Wireless

Computing. Campus-Wide Information Systems, 21(5), 201-204.

ChinaCCM (2006). 2006 South East Asian Mobile Communications & Mobile Data Markets, September, http://www.chinaccm.com.

Dholakia, R.R. and Dholakia, N. (2004). Mobility and Markets: Emerging Outlines of M-Commerce. Journal of Business Research, 57(12), 1391-1396.

4GMF (Fourtn Generation Mobile Forum) (2006). Statement by Prof. Willie W. Lu, Chairman of 4GMF Mission, http://4gmf.org.

Haque, A. (2004). Mobile Commerce: Customer Perception and It's Prospect on Business Operation in Malaysia. Journal of American Academy of Business, 4(1/2).

IDC (2004), MCommerce: Where Are We Today?, http://www.idc.com.my/Research%20Document/MCommerce.asp.

IDC (2005). Malaysia Internet and eCommerce 2005-2009 Forecast: Tracking the Development, http://www.idc.com/getdoc.jsp?containerId=MY381151M.

Lee, L. and Lee, H.M. (2006). Malaysia Broadband Access Services 2006-2010 Forecast and Analysis, IDC.

Liu, C.M (2002). The Effects of Promotional Activities on Brand Decision in the Cellular Trlrphone Industry. Journal of Product & Brand Management, 11(1), 42-51.

Lloyd, E.M. (2005). Malaysia: APAC's Next China?, iMedia Connection, 12 September, http://www.imediaconnection.com/content/6704.asp.

MCMC (n.d). http://www.mcmc.gov.my.

MCMC (2004). Consumer Satisfaction Survey 2004, Summary Report. http://www.mcmc.gov.my.

MCMC (2006). Facts & Figures - Statistics & Records. http://www.mcmc.gov.my.

Ministry of Energy, Water and Communications (2001). Mobility above all? Is the future wireless?, Presented by Mr Knut Oppegaard at Gaining Competitive Advantage In the Knowledge Economy, The 2nd Asean Communications and Multimedia Forum 2001, 30 - 31 October, The MINIES, Kuala Lumpur.

Mobile World Magazine (2006). MyICMS 886: Will Mobile Pull Its Weight?, 9 March, http://www.mobileworld.com.my/index.php?option=com_content&task=view&id=116&Itemid=95.

Mohd, F. and Osman, S. (2005). Towards the Future of Mobile Commerce (M-Commerce) in Malaysia, IADIS International Conference Web Based Communities 2005, Algarve, Portugal, 23 – 25 February.

New Straits Times (2002). Efforts to Boost Wireless Application Market, New Straits Times, 21 February.

Olla, P., Patel, N. and Atkinson, C. (2003). A Case Study of MM02's MADIC: A Framework for Creating Mobile Internet Systems. Internet Research: Electronic Networking and Policy, 13(4), 311-321.

Bradley S.P. and Sandoval, M. (2000). NTT DoCoMo - The Future of the Wireless Internet?. Journal of Interactive Marketing, 16(2), 80-96.

Ravendran, A. (2002). Local Mobile Commerce Market to See Shift in Trends, Computimes, 2 May, 1.

Samsudin, A.M. (2005). AirAsia Offers Mobile Phone Bookings, Business Times, 24 August, 3.

Sigala, M. (2006). Mass Customisation Implementation Models and Customer Value in Mobile Phones Services - Preliminary Findings from Greece. Managing Service Quality, 16(4), 395-420.

Snowden, S., Spafford, J., Michaelides, R. and Hopkins, J. (2006). Technology

Acceptance and M-Commerce in An Operational Environment. Journal of Enterprise Information Management, 19(5), 525-539.

Steenderen, M.V. (2002). Business Application of WAP. The Electronic Library, 20(3), 215-223.

TACD (2006). Report on the July 2006 TACD Mobile Commerce Survey, TACD, http://www.tacd.org/db_files/files/files-413-filetag.pdf.

Varshney, U. and Vetter, R. (2002). Mobile Commerce: Framework, Applications and Networking Support. Mobile Networks and Applications, 7(3), 185-198.

Whatis.com (n.d). SearchWebServices.com, http://whatis.com.

Wikipedia (2006). M-Commerce, 2 November, http://en.wikipedia.org/wiki/M-commerce.

Yapp, E. and Khalid, H.A. (2006). SMS still king, TechCentral, The Star, 31 January.

Yunus, K. (2006). Pos Malaysia Unit to Launch Mobile, Online Payment Services, New Straits Times, 25 November, 54.