Chapter 2

Literature Review

Internet banking is a relatively new concept brought about only in mid-1990's when the Internet, as a universal medium, started to emerge. Therefore, very few academic researches had been done on Internet banking. This chapter discusses the awareness and Internet banking concept. Features and products of Internet banking in Malaysia context will also be examined.

2.0 Consumer Awareness

A consumer is an individual who purchases, or has the capacity to purchase, goods and services offered for sale by marketing institutions in order to satisfy personal or household needs, wants, or desires (Walters, 1974).

Oxford Advanced Learner Dictionary (1993) defines awareness as having knowledge or realization of something.

Awareness in Psychology means consciousness, which includes a person perceptions, thoughts, feelings, images, and desires at a given moment (Zimbardo & Gerrig, 1999).

Engel & Blackwell (1982) found out that awareness in the diffusion or innovation process begins when a consumer receives physical or social stimuli that gives exposure and attention to the innovation's existence and some understanding of how it function. This stage is called 'knowledge awareness'. Knowledge "is acquaintance with and understanding of an object. It consists of facts; the number of facts one can list about an object indicates the amount or degree of knowledge one possesses about that object" (McNeal, 1982: 104). At the awareness stage, the consumer has made no judgement concerning the relevance of the product to an existing problem or need. The four main steps for an innovation adoption process are: 1. Knowledge awareness 2. Persuasion
(Evaluation) 3. Decision (Trial) 4. Confirmation (Adoption). The process is depicted in Figure 2.0.

**Figure 2.0 Steps in the Adoption Process**

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**Social System variables**
- 1. Social system norms
- 2. Communication
- 3. Other

**Perceived characteristics of innovations**
- 1. Relative advantage
- 2. Compatibility
- 3. Complexity
- 4. Trialability
- 5. Observability


In consumer behaviour, awareness is defined as having knowledge of something through the senses and most directly relates the individual to his external environment (Walters, 1974). It is subdivided into three variables. They are perception, attitudes and learning. "Perception is defined as the particular interpretation one gives to objects or ideas observed or otherwise brought to the consumer's attention through the senses. Learning means any change in the consumer's thoughts, responses, or behaviour as a result of practice, experience, or intuition. Finally, attitudes means a broad group of innate human feelings or
points of view that pattern behaviour" (Walter, 1974: 13). These variables and the environmental influences can be arranged around a wheel as in Figure 2.1.

Figure 2.1 The Model of Consumer Awareness

Since the Internet banking is a new innovation in Malaysia, awareness in this paper is defined as the realization of the existence of Internet banking, having knowledge and perception of the product. However, one has made no judgement concerning the relevance of the product; neither formation of favourable nor unfavourable attitudes toward the product.

2.1 Factors Influence Awareness
There are a few factors influencing awareness:
1. Communication
Consumer communication defined as an interchange of market-related information through personal or impersonal contact (Walters, 1974). Personal contact is defined as those informational sources where social interaction takes place between two or more people. The personal sources of information includes information from relatives, friends, salespeople, agency personnel and meetings.
The category of impersonal sources of information includes magazines, newspaper, radio and television (Holloway, Mittelstaedt and Venkatesan, 1971).

The impersonal mass media sources tend to be most valuable for creating initial product awareness (Schiffana & Kanuk, 1991). Beal and Rogers (1971) also found out that mass media was rank the highest among other sources that first made consumers aware of new products.

Meanwhile, interpersonal communication is the most important source for information (Granitz & Ward, 1996 and Beal & Roger, 1971). A study by Beard and Easingwood (1996) found out that it is crucial for marketers to provide pre-launch information e.g. give technical information to media and give pre-launch demonstrations for high-technology products to increase awareness in order to succeed in the market. Figure 2.2 depicted the importance of personal and impersonal mass media sources in the adoption process.

**Figure 2.2: The Importance of Personal and Impersonal Mass Media Sources in the Adoption Process**

![Diagram showing the importance of personal and impersonal mass media sources in the adoption process.](image)

In addition, Internet (web) advertising is growing rapidly because:

a. Web advertisements can be updated any time with a minimal cost, therefore, they are always timely.

b. Web advertisements can reach very large numbers of potential buyers globally.

c. Online advertisements are sometimes cheaper in comparison to television, newspaper, or radio. The latter are expensive since they are determined by space occupied, how many days (times) they are shown, and how many local television stations and newspapers they are posted.

d. The use of the Internet itself is growing very rapidly.

e. Web advertisements can be interactive and targeted to specific interest groups or individuals (Turban, Lee, King and Chung, 2000).

Peterson, Balasubramanian and Bronnenberg (1997) stated that the Internet is more flexible than existing mass media channels, potentially superior in targeting individual buyers and prospective buyers, and it enables direct interaction. They also speculate that the Internet will functionally replace traditional mass media.

In 1997, a study titled 'The Internet Advertising Report', Meeker examined the adaptation rate of the Internet, compared to three traditional media: radio, network television, and cable television. He found out that the length of time it took for the Internet to reach 50 million users was about 5 years, which is remarkable considering that it took radio 38 years, television 13 years, and cable television 10 years. According to these statistics, the Internet is the fastest growing media of communication, and its growth potential as a means of communication is very high.

In Malaysia, Lee (1999) found out that among the various types of advertising medium, newspaper, bank's pamphlet and television ranked the highest in the ability to communicate banking information to the consumers. In
addition, banks tend to advertise their new product more often in newspaper as they believe that advertising in a newspaper will reach the target customers based on the newspapers' readership (Marashdeh, 1993). Moreover, newspaper advertising allows more information to be imparted to consumers than television advertisement.

According to Deputy Energy, Communications and Multimedia Minister Datuk Tan Chai Ho (The Star, 22 September 2000) that there were 18,000 Internet subscribers in the country in 1995, and the number had grown to 700,000 in 1999. The number of local Internet subscribers is expected to grow to 1.6 million by the end of year 2000 and would increased by 25% within 5 years. Therefore, Internet could become one of the important communication source in Malaysia.

2. Sociodemographic

"A social system is a physical, social, or cultural environment to which people belong and within which they functions. If the social system is modern in orientation, the awareness and acceptance of innovation is likely to be high. In contrast, if a social system is traditional in orientation, innovation that are perceived as radical or as infringements on established custom likely to be avoided" (Schiffana & Kanuk, 1991: 488). The following characteristics typify a modern social system (Schiffana & Kanuk, 1991):

a. A positive attitude toward change.
b. An advanced technology and skilled labour force.
c. A general respect for education and science.
d. An emphasis on rational and ordered social relationship rather than on emotional ones.
e. An outreach perspective, in which members of the system frequently interact with outsiders, thus facilitating the entrance of new ideas into the social system.
f. The system's members can readily see themselves in quite different roles.
Many studies in developed countries had shown that the early adopters of technological products often are more educated, had high social economic status and had many contacts both within and outside social group or community (Britt, 1997; Tracy, 1997; Rosenberger, 1998). Teoh (1998) and Lee (1999) also confirmed that electronic banking (refer to automatic teller machine, phone banking and PC banking) users in Malaysia had higher education and higher income while working in the private sector.

2.2 Banking in Malaysia

The banking system in Malaysia is made up of the Central Bank (Bank Negara Malaysia), Commercial Banks, Representative Offices of Foreign Banks, Finance Companies, Merchant Banks, Discount Houses and the Foreign Exchange and Money Market (Pang & Savarimuthu, 1985). They provide various banking services which include receive money on current or deposit accounts (fixed deposits and savings), pay cheques drawn by customers, collect cheques deposited by customers, and make advances to customers.

Prior 1970s, all banking transactions were primarily processed by manual. The increasing volume of banking transactions, especially the current accounts and saving accounts, necessitated the introduction of computers to process these transactions. With the advent of on-line real time computerisation and subsequent implementation of the 'universal teller' concept, banking transactions at the counters in bank branches improved and queues became shorter and more bearable as customers with multiple transactions need not have to shuttle from one counter to another (Pang, 1994).

With the further technological advancement, various electronic delivery channels such as the automated teller machines (ATMs), telebanking, PC-banking and Internet banking were introduced.
2.2.1 Automated Teller Machine

An ATM is a convenient self-service computer assisted machine which provides certain predetermined banking services during and after the banking hours. The first ATM was installed in Malaysia in 1981 (Pang, 1994). The ATM can be used for balance enquiry, cash withdrawal, transfer of funds between checking, savings and credit cards accounts, bill payments, making payments to application for initial public offerings in the Kuala Lumpur Stock Exchange and for making cash and cheque deposits (Pang, 1994).

In 1997, the financial institutions have installed a total of more than two thousand ATMs, serving roughly 3 million cardholders in the country (Balachandher Krishnan Guru, Santha Vaithilingam, Norhazlin Ismail and Rajendra Prasad, 1999).

2.2.2 Telebanking

Telebanking can be considered as a form of virtual banking which is essentially the delivery of branch financial services via telecommunication devices where the bank customers can perform retail banking transactions by dialling 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 (Balachandher Krishnan Guru et al., 1999).

Telebanking has been in Malaysia since the early 1990's. The facilities available include checking account balance, funds transfer between current, savings and credit card accounts and bill payments (Balachandher Krishnan Guru et al., 1999).

As at April 1999, only nine out of the twenty-three local commercial banks were known to offer telebanking services (Balachandher Krishnan Guru et al., 1999). This indicates that telebanking is currently not a major delivery channel for Malaysian commercial banks' products and services.
The poor customer response to telebanking was 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. It also due to the lack of customer confidence in online transactions, which are not immediately verified with black and white statements or receipts. (Balachandher Krishnan Guru et al., 1999).

2.2.3 PC-Banking

PC-Banking is banking at home or office via a personal computer by subscribing to and dialling into the banks’ Intranet proprietary software system by use of password. The facilities available include checking account balance, funds transfer between current, savings and credit card accounts and bill payments.

As at end 1995, according to BNM (1995), ten local Malaysian commercial banks are already offering PC-banking or home banking services. 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 was the small number of customers who actually have access to personal computer (Balachandher Krishnan Guru et al., 1999). 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 700,000 Internet account holders in Malaysia (The Star, 22 September 2000).

2.2.4 Automated Self Banking Centres

The automated self-banking centre, is another multimedia banking delivery channel which incorporates an information counters, ATM, telebanking and banking booth. These automated self-banking centres 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 (Phileo Allied Bank brochures, 2000).

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 via the GREAT and MEPS network nation wide. 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 (Phileo Allied Bank brochures, 2000).

2.2.5 Internet Banking
Internet banking is the latest delivery channel for financial products and services. It would free both bankers and customers of the need for proprietary software to carry on their online banking transactions. The following section will discuss it more in details.

2.3 The History of Internet
The Internet is a “network of networks, tens of thousands of computers connected in a web, communicate to one another through a common communications protocol” (Tambyah, 1996). It is estimated that there are 20 to 30 million active Net users and that the number is growing by about 160,000 users per month (Tambyah, 1996).
The Internet was created in the late 1960s as a computer communications research project by the U.S. Department of Defence. The purpose of the project was to create a defence and research-oriented computer network that could still function reliably even if damaged by military attack. The network was called ARPANET – the precursor to the modern-day Internet (Gagnon, 1995). Within two years, ARPANET hosted, or connected, 23 universities and government research centres. In 1971, electronic mail was invented.

In 1973, development began on a new standard, known as a protocol, that would allow different computer networks to interconnect and communicate with each other. This protocol would be known as Transmission Control Protocol/Internet Protocol, or TCP/IP. The creators of TCP/IP, Vinton Cerf and Bob Kahn, first coined the term ‘Internet’ in a paper they wrote on the new protocol (Tambyah, 1996).

In 1993, a graduate student named Marc Andreessen from the National Center for Supercomputing Applications (NCSA) developed Mosaic, the first graphic Internet interface. His venture became Netscape, now the most popular web browser in use. The development of Netscape also marked the beginning of the commercialization of the Internet. Between 1993 and 1995, the number of Internet hosts\(^2\) grew from about 2 million to 6.5 million.

The rise in Internet use has resulted in a growing demand for better content and faster connectivity. Currently, the Internet could also be accessed using mobile phones through wireless application protocol (WAP).

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\(^2\) The Internet consists of ‘host’ computers that access ‘servers’ to get the data. Hosts can be categorized by their three-letter domain for example, com= business, edu= educational institutions, and gov= government institutions (Geissler and Zinkhan, 1998).
2.4 Internet Banking- General

Internet banking refers to ‘banking products and services offered by banking institutions on the Internet through access devices, including personal computers, interactive televisions, palm computers and mobile telephones’.

Generally, there are four classes of Internet use in banking institutions:

a. Information presentation- provide information of products, services, terms of services and any other form of information that can create confidence and assurance among present and potential customers.

b. Information presentation together with two way communication (e.g. e-mail to request further information).

c. Interaction with user (e.g. execution of programs with individual customer data) - Information provided by the user controls the information offered by the server. If the customer is identified and authenticated connecting to operative systems of the banking institution may be possible. Then, the customer has to provide very little information since data stored in the databases of the banking institution may be used.

d. Transaction banking (e.g. customer payments, securities transactions applications for loans or insurance acquisitions) (Seitz and Stickel, 2000).

Due to the structure and the intention of the Internet to be an open network high security risks are involved with financial transaction. Today, various techniques and standards are offered in order to control or avoid these risks. Basic requirements are as follows:

a. Customer and banking institution have to authenticate each other.

b. Private data have to been coded. Cryptographic algorithms used need to have certain characteristics. No third party should be able to quickly get access to messages or even to divert financial transactions.

c. A digital signature is necessary to get binding legal contracts. These digital signatures have to secure the integrity of signed documents. It needs to be
guaranteed that sender and receiver have the same intentions (Seitz and Stickel, 2000).

Base on these requirements, most banks have adopted Secure Socket Layer (SSL), a powerful encryption and server authentication protocol, supported by 128-bit encryption key, which provides the highest level of encryption capability for SSL (Noor Azli Othman, 2000).

The SSL performs message exchanges as shown in Appendix I. The steps of the process correspond to the numbers.

1. At Sally’s site, the message to be sent is hashed to a previously fixed length for message digest.
2. The message digest is encrypted with Sally’s private signature key using an RSA algorithm, and the output is a digital signature.
3. The digital signature and Sally’s certificate are attached to the original message. In the meantime, a secret key using the DES algorithm at Sally’s computer, encrypts the bundle with the key.
4. The symmetric key is encrypted with Richard’s public key, which resides in Richard’s certificate, received in advance. The result is a digital envelope.
5. The encrypted message and digital envelope are transmitted to Richard’s computer over the Internet.
6. The digital envelope is decrypted with Richard’s private exchange key.
7. Using the restored secret key, the delivered message is decrypted to the message, digital signature, and Sally’s certificate.
8. To confirm the integrity, the digital signature is decrypted by Sally’s key (that resides in Sally’s certificate), obtaining the message digest.
9. The delivered message is hashed to generate a message digest.
10. The message digests obtained by steps 8 and 9, respectively, are compared to confirm whether there was any change during the transmission. This step confirms the integrity.
2.5 Internet banking versus Online banking

Internet banking is different from the online banking. Online banking need special software. Due to that, customer is restricted to the computer where the application is installed. Customer’s data reside on the local hard drive, and is vulnerable to hardware or software failure (Kalakota and Whinston, 1997).

In the other hand, Internet banking does not need any special software (the Web browser is sufficient), nor is any data stored on the hard disk. Account access is possible from anywhere with an Internet-connected device. When new features are added, they are done at the bank only and the customer just has to log-in to get access to the Internet banking (Kalakota and Whinston, 1997).

2.6 The Benefits of Internet banking

The advantages of Internet banking to customers are:

a. Get current account balances at any time: Customers can easily check the status of his/her savings and current account.

b. Pay bills: Electronic payments from a customer’s accounts are normally credited the same day or the next. The cost of paying bills electronically may well be less than the postage involved in sending out a large number of payments each month.

c. Ease of transfer money between accounts: No more lines, deposit slips, and running to the ATM.

d. Send e-mail to the bank: A customer can send a quick note to his/her online bank representative if he/she faces problem with the account.

e. A new meaning for ‘banker’s hours’: A customer can manage his/her money and bills on his/her own schedule.

f. Handle finances when travelling. A customer can access accounts when he/she is on the road and even arrange for bill payments to be made while he/she is gone.
The Internet banking also offers benefits to the bank, such as expanding the customer base and saving the cost of paper transactions (Mahan, 1996).

2.7 Internet Banking in Malaysia

Internet banking was first introduced to Malaysia by Malayan Banking Berhad (Maybank) as soon as the green light was given to commence from 1 June 2000. Maybank always strives to introduce innovative services to enhance customer convenience through the use of technology. It led the way in the innovative use of technology and product development since 1970 in which it became the first Malaysian bank to embark on a computerisation programme.

Prior to that, other banks such as Multi-Purpose Bank, Phileo Allied Bank and RHB Bank in Malaysia had offered online banking or home banking. Home banking in Malaysia is an Intranet-based but using Internet type technology such as using TCP/IP network protocol and browse technology. To access home banking facility, users must sign up as a member of the home banking facility offered by the banks. According to Mr. Wong, officer of Multi-Purpose bank that the bank offers Intranet-based home banking for security concerns. Nevertheless, many of the Internet sites are still "under construction", indicating that the provision of these services is still in the evolutionary stage.

Meanwhile, the locally incorporated foreign banks are waiting for their deadline of 1 Jan 2002 before they can enter the Malaysian Internet transaction marketplace. However, without geographical limitations on the web, these banks have had an Internet presence way ahead of their domestic counterparts. Additionally, their global sites have matured over time and are well known to consumers at large. Examples are Citi’s citibank.com, HSBC’s hsbc.com and Deutsche Bank’s db.com (PricewaterhouseCoopers, 2000).
2.8 Services and Product Offered on Internet Banking in Malaysia

Currently, there are two banks offer Internet banking i.e. Malayan Banking Berhad (Maybank) and Southern Bank Berhad (SBB). A bank institution presence on the Internet divided into the three categories specified by BNM in its guidelines- informational site, communicative site and transactional site (PricewaterhouseCoopers, 2000). The distinguishes among the banks is the level of interaction between the user-customer and the institution.

a. Informational site- provide information of products, services, and terms of services.
b. Communicative site- provide search functions, updating static information of customer profile, opening new accounts and applying for loans via online application forms and customer enquiries.
c. Transactional site- enable to do transaction for example create/ delete standing orders payment instructions or request inter-account transfer.

Specifically, the Internet banking offered by Maybank (Maybank2U.com) allows users to do banking, shopping, bills payment, share investing from home or the office. The following are the details:

a. **Online banking** allows the users obtain information on bank balances, transfer funds from one account to another and to third party accounts, obtain information on rates, cheque status enquiry, issue stop payment instructions, request cheque book and examine the whole range of Maybank’s products and services, and make online applications.

b. **Online Stock** provides users about stock information, market information, stock announcement, research information and allows the customer buy/sell orders.

c. **Online shopping** allows users to purchase thousands of products such as books and magazines, CDs, flowers, jewellery & watches, furniture and household products.

d. **Bill payment** enable users to pay water, electricity, telephone, assessments e.g. Dewan Bandaraya Kuala Lumpur, Majlis Perbandaran Shah Alam, Majlis...
Bandaraya Ipoh, handphone/pagers, satellite/cable television e.g. Measet Broadcast Network System (ASTRO) and club e.g. Kelab Golf Diraja Selangor without leaving the house or the office.

In short, the Internet is essentially another distribution channel (similar to over-the-counter banking or telephone banking) for customers and a new way of adding value to the service provided.

2.9 The Acceptance and usage of Electronic banking
The breakthrough in technology have led to the development of the impressive and innovative consumer banking products and services, but many of these products are slow to gain acceptance by consumers. Therefore, Barczak (1997) conducted a survey to identify the motivations that underlie consumers' perceived value and usage of banking technologies such as ATM. In his finding, he identified four motivational clusters that differed significantly in their attitudinal and behavioural responses to technological innovations. For example, the instant gratification group was a heavier user of ATMs and automatic deposit, whereas hassle avoiders were more likely to use automatic withdrawal. The same concept can be applied to identify the motivations that underlie the consumers' perceived value and usage of Internet banking.

Meanwhile, 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.

In Malaysia, Balachandher Krishnan Guru et al. (1999) and Barczak (1997) conducted a survey to find out consumers' perception of electronic
banking found out that bank customers in Malaysia have quite highly value the importance of the personal touch in banking services.

Teoh (1998) comparative study between electronic banking and conventional banking also found out that conventional banking is more confidential and more personalized than electronic banking. It is obvious that electronic banking will not be able to compete with conventional banking in term of personalized service as electronic banking equipment and software have been programmed to follow the certain procedure and sequence only. The same concept applied to identify the consumers' perception towards the Internet banking.

2.10 Demographic Trends and Lifestyle in Malaysia
The most important demographic feature in the 21st century is that 14.3 million Malaysians (about 61 percent of the total population) would be born after 1965 and had better education (Chua, 2000). This segment of the population is expected to be less receptive to physical banking, and more inclined to using virtual retail financial services. The main reason is they spend more time working than ever before, and therefore place a higher premium on their leisure time (Chua, 2000).

A Malaysian lifestyle study by Survey Research Malaysia (1998) found out that there are seven lifestyle groups in Malaysia:

a. The Yesterday People
Comprising 20% per cent of the population, these people cling to the past, finding it hard to adapt to changes that are going on in today's society. Many are older people, females, with minimum education, and rural.

b. The Yuppies
This groups of people are socially and physically active, highly ambitious and confident people. Forming nine per cent of the population, they buy more up-
market brands and are very label-conscious. They tend to be younger, Chinese and well educated (one third of all graduates fell into this group).

c. The New Breed
Comprising 19 per cent of Malaysians, they have managed to combine modern materialistic trapping of life with their traditional, moral and religious backgrounds. They are very family-oriented and see themselves as leaders. They tend to be younger Malays with middle and higher incomes, males, urban dwellers and have above average education.

d. The Chameleons
These are people who blend perfectly into the society and wish to get on with their lives without any hassle. They total 14 per cent of population and two-third of them are Chinese.

e. The Loners
This group, totalling nine per cent, prefers to be left alone in their own company. They are more self-centred in their desires and are very relaxed about life. Found mostly in bigger towns, they are upper-middle income groups with white collar jobs.

f. The Kampung Trendsetters
Comprising 19 per cent of the population, they tend to be very traditional and morally upright. Twenty per cent of them are Chinese and Indians. They are better educated and younger people with higher incomes and most of them buy branded products.

g. The Sleepwalkers
This group tends to be female, Chinese, with a lower education, in middle or upper income households. They are unadventurous people, followers, and do not
participate because they cannot cope. Comprising nine per cent of the population, they are non-working housewives and they 'switch off' from life.

Based on the lifestyle, only about thirty per cent of the total population refuse to changes. Hence, the trends in demography and lifestyle will lead to an explosion of virtual financial services in Malaysia.