



Internet Banking: Boon or Bane ?

By Vignesen Perumal, Monash University Malaysia

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

Email: perumal.vignesen@buseco.monash.edu.my

Vignesen Perumal works as a Graduate Research Assistant at the School of Business, Monash University Malaysia.

By Bala Shanmugam, Monash University Malaysia

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

Email: bala.shanmugam@buseco.monash.edu.my

Professor Bala Shanmugam holds the Chair of Accounting and Finance at Monash University Malaysia, where he is also the Head of the Department of Accounting and Finance. Professor Shanmugam has published extensively on electronic banking and has wide international consultancy experience in the same area.

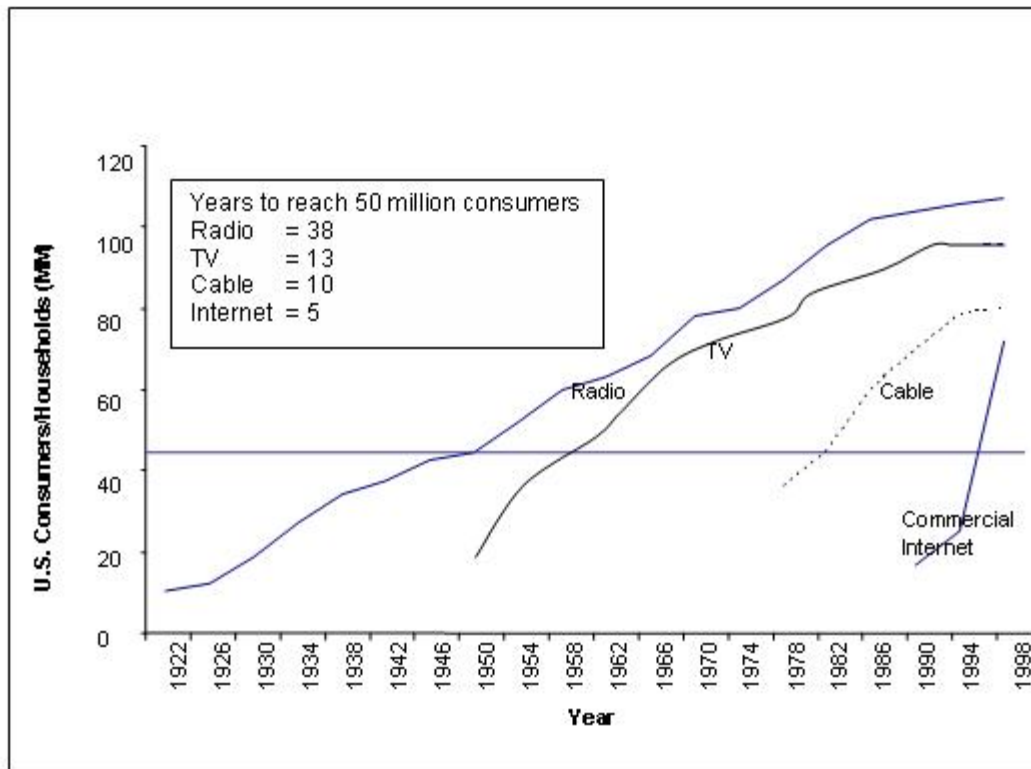
Abstract

There is little doubt that the Internet has revolutionized the entire communication system. As much as banking involves communication in one way or the other, banks have joined the communication bandwagon. Having observed the astronomical growth rate and acknowledging the potential banks adapting and often adapting the Internet to suit their functions and roles. As in any new venture there are setbacks in terms of issue of security and associated costs. As a consequence banks are working towards remedying these shortcomings so as to take full advantage of the digital revolution.

Introduction

Vinton Cerf, the father of the Internet, envisioned an online environment populated by billions. The Internet, which was born in 1969, would certainly 'catch fire', according to Cerf. Cerf estimated that three billion users would be online by 2010, and the number of devices online could be anywhere from six billion to 30 billion by 2020. Cerf prophesied that by 2030, we will be speaking to our computers and other appliances and they will respond (Harmon, 2001). Figure 1 shows Internet penetration in the U.S market relative to radio, television and cable inventions. The Internet reached 50 million consumers within 4 years while the radio took nearly 28 years.

Figure 1: Internet Penetration



Source: Goldman Sachs, Morgan Stanley Technology Research

Banking is an industry that is based on intensive information, and transactions in banking can normally be consummated without any physical exchange. These ingredients have made banking a perfect passenger for the Internet vehicle. However, in the initial stages Internet banking had to go through hard times and failures. As a result, customers do not seem to be much excited about Internet banking. In fact, an article in the *Euromoney* magazine quoted Internet banking as "Click, click – you are dead" (Irvine, 1999). This paper seeks to evaluate objectively if Internet banking is in fact a boon or a bane.

Types of Internet Banking

Currently, there are three basic kinds of Internet banking that are being employed in the marketplace:

Information

This is the most basic level of Internet banking. The bank has marketing information about its products and services on a stand-alone server. This level of Internet banking service can be provided by the bank itself or by sourcing it out. Since the server or Web site may be vulnerable to alteration, appropriate controls must therefore be in place to prevent unauthorized alterations to data in the server or web site.

Communication

This type of Internet banking allows interaction between the bank's systems and the customer. It may be limited to electronic mail, account inquiry, loan applications, or static file updates. The risk is higher with this configuration than with the earlier system and therefore appropriate controls need to be in place to prevent, monitor, and alert management of any unauthorized attempt to access bank's internal network and computer systems. Under this system the client makes a request to which the bank subsequently responds. Works on the same principle as the e-mail.

Transaction

Under this system of Internet banking customers are allowed to execute transactions. Relative to the information and communication types of Internet banking, this system possesses the highest level of

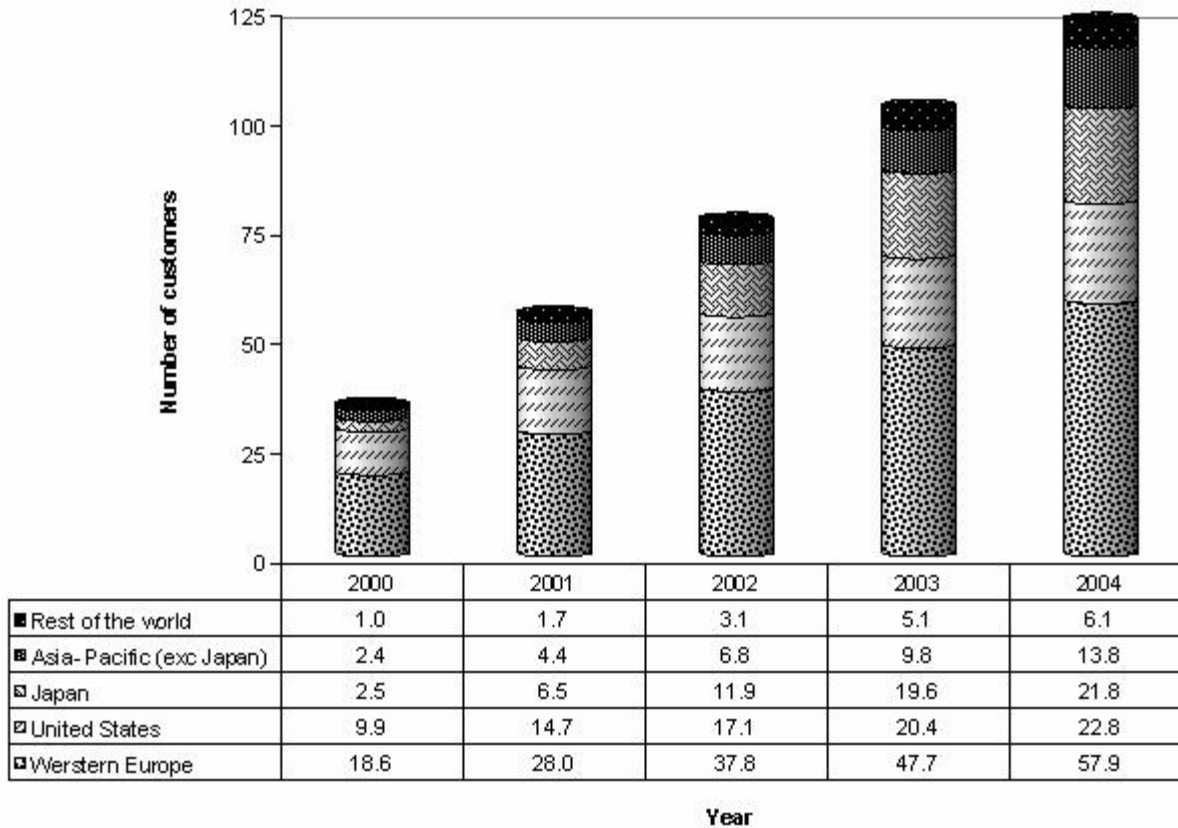
risk architecture and must have the strongest controls. Customer transactions can include accessing accounts, paying bills, transferring funds, etc. These possibilities demand very stringent security.

Growth in Internet Banking

The growth of Internet banking has been very encouraging and consequently financial institutions are actively pursuing Internet banking business. It is of little surprise that the number of customers banking online is expected to increase significantly over the next few years and that too not merely in the industrial nations but also in developing countries.

Figure 2: Growth in Internet Banking

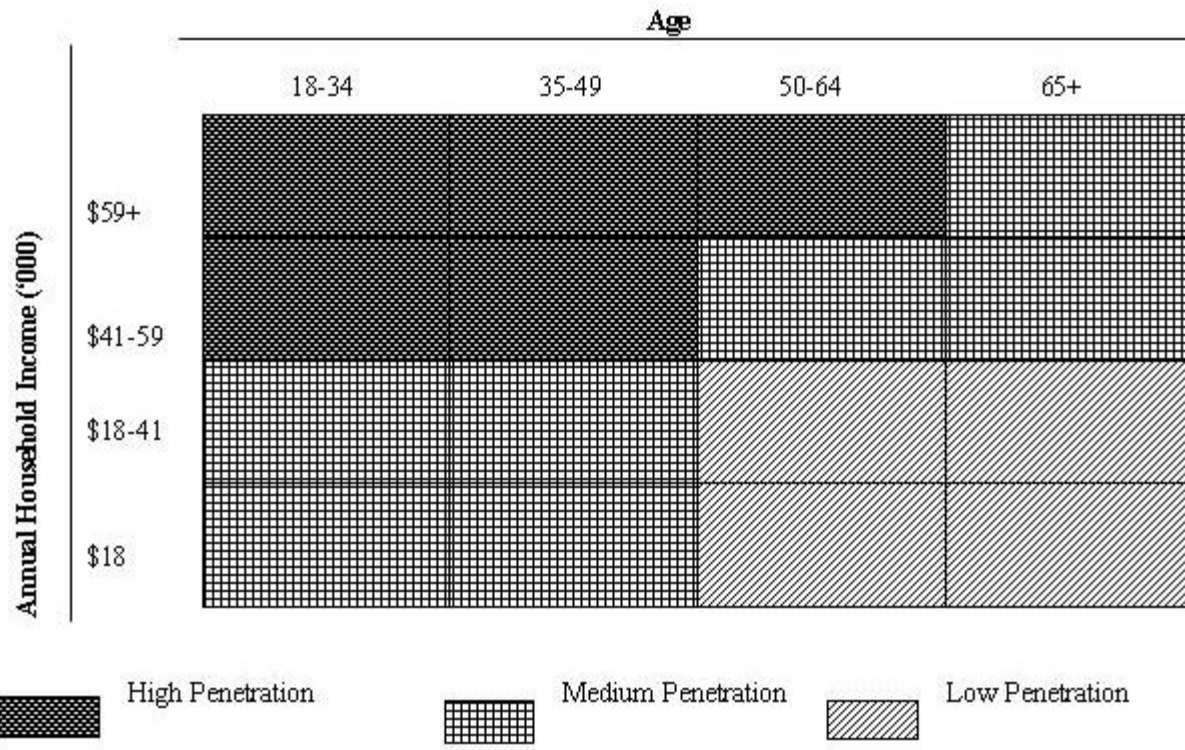
(Millions)



Source: International Data Corporation, epaynews.com

Of course the popularity is moreso amongst the younger and more affluent banking customers. As illustrated in Figure 3 persons between the age of 18-49 with a household income ranging between \$41,000-\$59,000+ showed high interest on Internet banking. On the contrary the older respondents (65+) showed very low interest in Internet banking.

Figure 3: Interest in Internet Banking by Segments



Source: BAI , JP Morgan interviews

The drastic and astronomical growth in the Internet banking industry can be attributed to the following forces: -

The Transaction Multiplier Effect

The myriad possibilities of settling bills, transferring funds (inter/intra bank etc) and trading in securities; all done online, has further encouraged customers to patronize the online system. The increasing numbers of patrons and the consequent rise in revenues have further spurred financial institutions to establish ever expanding infrastructures to support more online activities.

Faster Launch Cycles

The development of Internet banking encourages financial institutions to frequently launch new programs in response to customer preferences and technology innovations. Among the popular enhancements to Internet banking services include improved navigation, integrating multiple services into single systems, viewing of returned checks, onsite purchase of retail goods, seamless integration with e-commerce retail sites, and use of Extensible Markup Language (XML). Such potential tends to further encourage participation.

Poaching of High Net-Worth Customers and Competition

Online brokerage firms are beginning to poach high-net-worth customers from online banks. Such customers are a segment of the banking population, which includes more than six million U.S. households with a net worth of more than US\$1 billion. This segment is growing at a rate of 13 percent annually (Internet Banking Solution, 2001). This kind of intense competition further pushes financial institutions to improve their systems which results in attracting more customers.

Geographical Reach

A brick and mortar bank is limited by its geographical reach but the same cannot be said of Internet banks. Internet banking by its very nature is borderless. This new delivery channel can now reach out to areas and regions which have hitherto remained unexplored.

Branding Possibilities

Internet banking technology and products can provide a means for banks to develop and maintain an ongoing relationship with their customers by offering easy access to a broad array of products and services. The results of these efforts are enhanced by capitalizing on brand identification and providing a broad range of financial services, which

tends to build customer loyalty, cross-sell, and enhance repeat business.

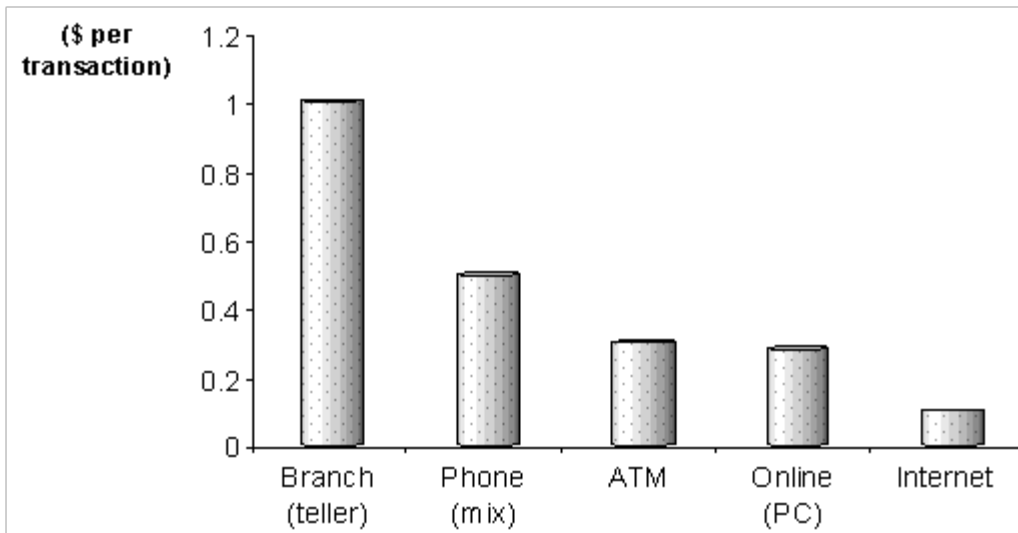
The 'Boon' Side of Internet Banking

The benefits of Internet banking are plentiful as witnessed by the consequential reaction of a tremendous rise in usage and application. The potential appears to be unlimited ranging from virtual banks to e-cash.

Reduced Transaction Costs

It has been repeatedly shown that as a delivery or distribution channel, the Internet could bring a substantial cost advantage for banks. The frequently quoted Booz-Allen and Hamilton study showed that the cost of a customer walking into the branch and using a teller is USD1.01, where as the cost of conducting the same transaction on the Internet is only a tenth of the cost. No doubt the ATM is considerably cheaper than a teller, but even so, the Internet is nearly 3 times cheaper than the ATM usage. In short, replacing a teller with an Internet channel should in theory, show a 10 fold increase in the distribution revenue for the bank. This reason alone should be sufficient for banks to encourage this form of distribution channel. Figure 4 illustrates the cost function.

Figure 4: Processing Cost Per Transaction



Source: Booz-Allen & Hamilton, JP Morgan (2003)

Perfect Information

Internet makes perfect information available to all market participants by bringing about efficiencies in the search process. For buyers of banking services, there are sites that aggregate information on product offerings from different providers at a single location. By merely making information available to customers about multiple providers, the Internet performs the function of dismantling the oligopoly of a few providers and bringing about a structure favorable towards perfect competition. A good example of this would be e-loan. It allows potential borrowers to search and compare the offerings of thousands of providers. On the other hand, seeking out bank branches, researching product catalogues and making phone calls cannot achieve this function with the same level of efficiency. Eliminating the agent's commission effects a further reduction in mortgage costs. E-loans also allow for the monitoring of mortgages over its lifetime and alert the borrower to cheaper refinance options whenever available.

Perfect information would be available to the bank as well. The Internet makes it less likely, for example, for an individual to hide a bad credit history from prospective providers and to beat the system by switching providers frequently. All this means that there is limited room for hearsay, verbal/oral accounts, and its related subjectivity. In short the Internet has resulted in a wider dissemination of quality information.

Perfect Competition

Successful dot. com companies such as eBay for instance, offer visitors the ability to directly participate in all transactions such as online auctions. More than 60 million auctions have been completed on eBay since its inception in 1995 and in January 2000, the number of daily visitors to eBay on an average basis set a new record of 1.782 million (Singhal, 2003).

eBay's success is mainly due to its offering to visitors an electronic market place that is tending towards perfect competition. This is achieved by two means. The first is through the aggregation of buyers and sellers and also through the provision of a search function platform. The second is by bringing about efficiency in determining price that is enabled by the online auction mechanism which makes pricing transparent and also makes it dynamic since it is driven by near perfect market conditions of demand and supply.

Similarly, by creating competition among the providers of capital, the Internet helps companies raise money at much finer spreads. Also banks using the Internet have pioneered the use of online auction to price Initial Public Offerings (IPOs). In this manner market forces are given greater prominence thus ensuring conditions for perfect or near perfect competition.

The 'Bane' of Internet Banking

There are always two sides to a coin. Similarly Internet banking too has a 'bane' side to it. The bane lies in its inexorable slide towards higher risk from various facets of bank operations. Risk is the potential that unexpected events may have an adverse impact on the banks earnings. Internet banking risks consists of risk associated with credit, interest rate, transaction, etc. These risks are not mutually exclusive but invariably all of these are associated with Internet banking.

Credit Risk

Credit risk is the risk to earning and eventually capital, arising from a borrower's failure to meet the terms of a credit contract with the bank or otherwise to perform as agreed. It is found in all activities where success depends on counterparty, issuer, or borrower performance. It arises any time bank findings are extended, committed, invested, or otherwise exposed through actual or implied contractual agreements, whether on or off the bank's balance sheet.

Internet banking provides the opportunity for banks to expand their geographic range. Customers can reach a given institution from literally anywhere in the world. In dealing with customers over the Internet, absent of any personal contact, it is challenging for institutions to verify the bona fide of their customers, which is an important element in making sound credit decisions. Verifying collateral and perfecting security agreements can also be challenging with out-of-area borrowers.

Unless properly managed, Internet banking could lead to a concentration in out-of-area credits. Moreover, the question of which state's or country's laws control an Internet relationship is still very much at an infancy stage of development.

Effective management of a portfolio of loans obtained through the Internet requires that effective policies, processes, and practices are in place to control the risk associated with such loans.

Interest Rate Risk

Interest rate risk is the risk to earnings arising from movements in interest rates. From an economic perspective, a bank focuses on the sensitivity of the value of its assets, liabilities and revenues to changes in interest rates. Interest rate risk arises from differences between the timing of rate changes and the timing of cash flows (repricing risk); from changing rate relationships among different yield curves affecting bank activities (basis risk); from changing rate relationships across the spectrum of maturities (yield curve risk); and from interest-related options embedded in bank products (options risk) (Comptroller's Handbook, 1999). Evaluation of interest rate risk must consider the impact of complex illiquid hedging strategies or products, and also the potential impact that changes in interest rates will have on fee income. In situations where trading is managed separately, it refers to structural positions and not trading portfolios. The attracting of inflow (deposits) done instantaneously and independently from outflow (loans) with rates moving in between could cause major upheavals if not managed properly. Of course this risk existed even prior to the Internet era but real time implications due to Internet applications have exacerbated the risk.

Liquidity Risk

Liquidity risk is the uncertainty arising from a bank's inability to meet its obligations when they are due, without incurring unacceptable losses. Liquidity risk includes the inability to manage unplanned changes in market conditions affecting the ability of the bank to liquidate assets quickly and with minimal loss in value.

Internet banking increases deposit volatility from customers who maintain accounts solely on the basis of rates or terms. Increased monitoring of liquidity and changes in deposits and loans maybe warranted depending on the volume and nature of Internet account activities. In a nutshell, the Internet allows all transactions to occur in real time. The management must therefore be prepared for immediate changes and consequently immediate solutions.

Transaction Risk

Transaction risk is the current and prospective risk to earnings and capital arising from fraud, error, the inability to deliver products or services, the failure to maintain a competitive position and services, and the inability to manage information properly. This risk is evident in each product and service offered and encompasses product development and delivery, transaction processing, systems development, computing systems, complexity of products and services, and the internal control environment (Comptroller's Handbook, 1999). A high level of transaction risk may exist with Internet banking products, particularly if those lines of business are not adequately planned, implemented, and monitored. Banks that offer financial products and services through the Internet must be able to meet their customer's expectations. Banks must also ensure they have the right product mix and capacity to deliver accurate, timely, and reliable services to develop a high level of confidence in their brand name. Customers who conduct business over the Internet are likely to have little tolerance for errors or omissions from financial institutions that do not have sophisticated internal controls to manage their Internet banking business. Likewise, customers will expect continuous availability of the product and Web pages that are easy to navigate.

Software to support various Internet banking functions is provided to the customer from a variety of sources. Banks may support customers using customer-acquired or bank-supplied browsers or Personal Financial Manager (PFM) software. Good communications between banks and their customers will help manage expectations on the compatibility of various PFM software products.

Attacks or intrusion attempts on banks' computer and network systems are also a major concern. Surveys point towards systems being more vulnerable to internal attacks than external, because internal

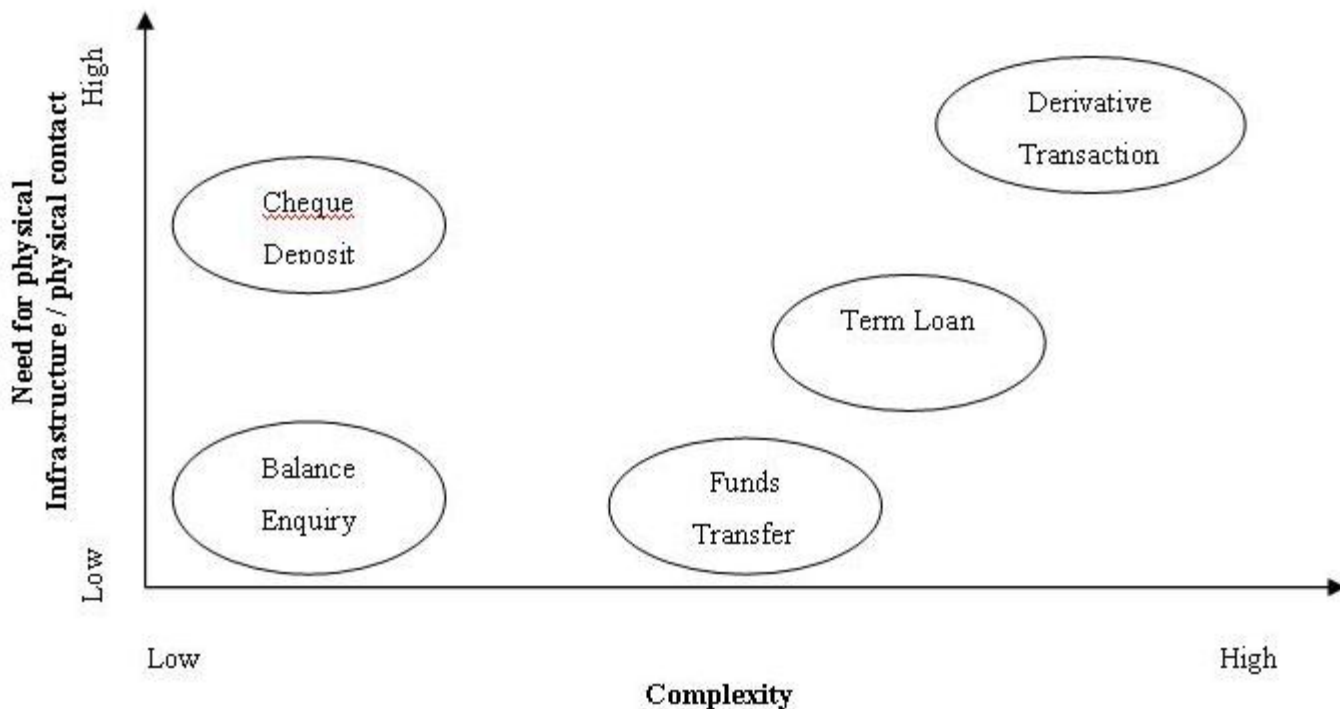
system users have knowledge of the system and access. Banks should therefore have sound preventive and detective controls to protect their Internet banking systems from exploitation, both internally and externally.

Contingency and business resumption planning is necessary for banks to be sure that they can deliver products and services in the event of confrontation with adverse circumstances. Internet banking products connected to a robust network may actually make this easier because back up capabilities can be spread over a wide geographic location. Security issues should be considered when the institution develops its contingency and business resumption plans. In such situations however, security and internal controls at the back-up location should be as sophisticated as those at the primary processing site. High levels of security and control systems will be a key expectation of customers and this will most likely differentiate success levels among financial institutions selling Internet products and services (Comptroller's Handbook, 1999).

Total Reliability Risk

As with most other Internet ventures, an exclusive reliance on virtual channels is probably not a very wise move. A strategy of combining brick and mortar with click and avatar is probably more viable. There are transactions such as balance enquiry that are ideally suited for the Internet. But transactions such as working capital loan applications are more detailed and personal discussions may be necessary. In the latter, the absence of a physical channel is a problem. Figure 5 shows various banking transaction that are suitable for Internet banking and the expected level of physical contact. Transactions such as bill payment can be efficiently conducted entirely online. Credits to accounts such as those for salary can also be online through electronic credits.

Figure 5: Various Banking Transactions



Source: Singhal, 2003

However, even if it is considered that Internet banking works well for certain types of credits, account holders also receive cheques that need to be deposited physically. The process followed by online banks as regards to cheque deposits is to install cheque accepting machines (ATM prototype) which collect cheques, clear them and credit the proceeds into the depositors' accounts. Unfortunately, cheques do not seem to be going away in any hurry as Americans alone write approximately 69 billion cheques a year (Singhal, 2003)

There are also deep psychological links between money and financial services that create inertia in terms of adopting new technologies. For example, the U.S. Federal Reserve Board predicts that the number of cheques written in the

United States will actually rise and not fall (Singhal, 2003). This is the expectation despite all the improvements and developments in Internet banking. It looks as though convincing people that holding and transacting money in electronic form is equally secure as using paper is going to be a never ending process.

Opportunities for Internet Banking

Internet banking as an alternative delivery channel offers many opportunities for growth and development of the financial institutions. Financial institutions have begun to realize that although the Internet is simply a delivery channel it is nevertheless an extremely powerful one. Therefore, financial institutions are investing in electronic Customer Relationship Management (eCRM) solutions that span across all channels, with the goal of strengthening customer loyalty and increasing fee-based transactions. In order to achieve this, eCRM solutions track customer interactions across channels, analyzing the aggregate data that will reveal patterns about customer usage of financial products. Consequently, by using this information, financial institutions can generate business rules that define as to which type of offers need to be made to customers at various times of their lives. Increasingly, financial institutions make offers through all channels, tracking the results to make business strategies even more effective.

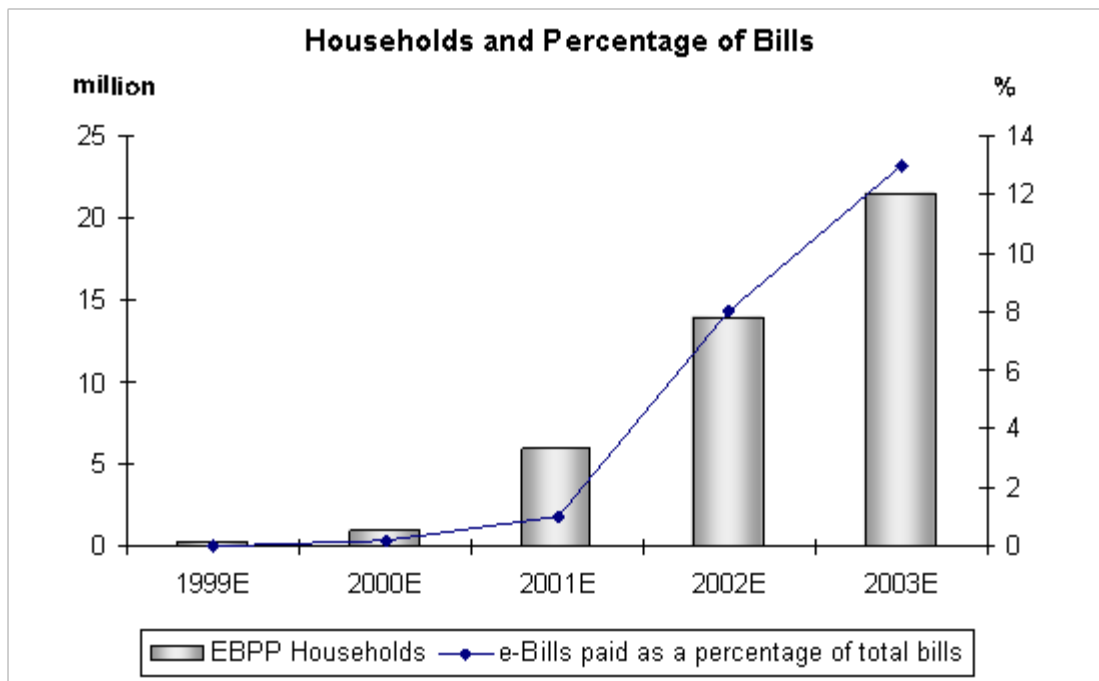
Opportunities for Internet –Only (virtual) Banks

Internet-only banks often have less money to spend on items such as marketing or CRM solutions relative to their brick-and-mortar counterparts. Therefore in order to compete they must find niches in areas where they can outlast their competitors. When they do identify niches, they can compete effectively because they do not have the additional burden of integrating legacy systems. Some areas where virtual banks may carve a niche are discussed below.

Invoice Payment Management

Though financial institutions have not become the dominant Electronic Bill Presentment and Payment (EBPP) consolidators for consumers, they are creating a new role in Electronic Invoice Presentment and Payment (EIPP) for small business and corporate customers. In this role, financial institutions will be the receipt point for company bills, extending their more traditional lockbox processing into the e-payment age (Internet Banking Solutions, 2001).

Figure 6:U.S EBPP Forecast



* E – Year End

Source: Forrester Research

Figure 6 shows EBPP estimates for the U.S. From the figures shown one can observe that approximately 25 million households in the U.S will be using EBPP by the year end 2003 to pay about 13 percent of all their bills.

Online Credit Card Payments

Credit cards will remain the dominant consumer Internet payment for the future. While online debit and electronic cheques using Automated Clearinghouse (ACH) will make marginal headway there would be little chance of overtaking online credit cards. As this is an area with relatively low need for contact between banker and customer, virtual banks may be tempted to capitalize on credit card business (Shanmugam and Guru, 2003).

Electronic Cheques for B2B Payments

Electronic cheques have become more popular for retail purchases but until now have had little impact on business payments. It is expected that businesses such as retailers would turn cheques into ACH transactions to retain compatibility with their accounts payable systems (Internet Banking Solutions, 2001).

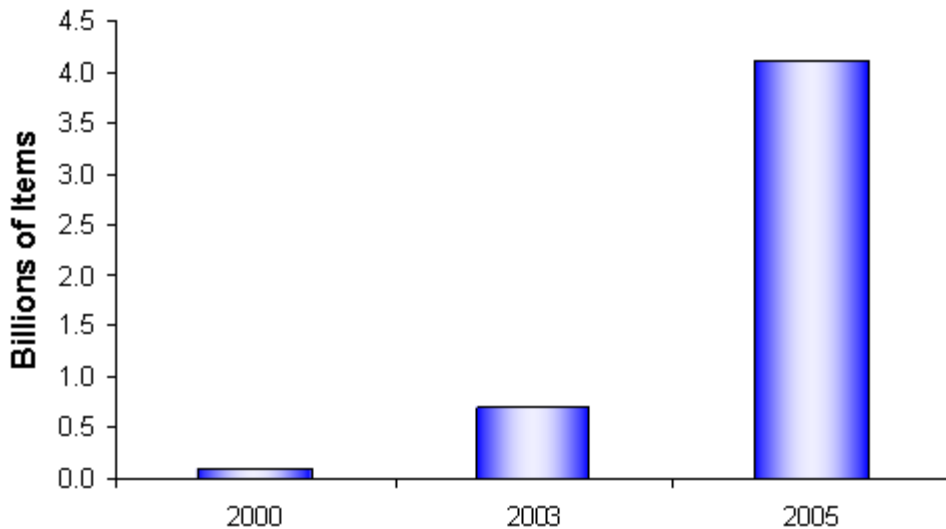
Online Mortgage Applications

Until recently, online applications were restricted to credit cards and small loans. Now more people are beginning to apply for mortgages online. However, the volume is growing slowly due to inadequate online customer support. Experts forecast the number of home purchasers researching mortgages online to reach 25 to 30 percent. While many may review this availability the actual closing of deals may only reach 6 percent per annum (Internet Banking Solutions, 2001).

Person-to-Person E-mail Payments

In the U.S., financial institutions are successfully launching Person-to-Person (P2P) e-mail payment systems. With these solutions, customers can make credit card payments and ACH transfers in real time to anyone with an e-mail address. It is a relatively simple process, in that, by simply adding a new front end to existing credit card and ACH payments systems to make them more convenient for consumers and businesses to transfer funds. Figure 7 shows estimates of Internet P2P Payments in the U.S.

Figure 7: U.S Internet P2P Payments



Source: Tower Group

From Figure 7 it is estimated that by the year 2005, Internet P2P payments in the U.S will grow to more than 4 billion transactions per annum.

Conclusion

Internet banking is on the rise. When viewed as another channel, its benefits are modest. However, when integrated with other channels, Internet banking becomes a powerful tool for improving customer satisfaction and increasing cross-selling opportunities. But at the same time banks must keep in mind that, every electronic channel including the Internet has its short falls which can have major consequences. Keeping track of the ever changing banking industry and the latest update in Internet technology, banks need to equip themselves for the competition. Even though there are enormous opportunities and virtual banks are on the rise 'brick and mortar' banks and transactions should not be neglected or relegated to the sidelines. This is because there are numerous aspects of banking which cannot be currently accomplished by electronic impulses.

References

1. BAI, "Interest in Internet Banking by Segments", JP Morgan Interviews
2. Booz-Allen & Hamilton, (2003), "Processing Cost Per Transaction", JP Morgan
3. Comptroller's Handbook, (1999), "Internet Banking", Comptroller of the Currency Administrator of National Banks, Oct 1999
4. Forrester Research, "US EBPP Forecast"
5. Goldman Sachs, "Internet Penetration", Morgan Stanley Technology Research

6. Harmon, S., (2001), "The Future of the Internet", Smart Investor, Issue 132, April 2001
7. Irvine, S., (1999), "Click, click – you´re dead", Euromoney, Sept 1999
8. Internet Banking Solutions, (2001), "Next-Generation retail banking", COMPAQ Inspiration Technology
9. International Data Cooperation, "Growth in Internet Banking", epaynews.com
10. Shanmugam, B and Guru, B.K. (2003), "Electronic Banking in Malaysia", IBBM Publications, Kuala Lumpur
11. Singhal, S., (2003), "Internet Banking The Second Wave: A Banker´s Guide to Internet Strategy in the Post Dotcom Era", Tata McGraw-Hill Publications
12. Tower Group, (2001), "US Internet P2P Payments"