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Electronic Banking in Malaysia: A Note on Evolution of Services and Consumer Reactions

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Abstract

Developments in information technology and telecommunications have set in motion an electronic revolution in the Malaysian banking sector. This in turn has resulted in new delivery channels for banking products and services such as the automated teller machines (ATM's), telebanking and PC-banking. In this context, the purpose of this study is to examine the evolution of electronic banking in Malaysia, analyze the various electronic delivery channels utilized by local banks and to assess the consumers' reactions to these delivery channels.

Introduction

Technological developments particularly in the area of Telecommunications and Information Technology are revolutionizing the way business is done. Electronic commerce is now thought to hold the promise of a new commercial revolution by offering an inexpensive and direct way to exchange information and to sell or buy products and services. This revolution in the market place has set in motion a revolution in the banking sector for the provision of a payment system that is compatible with the demands of the electronic marketplace.

In line with global trends, banking business in Malaysia too has been undergoing tremendous changes since achieving independence in 1957. The first step in the evolutionary process was the gradual deregulation of the financial sector, which commenced in the 1970's. Then, in the 1980's the introduction

of Automated Teller Machines (ATM's) can be considered as the first and most visible piece of evidence of the emerging electronic banking in Malaysia. This was then followed by the introduction of telebanking and later on PC-banking in the 1990's. The next imminent step in this evolutionary process inevitably appears to be Internet–banking. However, there are several issues including the lack of adequate legal framework and security of electronic transactions, which tend to hamper the continued progress of this evolutionary process.

The objective of this paper is fourfold. First, it presents a discussion of the progressive developments of electronic banking in Malaysia. Second, an analysis is made of the types of electronic delivery channels utilized by local commercial banks. In this context, the Malaysian commercial banks' use of the World Wide Web (WWW) is also assessed. Third, some pertinent issues for the successful implementation of electronic banking are discussed. Fourth, the paper presents the findings of a questionnaire survey carried out to evaluate the Malaysian customers' perception of electronic banking services. Finally, the paper is concluded with a summary of the findings and a discussion of the limitations of the study.

The Electronic Revolution in the Malaysian Banking Sector

The electronic revolution in banking basically centers on changes in the distribution channels of financial institutions. The basis for the emergence of the modern electronic distribution channels is the result of the evolution of the concept of money. In the days of barter trade, the ability to pay for goods and services was reflected in the physical existence of the goods, which could be used for exchange. Then, came hard cash in the form of coins made out of precious metals. This was then followed by the advent of fiduciary money in the form of modern coins and paper notes. Today, an individual's ability to pay for goods and services is simply reflected in the accounting records of his or her bank. Thus, it is important to appreciate at the outset that money as it is defined today is just simply information, which can be electronically transmitted to facilitate economic transactions. It is this new definition of money, which has resulted in the electronic revolution of financial institutions.

Figure 1

The first giant step in this electronic revolution was the computerization of financial institutions. According to Pang (1995), computerization in the Malaysian banking industry got off to a slow start and only picked up momentum in the 1970's. The increasing volume of banking transactions was the inevitable motivator for the introduction of computers in Malaysian commercial banks. Then, by linking up technological developments in telecommunications and Information Technology, real-time on-line electronic funds transfer came into existence. A large part of the electronic funds transfer process takes place within the banking premises and thus may be invisible to the lay person.

Today, as indicated in Figure 1, Malaysian commercial banks have the privilege of various delivery channels for their products and services. This includes the brick and mortar branch office networks, automated teller machines (ATM's), automated self banking channels such as the BSN Commercial Bank's Electronic Banking Center (EBC) and Phileo Allied Bank's virtual kiosks, telebanking via the telecommunication channel and PC-banking.

Automated Teller Machines

The most visible form of electronic funds transfer in relation to the Malaysian banking sector, was the

introduction of Automated Teller Machines (ATM's) in 1981. The ATM's released banks from the constraints of time and geographical location. They presented banks with a more economical substitute for brick and mortar branches. The revolution brought about by this technology were longer banking hours which extended beyond office hours.

Source : BNM Annual Reports (1985-1997)

Figure 2

Another immediate impact of the introduction of ATM's was that bank staff could be relieved of some mundane functions like processing withdrawals and fund transfer over the counter. Today, the ATM's in Malaysia can be used for balance enquiry, cash withdrawal, transfer of funds between checking, savings and credit card accounts, bill payments, making payments to application for initial public offerings in the Kuala Lumpur Stock Exchange and for making cash and check deposits.

However, Malaysian bank customers had not been very confident of making cash deposits via the ATM since the cash is only physically deposited into the bank but only credited into his or her account usually on the following working day. Furthermore, the bank officer has the final say on the amount deposited in the event of any dispute.

As at the time of writing, local banks such as BSN Commercial Bank, Maybank, Phileo Allied Bank, Hong Kong Bank and the Standard Chartered Bank in Malaysia have introduced cash deposit machines (CDM's) that can accept cash which is immediately verified and credited to the customers account. This technology was however implemented by Posbank in Singapore as early as 1997 where the ATM actually sorts and counts the money and asks the customer to confirm the amount. If the amount tallies the customers account is immediately credited but however, if the amount does not tally, then the amount is automatically returned to the customer. It is this capability of the machine to perform like human teller, which has succeeded in weaning customers away from the counters and to the automated teller machines.

In the initial stages of development of ATM's, financial institutions installed ATM's in practically every strategic location with the primary objective of securing competitive advantage.

This is clearly indicated in Figure 2, by the rapid growth rate of ATM's in the early years. However, the result was a large number of ATM's in these strategic locations with resultant returns that did not commensurate with the heavy installation costs. Thus, in view of the high costs involved in ATM operations and the duplication of ATM services at many off-branch premises, the financial institutions agreed to pool their resources together to establish ATM network switches. By linking the respective ATM systems of these financial institutions through the switch, cardholders of member institutions of the consortium would be able to carry out transactions at the terminal of any of the other participating financial institutions. Today, almost all the domestic commercial banks in Malaysia are members of the Malaysian Electronic Payment System (MEPS) Sdn Bhd. and the member banks' customers can have

access to their accounts via any ATM belonging to the MEPS network. This may be one of the reasons for the slower growth rate of ATM's in the more recent years.

The impact of the above development was that, commercial banks with geographically well spread ATM networks like the Malayan Banking Berhad, one of the largest commercial banks in Malaysia may tend to lose any competitive edge associated with having the largest number of ATM's in the country. However, if a bank customer was to use the ATM facilities of another bank for his transactional needs, a minimum access fee of RM1 will be charged to the customer. Thus, those banks with large number of ATM's can now profitably use these machines as a source of revenue.

So what are the future prospects for these ATM's? Philip (1996) sees ATM's evolving into virtual branches providing a broader range of remote transactions where customers could interact with bank personnel through video conferencing.

Telebanking

Telebanking can be considered as a form of remote or virtual banking which is essentially the delivery of branch financial services via telecommunication devices where the bank customers can perform retail banking transactions by dialing a touch-tone telephone or mobile communication unit, which is connected to an automated system of the bank by utilizing Automated Voice Response(AVR) technology. Telebanking has been in Malaysia since the early 1990's. The telebanking service provides yet another alternative to almost all of the functions available on the Automated Teller Machines except withdrawal and deposit of cash. The facilities available include checking account balance, funds transfer between current, savings and credit card accounts and bill payments. Some of the local commercial banks like BSN Commercial also allow stock exchange transactions to be performed via the telebanking facility.

According to Leow (1999), telebanking has numerous benefits for both customers and banks. As far as the customers are concerned, it provides increased convenience, expanded access and significant time saving. On the other hand, from the banks' perspective, the costs of delivering telephone-based services are substantially lower than those of branch based services. In addition, there are about four million users of fixed line telephone services, which would certainly guarantee the critical mass criteria for telebanking services. Despite all these advantages, according to an article in the Malaysian Central Bank, Bank Negara Malaysia's (BNM) annual report only eight commercial banks offered telebanking services as at end of 1995. As at April 1999, only nine out of the twenty-three local commercial banks were known to offer telebanking services. This indicates that telebanking is currently not a major delivery channel for Malaysian commercial banks' products and services.

The poor customer response to telebanking may be due to the fact that one of the most important transactions, which almost all bank customers perform on a regular basis namely cash withdrawal is not possible via telebanking. Another, reason for the lack of success of this delivery channel may simply be poor marketing of this product on the part of the local commercial banks. It may also be due to the lack of customer confidence in online transactions, which are not immediately verified with black and white statements or receipts. This may however be contrary to the developments in Europe where it has been reported in Leow (1999), that 95% of European banks are considering telebanking services to be offered by the turn of the century.

PC-Banking

The increasing awareness of the importance of computer literacy has resulted in increasing use of personal computers in Malaysian households. This would certainly support the growth of PC-banking which would virtually establish a bank branch in the customers home and offer 24 hour service seven days a week.

As at end of 1995, according to BNM(1995), ten local Malaysian commercial banks are already offering PC-banking or home banking services. At present, customers can use their personal computers at home or at their office to access their accounts for transactions by subscribing to and dialing into the banks' Intranet proprietary software system by use of password.

Though, PC-banking has been around in Malaysia for a while, especially over the latter half of the 1990's the number of customers who use this service is still relatively small. One of the reasons for this may have been the small number of customers who actually have access to personal computer. However, this situation is fast changing with the Malaysian government's emphasis and commitment in its efforts towards transforming Malaysia from a production economy to a knowledge-based economy. Homes with computers are fast increasing and as at 1999 there were about 500,000 Internet account holders in Malaysia, which would imply at least 1.5 million effective Internet users.

It is also worth noting that in Malaysia, PC-banking is more common among corporate customers compared to individual customers. This may be so since PC-banking has the advantage of reducing cost, increasing speed and improved flexibility of business transactions. To this extent, Leow(1999), asserts that on-line banking will emerge as a competitive tool and as a money saver rather than a revenue earner. However, if the banks are fast in adapting to the changing needs of consumers and are prepared to provide new innovative services in line with the demands of the electronic marketplace they may be able to transform this delivery channel into a revenue-generating source as well.

Automated Self Banking Centers

The automated self-banking center, is another multimedia banking delivery channel which incorporates an information counter, ATM's, telebanking and banking booths. These automated self-banking centers are usually situated in high pedestrian traffic areas such as shopping malls and office complexes. The Phileo Allied bank is the innovative leader in virtual multimedia bank kiosks in Malaysia with the PALVIRTUAL KIOSK, which consists of PALWORLD, PALPOINT, PALPHONE and PALTELLER touch screen terminals with video- conferencing capabilities.

PALWORLD allows users to log onto a world of online conveniences such as banking, electronic shopping, utility bill payment, share investment, flight bookings and hotel reservations and news updates including the Kuala Lumpur Stock Prices. PALPOINT is a new generation ATM facility that is connected to over 2800 ATM's via the GREAT and MEPS network nationwide. PALPHONE on the other hand, is the telebanking component of the virtual kiosk, which provides a variety of banking products and services via the Automated Voice System. Finally, the PALTELLER is a new generation terminal, which allows customers to conduct banking operations on-line via a touch-screen interface with video conferencing capabilities where the customer will be able to see and speak to a customer service officer located at the head office. The BSN Commercial Bank (M) Sdn Bhd., is another local Malaysian bank which, has also started to provide online banking services via the multimedia delivery channel. Through their electronic

banking centers (EBC's)

Internet Banking

Internet banking would free both bankers and customers of the need for proprietary software to carry on with their online banking transactions. To this extent, it was pointed out by ABJ(1998), that five banks in Malaysia have invested millions of ringgit in Internet ready technology but these banks are still operating as dial up intranet facilities. In this context, an interview with a Malaysian banker, revealed that all home or PC-banking based on proprietary software which are browser based and conform to Internet requirements can also be used to provide Internet banking services. However, this delivery channel is still not available to Malaysian bank customers at present due to lack of adequate legal framework and security concerns. To this extent, EPI (1996), reported that one of the key factors which had contributed to the success of Security First Network Bank (SFNB), was the implementation of a comprehensive security infrastructure. The security infrastructure includes layers of security from the network to the browser, including sophisticated encryption that protects customers' from intrusion when they access the bank over the public network.

Furthermore, no matter how secure the bank, consumer confidence is paramount for the success of Internet banking. It is for this reason, that Internet banking is still not made available in Malaysia. The government wants the infrastructure both legal and physical to be in place before launching this additional delivery channel for financial products and services.

Other Recent Developments in Electronic Banking and E-Commerce in Malaysia

The role of banks in facilitating e-commerce is basically in providing the necessary electronic payment system, which is certainly a precondition for the success of e-commerce implementation. To this extent, the Malaysian Electronic Payment System (MEPS) Sdn Bhd, a major operator of ATM's in Malaysia and which is jointly owned by local commercial banks is in the process of investing more than RM350 million to set up an electronic emporium in an effort to expand its range of services to encompass e-commerce facilities for both businesses and individual customers, cyber-banking and a host of other electronic cash payment systems as indicated in Figure 3 below.

Source: The Star, February 27,1999
Figure 3

The immediate plan is to expand the availability of the MEPS cash electronic purse, which will become the country's first multi-purpose card. The card was first tested during the 1998 Commonwealth Games in Kuala Lumpur when the company issued 70,000 disposable e-purse cards. MEPS is now planning to study the acceptability of the card from a commercial aspect by launching the e-purse commercial pilot project in Bangsar Baru, Kulala Lumpur which would feature 21,000 reloadable and 75,000 disposable cards. The MEPS cash or e-purse which is targeted at retail merchants such as fast food outlets, restaurants, supermarkets and hypermarkets is the first of many applications which will eventually make up the Payment Multi-Purpose Card (MPC). An important benefit to the merchants is that the MEPS cash is cheaper than a credit card transaction. The long-term objective is to evolve the e-purse by the year 2002 into a widely usable multipurpose payment card that could serve as both a debit card and an ATM card.

The inter-bank GIRO system is intended to support the electronic presentation and payment of bills. MEPS's e-commerce initiative for banks in Malaysia was spearheaded with the launching of a pilot programme between banks and businesses in November 1998. However, only four banks and five retailers are currently participating in the e-commerce project but the number of merchants is expected to increase to 100 by the middle of year 2000. Finally MEPS is planning to expand its Secure Electronic Transaction (SET) Payment Gateway to offer Internet or Cyber Banking services on behalf of all banks in Malaysia.

Electronic Delivery Channels Utilized by Local Malaysian Banks

Commercial Banks	ATM's	Telebanking	PC-Banking
Malayan Banking Bhd.	a	a	a
Bank Bumiputra Malaysia Bhd.	a	a	r
Arab Malaysian Bank Bhd	a	a	r
Hong Leong Bank Bhd	a	r	a
The Pacific Bank Bhd	a	a	a
Ban Hin Lee Bank Bhd	a	r	a
Multi-Purpose Bank Bhd	a	a	a
Public Bank Bhd	a	a	r
Bank of Commerce Bhd	a	r	a
RHB Bank Bhd	a	a	r
BSN Commercial Bank Bhd	a	a	a
EON Bank Bhd	a	r	r
United Overseas Bank Bhd	a	a	r
Bank Islam Malaysia Bhd	a	r	r
Sime Bank Berhad	a	r	r
Sabah Bank Bhd	a	r	r
Oriental Bank Berhad	a	r	r
Southern Bank Berhad	a	r	a

a means does provide service
r means does not provide service

Table 1

This study on the evolution of electronic banking in Malaysia will not be complete without a proper analysis of the types of electronic delivery channels utilized by the local commercial banks. To this extent, the focus will be on the three main delivery channels namely ATM's, Telebanking and PC-banking. This information was basically gleaned from the commercial banks' web-sites and other brochures and pamplets.

The findings in Table 1 indicate that ATM's are undoubtedly the most popular electronic delivery channel for banking services in Malaysia. In regards to telebanking and PC-banking, though the Malaysian banks are clearly making the necessary efforts to provide these services, they have not penetrated the Malaysian market in a big way as yet.

Malaysian Banks' Use of the World Wide Web (WWW)

Diniz(1998), reported that a survey on bank web sites in the USA had indicated that American banks were using the Web to reach opportunities in three different categories: to market information, to deliver on-line banking products and services and to improve customer relationships. In this context, it is also worth noting that interactivity in the bank web sites is an important factor for the success of internet-banking services.

To this extent, an evaluation of the Malaysian commercial banks web sites or homepages revealed that most of these banks are basically using the Web at the brochure level merely for promotional purposes. However, some of the banks, which offer PC-banking services are probably exploring a wider aspect of the opportunities and possibilities of the WWW.

Another possibility the Malaysian banks should consider in relation to the use of the Web may be the provision of telebanking services via web phones, which may be cheaper than that via fixed line services.

Electronic Banking Issues

Although it is evident that the electronic revolution has commenced in Malaysia, widespread electronic banking may still be several years away. Star (Friday, September 3,1999, p12/Business) reported that a research survey conducted by PriceWaterhouse-Coopers on 40 to 50 senior executives of financial institutions based in Europe, North America and Asia Pacific had indicated that banks are not fully prepared for the 'paradigm quake' with the advent of information technology which is set to rock the banking industry. One of the main factors, which would be essential for the success of electronic banking, is setting up of the appropriate infrastructure. Once the infrastructure is in place then the commercial banks can start to push customers to accept the new delivery channels by ensuring that the necessary security measures are in place.

Next, even if the infrastructure were ready, the obvious question would be are the potential customers large enough to ensure a critical mass for the economic viability of providing the electronic banking services. If the critical mass criteria, is not fulfilled then the banks may not be able to profitably use these delivery channels. In the case of ATM's there is no doubt about the critical mass because almost every

adult who has a bank account would have an ATM card and ATM‘s are available in every town, in every state in Malaysia. As far as telebanking is concerned, the existing four million fixed line telephone subscribers would imply that there is an adequate critical mass for telebanking services.

In the case of internet banking there are at present 500,000 Internet account holders in Malaysia and this is assumed to imply at least 1.5 million effective Internet users in the country which is about 7.5% of the Malaysian population. Can this be considered as a sufficient critical mass for harnessing the new delivery channel? If the critical mass has not been reached, should the banks wait until it has before offering their products and services through the new delivery channels or should the banks introduce the new delivery channels and persuade or push the customers to use them? These are questions that need to be answered in implementing electronic banking not only in Malaysia but also in any part of the world.

According to an article, gleaned from the web, it was reported that a Cybercitizen Finance Study by Cyber Dialogue had indicated that as at end of 1998 though the number of consumers banking online had grown to 6.3 million, 3.1 million US adults had also discontinued their use of online banking. More than 50% of those who had discontinued, found the service too complicated or were dissatisfied with the level of customer service. This indicates that for successful implementation of electronic banking in Malaysia, providing banking products and services through the new delivery channels alone is not sufficient. The banks should in fact ensure that consumption of the services through these new delivery channels are simple, easy and of sufficiently high quality to ensure customer satisfaction in order to maintain their online customers. This is going to be all the more difficult because of the lack of personal touch in electronic banking.

Another problem associated with electronic banking is electricity power cuts, which can be disruptive. What will happen to transactions, which are being processed when a power cut occurs. Thus, one infrastructure requirement that is essential from the outset is stable power supply, which is not a basic feature in most, less developed and developing countries including Malaysia.

In addition, to power stability is the issue of connectivity. In some countries the local internet service providers may not be very efficient in terms of connectivity. An article from Electronic Payments International (August 1996), reported that when America On Line (AOL) shut down for 19 hours on August 7 th 1996, business users were unable to surf the net, send electronic mail and make online payments. To this extent, many information publishers complained of losing thousands of dollars in access fee and advertising revenues.

Thus, for the successful implementation of electronic banking in Malaysia or in any other part of the world, adequate legal and physical infrastructure are major prerequisites. Then, the customers must also be made to feel confident about the privacy and security issues associated with electronic banking. Finally, quality service would certainly be a very important determinant for the success of electronic banking.

Survey Findings on Consumers’ Perception of Electronic Banking in Malaysia

The findings reported in this section are based on data collected for a pilot study on consumers’ perception of electronic banking in Malaysia. The respondents for the pilot study primarily consisted of employees of the Multimedia University, which is located in Cyberjaya, at the heart of Malaysia’s

Multimedia Super Corridor (MSC). The pilot study only involved thirty respondents but the final survey will be based on a sample of 300 bank customers. The data for the pilot study was collected by administering, the personal questionnaire method. Though the questionnaire covered various issues only some of the relevant findings are reported here.

One of the implications of electronic banking is that it should reduce the need to visit bank branches. In fact, the electronic banking delivery channels are often considered as potential substitutes for brick and mortar bank branches. However, contrary to expectations, the survey results indicated that 90% of the respondents visit their bank branch at least once every month.

Frequency of Visits to Bank Branch

Number of Visits to Bank Branch Every Month	Frequency	Percentage(%)
Never	3	10
Once	14	46.7
Twice	6	20
Three or more	7	23.3
Total	30	100

Table 2

This would indicate that consumers of banking services in Malaysia still find it useful to visit their bank branches regularly every month to perform some banking transactions such as mortgage and loan repayments for which the automated payment systems are not very common. However, these customers also indicated that they frequently used the ATM's for other transactions such as cash withdrawals and funds transfer. To this extent, 63.3% of the bank customers indicated four or more visits to the ATM's every month

Frequency of ATM Usage

Number of Usage per Month	Frequency	Percentage(%)
Once	1	3.3
Twice	6	20
Thrice	4	13.3
Four or more	19	63.3

Total	30	100

Table 3

Furthermore, 90% of the sample respondents also indicated that they find human tellers important. This would indicate that bank customers in Malaysia do quite highly value the importance of the personal touch in banking services.

Importance of Human tellers to Bank Customers

Importance of Human Tellers	Frequency	Percentage(%)
Very Important	6	20
Important	21	70
Not Important	3	10
Total	30	100

Table 4

In relation to the usage of the three main electronic delivery channels for banking services which have already been in existence in Malaysia, namely Automated Teller Machines, Telebanking and PC-banking, the survey results indicated that ATM's are the most widely used electronic banking facility.

Familiarity and Usage of Electronic Banking Channels

Delivery Channel	ATM's		Telebanking		PC-banking	
	Frequency	%	Frequency	%	Frequency	%
Currently In Use	30	100	6	20	1	3.3
Not In Use	0	0	24	80	29	96.7
Total	30	100	30	100	30	100

Table 5

However, only 20% of the respondents were using telebanking services and only one respondent accounting for 3.3% of the respondents was familiar with PC-banking and personal finance management

software.

Though internet-banking is not available in Malaysia at the moment about 36.7% of the respondents indicated that they would be very interested in using this service once it is made available and only 6.7% of the customers indicated that they would not be interested at all in using this service.

Internet Availability at Home

Internet Access	Number of Respondents	Percentage(%)
Available	19	63.3
Not Available	11	36.7
Total	30	100

Table 6

Furthermore, 63.3% of the customers surveyed indicated that they had Internet access at home. This figure may represent an exaggeration of the national situation since the survey respondents are basically university staff who are quite highly computer literate and hence may not be representative of the whole nation. However, the attitudes of this group might be indicative of future trends in the Malaysian population. Nevertheless, the findings also indicate positive potentials for the introduction of Internet banking in Malaysia.

Conclusion

Advances in information technology and telecommunications have certainly introduced new delivery channels for Malaysian commercial banks' products and services. These new delivery channels include automated teller machines (ATM's), telebanking via the telecommunication channel, and PC-banking based on proprietary software. Among these, the ATM's are the most widely accepted and highly utilized delivery channel. Telebanking has not been very successful in Malaysia, but PC-banking has been successful to some extent among corporate customers. However, the indications are that the PC-based channels of banking have not realized its full potential in Malaysia.

Internet banking is still not available in Malaysia. It may seem ironical that a country, which has undertaken great initiatives in supporting developments on the Internet, still disallows its banks from providing Internet banking services. The governments main concern is the security of these electronic transactions.

The general survey findings are that, most Malaysian banking customers still patronize the bank branches and find interaction with human tellers as important. However, over 60% of the respondents have Internet access at home and these represents a positive indication for PC-based banking and Internet banking in

the future.

The data for this study was primarily obtained from a pilot study on consumer perceptions of online banking products and services. Thus, the sample suffers from two limitations. First, the sample size of only thirty respondents and second the sample respondents who were mainly employees of the Multimedia University. Despite these shortcomings the results compared quite well with that of a larger sample study carried out by BSN Commercial Bank. Thus, the findings of this study are not seriously flawed by this limitation.

References

ASBJ(1998), "Developing Laws in the Internet Jungle," The Asian Banker Journal,Issue 14, p.6-7

Bank Negara Malaysia (BNM), Annual Reports 1985-1997

Diniz, Eduardo (1998), "Web Banking in the USA" Journal of Internet Banking and Commerce at http://www.arraydev.com

EPI(1996), "A Provider's Costly Blackout in Cyberspace." Electronic Payments International, Issue 110, August 1996, p.4.

Leow, Hock Bee (1999), "New Distribution Channels in banking Services." Banker's Journal Malaysia, No.110, June 1999, p.48-56.

Pang, Johnson (1995), Banking and Finance Malaysia, Federal Publications Sdn. Bhd., Malaysia Philip, Jim (1996) " Bytes of Cash: Banking, Computing and Personal Finance." at http://www.firstmonday.

Sidhu, Jagdev Singh (1999), " MEPS plans RM350 Million Expansion of Services." The Star, February 27, Business, p.1.