



E-Banking in Malaysia: Opportunity and Challenges

Journal of Internet Banking and Commerce, December 2005, vol. 10, no.3
 (<http://www.arraydev.com/commerce/jibc/>)

By Chai Lee Goi, Curtin University of Technology, Malaysia

Web: <http://www.curtin.edu.my>

Email: goi.chai.lee@curtin.edu.my; or goichailee@hotmail.com

Goi is lecturer, School of Business, Curtin University of Technology, Sarawak Campus, Malaysia.

Abstract

E-banking has to be a delivery channel that replicates and replaces many of the physical functions a bank currently performs. Hence, the E-banking now becomes a virtual banking counter that the individual and corporate customer to carry out the regular activities. Even E-banking services more to electronic-based, but, it still strongly support banking activities, therefore communication, transaction and distribution (Peterson, Balasubramanian and Bronnenberg, 1997). There are number of challenges need to be faced by Malaysian banks, however, the opportunity in this industry is high due to the current trend especially application and development of ICT.

Introduction

ECbanking is defined as the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels. ECbanking includes the systems that enable financial institution customers, individuals or businesses, to access accounts, transact business, or obtain information on financial products and services through a public or private network, including the Internet. Customers access e-banking services using an intelligent electronic device, such as a personal computer (PC), personal digital assistant (PDA), automated teller machine (ATM), kiosk, or Touch Tone telephone (Federal Financial Institutions Examination Council, n.d). The first virtual bank was the ATM (Kass, 1994; Wan, Luk and Chow, 2005). Other forms of virtual banking include telephone banking and home banking (Mahoney, 1994; Straeel, 1995; Talmor, 1995; Wan, Luk and Chow, 2005). E-banking services are typically classified based on the type of customer they support. Table 1 lists some of the common retail and wholesale ECbanking services offered by financial institutions.

Table 1: Common E-Banking Services

Retail Services	Wholesale Services
Account management	Account management
Bill payment and presentment	Cash management
New account opening	Small business loan applications, approvals, or advances
Consumer wire transfers	
Investment/Brokerage services	Commercial wire transfers
Loan application and approval	Business-to-business payments
Account aggregation	Employee benefits/pension administration

Source: Federal Financial Institutions Examination Council (n.d)

E-banking systems can vary significantly in their configuration depending on a number of factors. Financial institutions should choose their e-banking system configuration, including outsourcing relationships, based on four factors, therefore strategic objectives for ECBanking; scope, scale, and complexity of equipment, systems, and activities; technology expertise; and security and internal control requirements. Financial institutions may choose to support their e-banking services internally. Alternatively, financial institutions can outsource any aspect of their e-banking systems to third parties. Few entities could provide or host, therefore allow applications to reside on their servers E-banking-related services for financial institutions, which covers another financial institution, Internet service provider, Internet banking software vendor or processor, core banking vendor or processor, managed security service provider, bill payment provider, credit bureau, and credit scoring company. At the same time, E-banking systems rely on a number of common components or processes, therefore Website design and hosting, firewall configuration and management, intrusion detection system or IDS (network and host-based), network administration, security management, Internet banking server, E-commerce applications (e.g., bill payment, lending, brokerage), Internal network servers, core processing system, programming support, and automated decision support systems. All these components work together to deliver E-banking services (Federal Financial Institutions Examination Council, n.d).

E-Banking in Malaysia

The financial services industry has been subject to dramatic changes over the past decades, as a result of advances in IT, deregulation, and globalisation. These changes have reduced margins in traditional banking activities, leading banks to merge with other banks as well as with non-bank financial institutions. The forces of consolidation are also having a profound impact on the operation of securities exchanges, as well as the brokerage and asset management industries (International Monetary Fund, 2001). The merger programme of the banking institutions has resulted in the consolidation of 51 banking institutions into 10 banking groups. The mergers, which involved the consolidation of 96% of the total assets of the banking institutions was achieved with minimum disruption and dislocation to the system. This has been a major accomplishment by the domestic banking industry. The domestic banking groups are now in a position to reap greater benefits from economies of scale, through greater investment in technology and the more substantive pool of skilled staff. This will allow the banking institutions to make further gains on efficiency and competitiveness with each banking institution having attained the minimum of shareholders funds of RM2 billion and total assets of RM25 billion. The completion of the legal and operational mergers will place the Malaysian banking institutions in a better position to respond to the forces of change, in particular, to advances in technology and the greater demands for more customised and differentiated products and services by consumers and businesses. It will allow the banking institutions to be less vulnerable and more resilient to external developments and thus be in a better position to contribute to the economic growth process and the development of the nation (Bank Negara Malaysia, 2001a).

Under the Bank Negara Malaysia guidelines, all licensed banking institutions in Malaysia are allowed to establish informational Web sites. For more advanced Internet banking services, only domestic banking institutions are allowed to establish communicative or transactional Web sites with effect from June 1 2000. Locally incorporated foreign banks, however, are only allowed to incorporate communicative Web sites from Jan 1 2001 and transactional Web sites from Jan 1 2002 (Low, 2000). Only banking institutions licensed under the Banking and Financial Institutions Act 1989 and the Islamic Banking Act 1983 are allowed to offer Internet Banking services in Malaysia (BankInfo, 2005).

There are 12 banks offering Internet banking facilities while five have introduced mobile banking. The

adoption of chip technology now also offers new forms of payment choices and higher security to the public. The introduction of the Bankcard to replace the magnetic stripe ATM cards and efforts towards migrating to EMV compliant credit cards before end-2004 is indeed an important step forward. A further development has been the introduction of the MEPS Cash, the national e-purse scheme as an alternative electronic payment mode to using cash for making retail payments. The ATM machines of the participating banks and terminals at retail outlets are being upgraded to facilitate MEPS Cash transactions. The number of interbank Giro payments has more than quadrupled in 2002, while electronic funds transfer and bill payments conducted through Internet banking has been on an increasing trend. More customers are likely to be drawn to Internet banking, which is gaining acceptance in Malaysia with now over 1 million subscribers (Bank Negara Malaysia, 2003).

The trend of the Web site adoption especially for business purpose in Malaysia consists of three layer stages, therefore promotion, provision and processing. This is similar to the classification applied by the business process of Ho (1997) model. These three stages hopefully can support the Internet marketing activities, therefore communication, transaction and distribution (Peterson, Balasubramanian and Bronnenberg, 1997). Refer to Malaysia banks Web site, it shows that banks Web site designed at least for promotion purpose and provide the communication activity to the customer. Few banks in Malaysia, example Maybank (<http://www.maybank2u.com.my>) provides quite completely of online business process stages and Internet marketing activities. Table 2 lists the commercial banks, as well as banks which offering the Internet banking in Malaysia. The provision of E-banking services in Malaysia mainly via electronic devices especially automated teller machine (ATM), telephone, personal computer or the Internet.

Table 2: Commercial Banks in Malaysia

Commercial Banks	Ownership	Web site
Affin Bank Berhad	Local	http://www.affinbank.com.my
Alliance Bank Malaysia Berhad	Local	AllianceOnline, http://www.alliancebank.com.my
AmBank (M) Berhad	Local	AMDIRECT, http://www.ambg.com.my
Bumiputra-Commerce Berhad	Bank Local	http://www.bcb.com.my Channel-e, http://www.channel-e.com.my
EON Bank Berhad	Local	http://www.eonbank.com.my
Hong Leong Bank Berhad	Local	http://http://www.hlb.com.my Hong Leong Online, http://http://www.hlb.com.my/inban.html
Malayan Banking Berhad	Local	Maybank2U, http://www.maybank2u.com.my
Public Bank Berhad	Local	http://www.publicbank.com.my PBeBank.com, http://www.pbebank.com

RHB Bank Berhad	Local	RHB Internet Banking Service, http://www.rhb.com.my
Southern Bank Berhad	Local	http://www.sbb.com.my SBB Direct, http://www.sbbdirect.com.my
ABN AMRO Bank Berhad	Foreign	http://www.abnamromalaysia.com
Bangkok Bank Berhad	Foreign	-
Bank of America Malaysia Berhad	Foreign	http://www.bankamerica.com.my
Bank of China (Malaysia) Berhad	Foreign	-
Bank of Tokyo-Mitsubishi (Malaysia) Berhad	Foreign	-
Citibank Berhad	Foreign	CitiDirect, http://www.citibank.com.my
Deutsche Bank (Malaysia) Berhad	Foreign	db-direct Internet, http://db-direct.my.db.com
HSBC Bank Malaysia Berhad	Foreign	online@hsbc, http://www.hsbc.com.my
J.P. Morgan Chase Bank Berhad	Foreign	-
OCBC Bank (Malaysia) Berhad	Foreign	http://www.ocbc.com.my eCafe, http://ecafe.ocbc.com.my
Standard Chartered Bank Malaysia Berhad	Foreign	http://www.standardchartered.com.my
The Bank of Nova Scotia Berhad	Foreign	http://www.scotiabank.com.my
United Overseas Bank (Malaysia) Berhad	Foreign	UOB Internet Banking, http://www.uob.com.my

The central banks Minimum Guidelines on the Provision of Internet Banking Services, which was issued in May 2000, requires banking institutions to have face-to-face interaction with customers prior to the opening of accounts or the extension of credit. Banking institutions are also required to establish appropriate measures to identify customers reached over third party websites and the customer verification process as stringent as that for face-to-face customers. In providing Internet banking services, banking institutions are also required to implement monitoring and reporting mechanisms to identify potential money laundering activities. This enables the Central Bank to ensure that the banking industry, while keeping abreast with developments in ICT, that is, information, communications and technology, would maintain the integrity of the financial system and prevent it from being abused by the money launderers (Bank Negara Malaysia, 2001b).

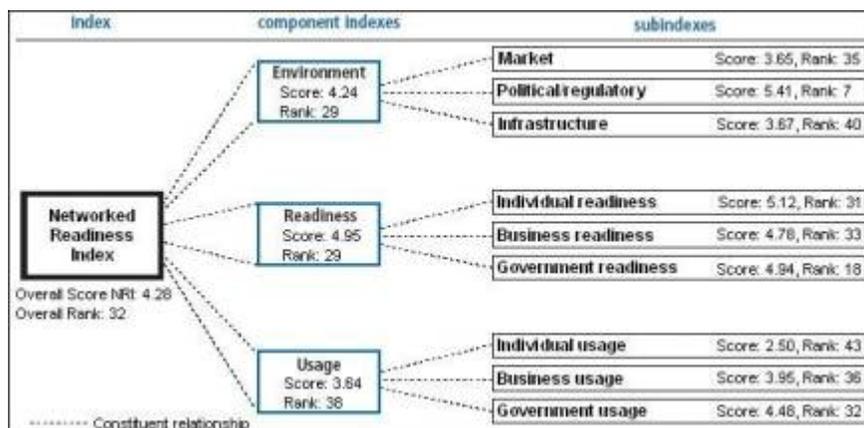
The Internet wave has caught on in Malaysia, especially through the MSC initiatives undertaken. In the first wave of the Internet, it is extensively being used for communications, messaging and the posting of static information. Businesses use it as a form of online brochure, publicising their corporations (Ganesarajah, 2000a). The most important role in phase one of the Internet revolutions has been played by the telecommunications and Internet service providers. It is because of them that a large number of Malaysians can now access the Internet (Ganesarajah, 2000b). Through the Phase 2 of MSC project (2003 C 2010), a Web of similar corridors will be established in Malaysia and a global framework of cyberlaws will be passed; furthermore at least four of five intelligent cities will be linked to other global cities worldwide (Multimedia Super Corridor, 2005). Phase two is where the Government and banks come in, with the latter playing the fundamental role of enabler for E-Commerce, laying out the foundation where transactions can be made securely and effectively (Ganesarajah, 2000b).

Opportunity

The development of ICT in Malaysia has moved very fast especially through the introduction of MSC in 1996. Financial institutions also perceived the advantages from MSC activities and at the same time provide more benefits and opportunities especially in E-banking services. Few studies have been done related to the development of ICT in Malaysia.

Based on the Networked Readiness Index (NRI) framework 2002C2003 shows that Malaysia is ranked 32 with the score of 4.28 (see Figure 1).

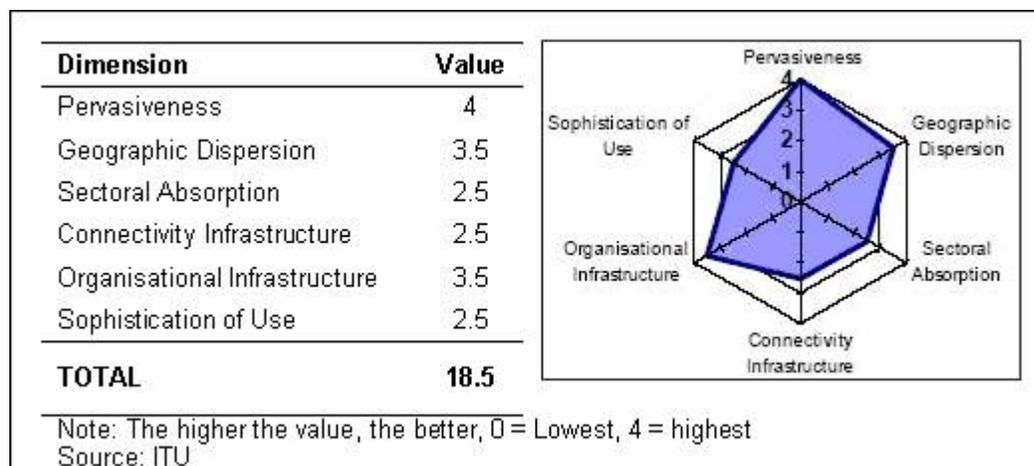
Figure 1: The Networked Readiness Index of Malaysia



Source: World Economic Forum (2003)

A result of study in April 2001 by using Framework for characterising the state of the Internet (The Mosaic Group, 1998) as the research methodology based on six dimensions are pervasiveness, geographic dispersion, sectoral absorption, connectivity infrastructure, organisational infrastructure and sophistication (see Figure 2) shows that pervasiveness is rated at level 4 that is Pervasive. Geographic dispersion is rated at level 3.5, that between highly dispersed and nationwide. Sectoral absorption is rated at level 2.5 that is between moderate and common. The connectivity infrastructure is rated at level 2.5 that is between expanded and broad. International connectivity is over 350 Mbps and it offers a domestic backbone of 155 Mbps. High-speed local accesses is limited with leased line and ISDN being the main access method. The organisational infrastructure is at level 3.5, that between competitive and robust. The two leading ISPs, JARING and TMnet dominate the Internet services. Finally, sophistication of use is at level 2.5 that is between conventional and transforming. The Malaysian government has equipped core areas in the MSC with high-capacity global telecommunications and logistics networks (Minges, Gray and Firth, 2002).

Figure 2: The State of the Internet in Malaysia



Source: Minges, Gray and Firth (2002)

Another study based on E-Readiness (The Economist Intelligence Unit, 2003), or the extent to which a market is conducive to Internet-based opportunities, takes into account a wide range of factors, from the quality of IT infrastructure to the ambition of government initiatives and the degree to which the Internet is creating real commercial efficiencies. Nearly 100 quantitative and qualitative criteria, organised into six distinct categories, feed into the E-Readiness rankings. Below is the E-Readiness for Malaysia (see Table 3).

Table 3: EIU 2003 E-Readiness for Malaysia

Ranking (of 60 countries)	Overall score (score of 10)	Connectivity (score of 10)	Business environment (score of 10)	Consumer and business (score of 10)	Legal and policy adoption (score of 10)	Social and cultural (score of 10)	Supporting E-services (score of 10)
33	5.6	4.3	7.2	5.5	5.9	5.5	4.8

Source: The Economist Intelligence Unit (2003)

As the Internet and Web revolution moves into full swing, commercial banks not only stand only on bricks-and-mortar services, but also clicks-and mortar activities. E-banking is another medium to achieve the marketing objective, especially to reach more customers. A study by Sulaiman, Lim and Wee (2005) shows that the E-banking adopters' perceptions of E-banking appear to be very favourable. On the whole, it can be seen that the adopters perceived E-banking to be useful, easy and better way to conduct banking transactions than more conventional means. Table 4 shows the full list of perceptions of E-banking. Another result based on Likert scale of 1-5 also shows that among the E-banking products and services, account balances inquiry was rated most useful by E-banking adopters. The other factors are saving account, current account, transaction summary report, e-payments, fund transfer, credit card services, cheque services and fixed deposit. Table 5 lists the usefulness of banking product/ services with mean scores. Based on these two results, acceptance and perception of customers on clicks-and-mortar is high.

Table 4: Perceptions of E-Banking

Items	Mean Scores
Easy to conduct banking transactions	5.35
Convenient way to manage finance	5.20
Able to manage finances more effectively and efficiently	5.15
Compatible with my lifestyle	5.08
Greater control over finances	4.99
Fits well with the way to manage finance	4.98
Useful for managing financial resources	4.97
Fits into working style	4.95
Faster internet access speed	4.81
Concern information will be known to others	4.57
Confident over security aspect	4.39
Can be frustrating	4.30
Requires mental effort	4.14

Source: Sulaiman, Lim and Wee (2005)

Table 5: Usefulness of Banking Products/Services with Mean Scores

Products/Services	Mean Scores
Balance inquiry	3.07
Saving account	3.06
Current account	2.99
Summary report of transaction	2.98
Electronic bill payments	2.97
Funds transfer	2.93
Credit card	2.87
Cheque services	2.78
Fix deposit	2.70
Online insurance	2.58
Stock information	2.57
Market information	2.56
Car/house loan	2.53
Financial planning and analysis	2.51
Personal investment	2.46
Housing mortgage	2.45
Personal loan	2.44
Unit trust	2.40

Source: Sulaiman, Lim and Wee (2005)

Rapid advances in ICT has also significantly revolutionised the banking business, transforming processes as well as the strategic focus of banking institutions. It has fully opened the doors for new business opportunities as well as offering new methods of delivery of banking products and services, such as through the Internet. Under the new environment, competitiveness will not depend only on physical presence as in traditional markets, but rather on the ability to capitalise the technology strategies so as to deliver efficient and effective services. Successful banking institutions will be the ones that are able to leverage most from the ICT revolution as greater recognition is accorded to ICT as a driver of change. The 21st century will also see changes to the regulatory philosophies and framework following the development of an increasingly more complex and competitive market. The new regulatory philosophy allows for a greater role for market discipline. This approach emphasises on high standards of corporate governance, transparency and accountability. In adapting, banking institutions would need to reassess their internal practices as well as the overall corporate culture to be consistent with the new rules and regulation (Bank Negara Malaysia, 2001a).

To improve the financial industry in Malaysia, the banking system policy has evolved from financial sector restructuring during the late 1990s to institutional development and capacity building, and the development of supporting infrastructure to enhance efficiency and the strengthening of prudential regulation to enhance resilience and preserve stability. In terms of the development of the financial infrastructure, efforts were intensified towards evolving a more diversified financial infrastructure to facilitate the economic transformation into a more diversified economic structure. This has involved the development of a more diversified financial structure anchored by a more efficient and resilient banking system, to support economic transformation and growth. The blue print for the development of the financial sector in Malaysia is outlined in Financial Sector Masterplan that was released March 2001. Positive results have been achieved on several fronts related to the adoption of the ICT to the E-banking system. First, domestic banking institutions have embraced a higher level of technology and improved business processes. Second, new delivery channels through innovative technology-based mechanisms such as internet and mobile banking have enhanced the delivery of products and services as well as widened access to banking services (Bank Negara Malaysia, 2004a).

In 2004, Financial Process Exchange was launched, which is multi-bank Internet payment platform marks another step forward in enhancing the financial infrastructure of the Malaysian financial system. In the quest for efficiency in the payment systems of the nation, an essential task for the banking industry is thus to strengthen the focus on meeting the specific demands of the consumers, and at the same time, forging alliances in common infrastructure building. The FPX is a right step forward in this

direction. The efficiency of the financial system will be further enhanced with the FPX that reduces transaction costs and contributes to the overall functioning of the economy. This advancement forward can only be successfully achieved when there is active participation by the banking institutions, individuals as well as businesses, in utilising and promoting the system nation-wide. The payment system landscape is continuing to evolve - shaped for the most part by the availability of various electronic payment infrastructures and the consumers' adoption pattern. It is noted, however, that while a vast array of electronic payment systems and instruments have been introduced against a background of more flexible regulatory policies and advancements in technology, the use of cheques remains pervasive in Malaysia. More than 90% of the non-cash retail payments in Malaysia are made by way of issuing cheques, albeit at a slower average annual growth rate of 2% in the recent two years, compared to the use of the Inter-Bank Giro, which has increased at the rate of 197% (Bank Negara Malaysia, 2004b).

Challenges

As online transaction risks are many and varied, risk management must take into account the state of technology, the banking industry, the non-bank competitors for payment business and adoption rate of new technology by the consumer. Bank Negara Malaysia a regulatory and supervisory approach to technology risks, which include three aspects. The first is research and collaboration among organisations such as banks, other central banks, vendors of technology and multi- lateral organisations like the Southeast Asian Central Banks (SEACEN) or the Bank for International Settlement (BIS). The second aspect is the issuance of minimum guidelines and standards for banking practices including the management of technology risks. Bank Negara Malaysia issued a guideline in relation to Internet banking that compels all banking institutions, which offer Internet banking services to adopt a rigorous risk management structure and system. This includes many online defensive mechanisms such as virus detection, intrusion management and authentication tools. The third aspect relates to the monitoring of risks and actual compliance to the standards issued. This involves a combination of off-site supervision, based on reports submitted by the banking institutions, as well as on- site examinations by examiners. Fundamental to all three aspects is the ability to understand and manage the complexity of technology risks, whether in relation to online transactions or otherwise (Sani, 2000).

The technologies of ECbanking are already very advanced, especially in the USA (Kolodinsky, Hogarth and Hilgert, 2004; Wan, Luk and Chow, 2005). However, E-banking, or virtual banking in general, cannot entirely replace other more traditional channels (Wan, Luk and Chow, 2005). In late 1999, bank customers using online banking were less than 1% (Hawkins, 2002). It is the challenge for the bank to increase the awareness and usefulness of the E-banking, beside the traditional-based banking services.

Many of the businesses that are piling onto the Internet may totally misunderstand what this medium is all about (Willcocks, Graeser and Lester, 1998). Marketer cannot succeed in exploiting Internet and ICT unless the right IT infrastructure and development are in place to meet the demands of the users. In the ICT area significant importance has been placed on perceived usefulness as a significant contributor to attitudes and thus adoption of new technology (Fenech and OCass, 2001). If a firm adopts ICT-based innovations without a clear understanding of the scope and implications of that adoption, then not enough attention may be paid to realigning business strategy. As a result, business resources needed to achieve competitive advantage from the ICT investment may not be made available and the investment in innovation may in the end be wasted, or even be detrimental to the firms pre-adoption competitive position (Pires and Aisbett, 2002).

Customer satisfaction may increase based on the want and need, times, power of buying, and status. Today's companies have moved from a product and sales philosophy to a new marketing philosophy. Customer-centred companies have emphasised a better understanding of customers needs and wants and then translated them into the capability to give customers what they really need and want. The technology of E-Commerce determines what can be offered to customers, but only customers determine which of those technologies will be accepted. The key to success for E-Commerce lies in knowing customers (Lin, 2003).

Conclusion

Malaysia still has not reached a critical mass to ensure a sustained momentum, which can only be achieved if the nervousness of trading via the Internet is overcome. Technologies are already here; it is the desire and willingness that needs to be converted into action (Sangaran, 2001). Malaysian banks will have to develop appropriate E-banking strategies to successfully compete both in the local and global marketplace. Proper understanding and planning is required to deploy the strategy or service effectively and safely.

References

Bank Negara Malaysia (2001a), Governor Dato' Dr. Zeti's Interview with The Star, 3 May, Available at: <http://www.bnm.gov.my/index.php?ch=9&pg=15&ac=24>.

Bank Negara Malaysia (2001b), Governor's Welcoming Remarks at the 4th Annual Meeting of the Asia/Pacific Group on Money Laundering, Speech by Governor of Bank Negara Malaysia, Tan Sri Dato' Sri Dr. Zeti Akhtar Aziz at Mandarin Oriental Hotel, Kuala Lumpur, 22 May, Available at: <http://www.bnm.gov.my/index.php?ch=9&pg=15&ac=2>.

Bank Negara Malaysia (2003), Governor's Speech at the Promotion of Electronic Banking & Payments Launching Ceremony, Electronic Banking: The Way Forward, Speech by Governor of Bank Negara Malaysia, Tan Sri Zeti Akhtar Aziz at Nusantara III, Sheraton Imperial Hotel, 8 May, Available at: <http://www.bnm.gov.my/index.php?ch=9&pg=15&ac=131>.

Bank Negara Malaysia (2004a), Governor's Keynote Address at the Malaysian Banking Summit 2004 : Towards World-Class Banking - Efficient, Effective and Resilient Banking System, Speech by Governor of Bank Negara Malaysia, Tan Sri Dato' Sri Dr. Zeti Akhtar Aziz at Nikko Hotel Kuala Lumpur, 14 May, Available at: <http://www.bnm.gov.my/index.php?ch=9&pg=15&ac=136>.

Bank Negara Malaysia (2004b), Governor's Speech at the Official Launch of The Financial Process Exchange (FPX), Speech by Governor of Bank Negara Malaysia, Tan Sri Dato' Sri Dr. Zeti Akhtar Aziz at Mutiara Hotel, Kuala Lumpur, 28 October, Available at: <http://www.bnm.gov.my/index.php?ch=9&pg=15&ac=159>.

BankInfo (2005), Available at: <http://www.bankinginfo.com.my>.

Federal Financial Institutions Examination Council (n.d), Booklet: E-Banking, Section: Introduction, Available at: http://www.ffiec.gov/ffiecinfobase/booklets/e_banking/ebanking_00_intro_def.html.

Fenech, T.; and OCass, A. (2001), Internet Users Adoption of Web Retailing: User and Product Dimensions, *Journal of Product & Brand Management*, Vol. 10, No. 6, pp. 361 C 381.

Ganesarajah, P. (2000a), Killer Applications for ECBanking?, *Business Times*, Jul 6.

Ganesarajah, P. (2000b), Banks Set to Play E-Commerce Enabler, *Business Times*, Jul 20.

Hawkins, J. (2002), E-Finance and Development: Policy Issues, E-Finance for Development: National Practices and Prospects for Future, E-Finance for Development, UN International Conference on Financing for Development, 19 March, Monterrey, Mexico, Available at: http://r0.unctad.org/ecommerce/event_docs/monterrey/hawkins-bis-EFD.pdf.

Ho, J. (1997), Evaluating the World Wide Web: A Global Study of Commercial Sites, *Journal of Computer-Mediated Communication* Vol. 3, Issue 1, June, Available at: <http://www.ascusc.org/jcmc/vol3/issue1/ho.html>.

International Monetary Fund (2001), IMF International Capital Markets, Chapter 5 of 6 Financial Sector Consolidation in Emerging Markets, August 22, p. 120, Available at: <http://www.imf.org/external/pubs/ft/icm/2001/01/eng/pdf/chap5.pdf>.

- Kolodinsky, J.M.; Hogarth, J.M.; and Hilgert, M.A. (2004), The Adoption of Electronic Banking Technologies by US Consumers, *International Journal of Bank Marketing*, Vol. 22, No. 4, pp. 238-59.
- Low, I.M. (2000), Internet Banking Offers Convenience to Consumers, *Computimes*, December 28.
- Lin, C.C. (2003), A Critical Appraisal of Customer Satisfaction and E-Commerce, *Managerial Auditing Journal*, Vol. 18, No. 3, pp. 202 C 212.
- Minges, M.; Gray, V.; and Firth, L. (2002), Multimedia Malaysia: Internet Case Study, *International Telecommunication Union*, March, Available at: <http://www.itu.int/ITU-D/ict/cs/malaysia/material/MYS%20CS.pdf>.
- Multimedia Super Corridor (2005), Available at: <http://www.msc.com.my>.
- Peterson, R.A.; Balasubramanian, S.; and Bronnenberg B.J. (1997), Exploring the Implications of the Internet for Consumer Marketing, *Journal of the Academy of Marketing Science*, Vol. 25, No. 4, pp. 329 C 346.
- Pires, G.D.; and Aisbett, J. (2002), The Relationship between Technology Adoption in Business-to-Business Markets C The Case of E-Commerce, *Industrial Marketing Management*, Vol. 32, Issue 4, pp. 291 C 300.
- Sangaran, S. (2001), Room for Growth in Local B2B Marketplace, *Computimes*, Aug 27.
- Sani, R. (2000), Internet Banking Needs Better Risk Management, *Computimes*, Jun 16.
- Sulaiman, A.; Lim, C.H.; and Wee, A. (2005), Prospects and Challenges of E-Banking in Malaysia, *The Electronic Journal of Information Systems in Developing Countries*, September, Vol. 22, Available at: <http://new.ejisdc.org/ojs/include/getdoc.php?id=167&article=184&mode=pdf>.
- The Economist Intelligence Unit (2003), The 2003 E-Readiness Rankings, The Economist Intelligence Unit Limited and IBM Corporation, Available at: http://graphics.eiu.com/files/ad_pdfs/eReady_2003.pdf.
- Wan, W.W.N.; Luk, C.L.; and Chow, C.W.C. (2005), Customers Adoption of Banking Channels in Hong Kong, *International Journal of Bank Marketing*, Vol. 23, No. 3, pp. 255-272.
- World Economic Forum (2003), *Global Information Technology Report 2002-2003 - Readiness for the Networked World*, Available at: <http://www.weforum.org>.
- Willcocks, L.; Graeser, V.; and Lester, S. (1998), Cybernomics and IT Productivity: Not Business as Usual?, *European Management Journal*, Vol. 16, No. 3, pp. 272 C 283.