Adoption of electronic banking: underlying consumer behaviour and critical success factors. Case of Estonia

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Abstract

The emergence of electronic banking has been a topic of increasing interest in recent years for both academics and practitioners, as the changes taking place in the field are clearly observable. However the growing interest has not been matched well enough with relevant studies that would give insight into the processes and behaviours underlying the rapid adoption of new channels.

Estonia is internationally renowned for being a pioneer in the acceptance of new technologies. Currently 22.3% of the Estonian population is using Internet bank services and over 50% of private transactions are done over the Internet. Only about 10% of the transactions are done via non-electronic channels. The primary aim of the study is to further the understanding how do consumers perceive electronic banking in the heyday of interactive channels. The motivation of the research is to move away from the innovation concept and analyse Internet banking as a mainstream transaction and service delivery platform.

The main questions addressed in the research are:

1. Which factors influence the customers' propensity to use electronic banking as a primary banking channel. The most important issue in exploring the first problem is comparing the influence of demographic factors and attitudes towards banking-related issues to the selection of the main banking channel.

2. What are the main characteristics of the heavy users of electronic banking and what are the main obstacles for further adoption of electronic banking. Why some customers find the new channels unacceptable and which obstacles should be eliminated in order to convince the customers about the advantages of using Internet banking.

3. What are the critical success factors of the Estonian Internet banking? Comprehensive analysis of the framework of consumer behaviour, economic environment, government policies and banks' activities will be presented.

The necessary data will be gathered through a survey conducted among the bank customers and interviews conducted with the leading banking professionals and industry experts. The research is based on the innovation diffusion theory formulated by Everett M. Rogers in 1965 (Rogers 1995). The theory has been used widely in analysing the adoption of Internet (Wolcott et al 2001), various Internet related applications (Black et al 2001, p 391, Polatoglu et. al. 2001, p.157), and also software products (Kautz 2000). The relevance of the chosen theory for the research of Internet banking adoption has been proved via introductory qualitative research on the subject by several authors.

1. The Background of Estonian Electronic Banking.

Estonia is currently belonging to the country group of medium internet penetration on the global scale outnumbering its Baltic neighbours and Eastern-European countries but being somewhat behind from the Scandinavian countries, USA, Canada, leading European countries and some Asian countries (TNS 2002).

The progress can be characterized from one hand by the rising number of Internet users as presented in Figure 1 and from the other hand by the wide possibilities of using Internet as presented later in the paper. Since the year 2000 the increase of usage rates has slowed down as the market is approaching to saturation and for the first two quarters of 2002 the number of Internet users has remained at the level of 39% (Emor 2002). The main further development in the Internet usage is growth of heavy user base (i.e. existing users will use Internet more intensively) rather than growth of the usage rates in general. The research on the digital divide issues has pointed out that existing motivational, skill and access barriers prevent non-users from reaching the Internet (Digital Divide 2002) and unless specific measures are taken to overcome the barriers it is not realistic to expect considerable growth of Internet use.

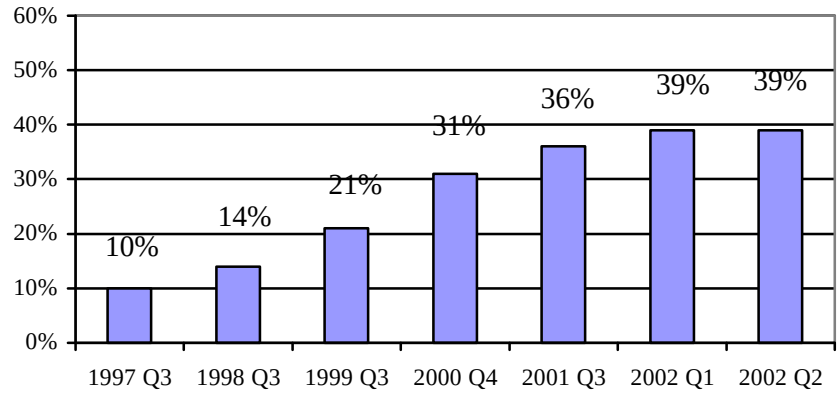

Figure 1 The growth of Internet usage among the Estonian population (source: Emor 2002)

As the number of Internet users is not growing remarkably any more, the competition among the Internet service providers has intensified and many of them have lowered their prices for a permanent connection. This has motivated old users to move from slow and expensive dial up connections to faster good quality connections and has also attracted some new users to the Internet. The main place for Internet usage is still the working place but home usage is growing at a steady pace (Emor 2002). For the content providers these new developments mean more time spent in the Internet and intensive use of their services.

Those who have used Internet during a week have done it for the following purposes (Emor 2002):

- 76% sending and reading mail
- 62% searching for specific information from databases or homepages
- 57% visiting portals
- 56% using search engines
- 57% using Internet bank

So we can see that a large proportion of Internet users are also using the services of Internet bank. 57% of the Internet users have been using Internet bank during the last six months. We can infer that there is still a potential for growth in convincing people to use electronic channels for banking activities more intensively. Out of the 410000 Internet users (39% of the population aged 15-74) who have used Internet during the last 6 months also 57% have used Internet banking (Emor 2002). So we can estimate the number of Internet bank users (in the period March-May 2002) in Estonia being **233700** people. This means that 22.3% of the Estonian population aged 15-74 are using Internet bank services. The global information technology report by Harvard University has ranked the ICT development of

Estonia to the 23rd place in the world among 75 countries surveyed, which is for example ahead of France, Italy and Spain. Estonia was the only CEE country among the top 25.

The number of Europeans banking online has increased by 19% during 6 months in 2002[1] according to Nielsen NetRatings. Approximately 18.6 million Europeans visited an online bank or building society during October 2002, up from 15.6 million six months ago. This is equivalent to one in four active Internet users in the region[2]. In this sense Estonia stands out with one of every two active Internet users being also Internet bank user. This indicates that in the case of Estonia also background features other than Internet penetration play an important role in the Internet banking uptake.

It is also common to compare situation in Estonia with its closest neighbours in the Baltic countries. The starting positions of the countries have been similar but somewhat different paths taken have resulted in differences in both Internet penetration and Internet bank penetration. In Latvia and Lithuania the telecommunications monopolies ended on January 1st, 2003, which will probably enliven competition and bring down fixed-line communication costs[3]. Both countries also have less of web content and services available compared to Estonia. Figure 2 presents comparative data on Internet and Internet bank usage across the Baltic countries.

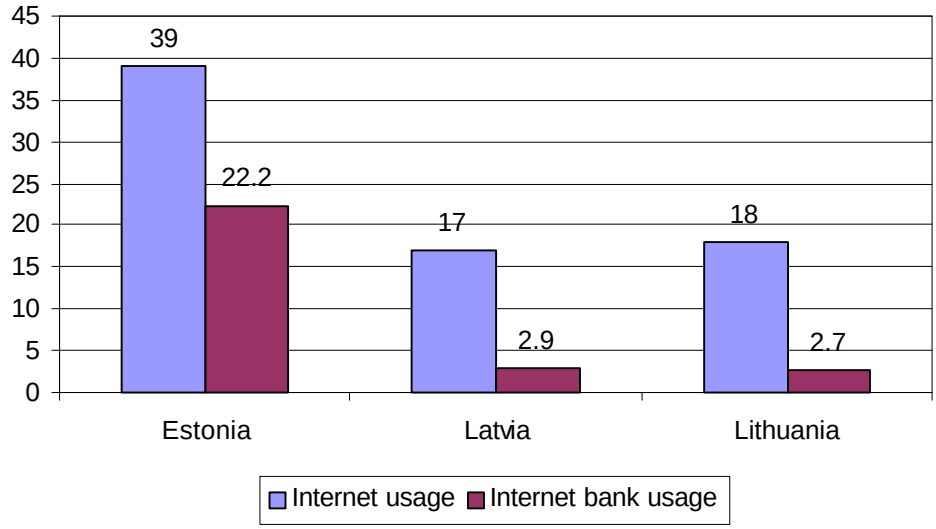

Figure 2. Comparison of Internet usage and Internet bank usage as a percentage of the 15-74 year old population in the Baltics[4].

A research by OECD indicated that there is a strong positive correlation between Internet usage and e-banking usage. The trend is usually logarithmic and the take off phase of Internet banking needs at least 30% Internet usage among the population (Christiansen 2001). This can be confirmed by the actual data from Estonia: in 2000 the Internet usage increased from 21% to 31% and hanza.net's customer base grew by nearly 100% during the same year.

[1] http://nyheter.idg.se/display.asp?ID=021121-EHA2
[2] http://news.zdnet.co.uk/story/0,,t278-s2126254,00.html
[3] The Global Competitiveness Report of Harvard University at http://www.cid.harvard.edu/cr/profiles/Latvia.pdf
[4] Data on Latvia and Lithuania obtained from Emor via personal inquiry.

2. Methodology

For the current paper two separate researches were conducted. Given the exploratory nature of the research into the critical success factors a qualitative approach was considered to be appropriate in gaining insight into the issue. A series of in depth interviews was conducted with leading industry experts in Estonia. The selection criterion for the respondents was mainly their involvement with the development of Internet banking systems from the early days of its emergence. Most of the respondents are still working in the leading banks. The number of respondents was 5 which is sufficient considering that in the Estonian market there are two leading banks whose decisions in the field of electronic banking are step by step followed by the smaller players.

To gain deeper understanding of the developments of internet banking also a number of short e-mail interviews were conducted with specialists from companies that have established cooperative internet based services together with the banks (Tax Board, mobile phone operators, Estonian Energy Co., Estonian Telephone Co.).

The second part of the research is an extensive bank customer survey conducted employing the customer database of Eesti Ühispank, the second largest bank of Estonia. The survey was conducted via Internet and also via traditional mail. This division was necessary because according to the banks' research department's experience internet prone customers are not willing to waste their time on paper based questionnaires but the customers who are not using internet bank do not have usually also access to the Internet.

Currently only the data collected via electronic channel is available for analysis. The response rate for the survey was 23.85%, 954 respondents out of 4000 customers.

3. Adoption of Internet Banking in Estonia

The history of Estonian electronic banking is only some years younger than the history of Estonian banking in general. Hansapank started its first electronic banking solution Telehansa in 1993 (Hansapank). The first banks to introduce Internet banking services in Estonia were Eesti Forekspank and Eesti Hoiupank in 1996 (Estonian Bankers Association 2001).

The greatest advantage of the late movers is that they are not rooted deep into old principles, processes and technologies. Setting up electronic banking requires substantial investments and it is very complicated to move from old technologies to new ones. In some cases worldwide the existence of a broad and well established branch office network has turned out to be a factor that has made banks see Internet as a threat rather than opportunity.

Rapid adoption of new technologies has helped the Estonian banks to leapfrog some of the traps that have slowed down the process of development in countries with better starting position. World Bank report on leapfrogging in e-finance pointed out that the three countries with impressive progress in information technology in this sense are Estonia, Republic of Korea and Brazil (Claessens et al 2001). Creation of the world's leading electronic banking systems has been done at a remarkably low cost compared to other world class internet banks (Sahlen 2002). Estonian Internet banks have been successful with respect to both supply of services and number of active customers.

The functionality development of the Estonian Internet banks has been from general and simple services towards more sophisticated ones. In 1996 the site of Hoiupank offered possibilities to view account balance and statement and execute domestic payments. Already a year later new features were added for securities transactions, international payments; viewing credit card statements, deposits and account history; sending messages to the bank and viewing a loan account. From 1999 the customers can manage their contact information and apply for loans. This was also the year when first 3rd party services and shopping options were added. Since 2000 banks have been cooperating with the tax board for both private and corporate customers and more 3rd party projects have been added. Customers can

now send also e-mails from the bank's home page. Banks can be accessed via mobile phones and first e-bill solutions emerged.

Being on the Internet has allowed banks to cut costs on transactions, improve their image on the market, and respond better to the demands of the market. Banks have used their sites also successfully to promote and cross sell their services and products among existing customers. Extra traffic is generated with providing non-banking services. The future trend is towards selling complex solutions not only single products.

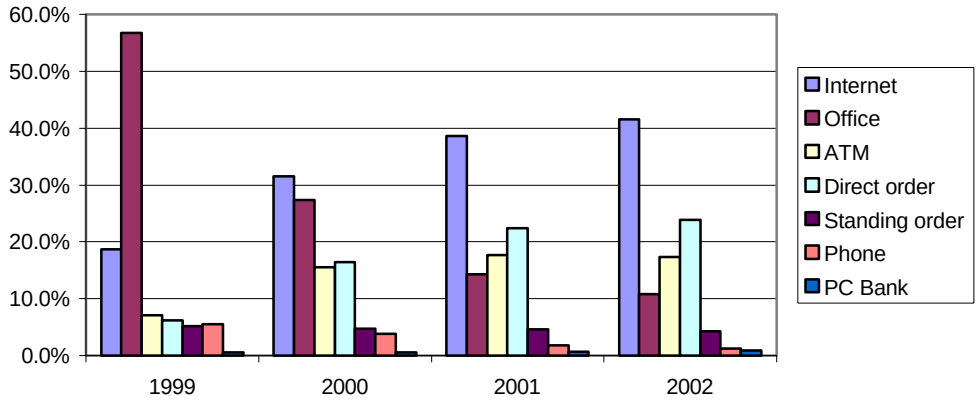

Figure 3. Usage dynamics of different transaction methods in Eesti Ühispank from 1999 to 2002 in percentages (source: author's interview)

Figure 3 shows that in Eesti Ühispank the percentage of transactions done in the Internet has been continuously growing and in two years Internet has taken a position of the main transaction channel whereas only three years before the office was dominant channel.

From the banks point of view Internet banking means significant cost cutting on transactions. According to the data provided by Hansapank the relative costs are following: if the office transaction is 100%, then the cost of one internet transaction is 11% (priced at 25% of the office transaction for a customer), PC banking transaction is 3.5%, ATM 7.7%, phone banking 108%, direct order 18% and standing order 19%. It is clear that strong motivation exists for the banks to convince more clients to use Internet banking services.

4. Motivational aspects of Internet bank usage

Some of the factors, which affect person's usage of Internet banking, are pretty straightforward; obviously a person should have an access to a computer with an Internet connection either at home or in the office. It is possible to use computers with Internet connection also in some of the self-service branches. The research of online shopping has pointed out that prior web experience has impact on the persons' beliefs about computers and technology in general (Crisp et al 1997, p 4) and it is quite obvious to draw a conclusion that the same applies also for Internet banking. Consumers who are on ease with computers and use them also for other purposes find it convenient to start banking over the Internet.

Although personal characteristics have been identified as significant predictors of consumers' adoption of an innovation several researchers have shown that it is the perceived attributes of the innovation itself rather than the characteristics of the innovators that are stronger predictors of the adoption decision (Black et al 2001, p 391, Polatoglu, Ekin 2001, p.157).

Clients demand a minimum relative advantage in order to switch channels. It means that the new innovative service should be perceived to be better that it's predecessor. In the case of Internet banking in Estonia this is achieved via two strategies: added convenience and price incentives

The branch-banking venue is characterized by long waiting lines and slow service and it is quite logical that those who have the possibilities try to use Internet banks. The negative motivation of pricing has been successfully used by the banks. The transactions in Internet banks are either considerably lower priced or without any fee at all but for the transactions in branches the fees are very high according to the Estonian standard (See Table 1). That is definitely one of the main reasons why the branch transactions are quickly losing their popularity.

Table 1. Prices of transactions in the major banks (covering ca 96% of the market) in Estonian kroons. Source: home pages of banks as of 13.11.2002.

	Direct debit	**Standing order**	**Internet**	**ATM**	**Branch**
Hansapank	Free	2	3 (free <25, >60)	3	9-12
Ühispank	Free	3, S+ free	3 (free <25, >60, S+[5])	Free	12 (6 S+)
Sampo Pank	Free	2	Free	NA	15
Nordea Pank	Free	4	1, free inside Nordea	NA	6-12

First the Internet services were introduced completely free of charge and after acquiring critical mass of customers the fees were introduced. The positive motivation of speed is challenged by the fact that relatively huge share of home customers still use slow, unstable and expensive dial-up connections which may make Internet banking as time consuming as branch banking. The fast connections belong usually to the companies and a big share of the consumers has Internet access from the office - which may be somewhat more convenient that visiting the bank branch but still dependent on location and office hours. The recent change in pricing occurred when Hansapank introduced a fee for the ATM transactions - it is now equal to Internet banks' fee.

Research by Emor among the customers of Hansabank's Internet bank hanza.net revealed that the most important aspect in choosing Internet bank for all client groups was ease of use followed by functionality and easiness of finding information. Overall satisfaction with the service is high and the only aspect that was criticized was price level (Emor 2002) - it shows that consumers found the introduction of the transaction fee unpleasant but not annoying enough to discontinue usage.

The test versions of Internet banks are encouraging to people who are not so familiar with the Internet and who doubt their competence in an unfamiliar setting. They can test the user interface and various functions prior to registering as a client. In the field of services it is especially important as due to the intangibility people are frequently not able to perceive to possible gains of an innovation.

The marketing efforts made to promote Estonian Internet banking have been continuous and aggressive in different media channels and in bank branches. Avlonitis et al (2000, p 37) have made a comprehensive research showing that innovative products, which have been promoted extensively, have a higher chance of success in the market than similar products without the communications support. Two of the leading Estonian Internet banks have run TV spots and reminders both in the launch phase and after that and Nordea has promoted Solo in print media.

[5] S+ is preferential price package Saldo+ for an active private customer in Ühispank. <25 indicates customers under 25 years of age and >60 indicates customers over 60 years of age.

The survey conducted for this research addressed six different issues influencing the adoption of Internet banking. The results are presented in Table 2.

Table 2. Factors important in adopting Internet banking (952 respondents).

No=952	Not important at all	2	3	4	5	6	Extremely important
Better prices	2.4%	2.3%	6.5%	9.8%	14.6%	39.5%	18.8%
Recommendations	20.7%	13.3%	16.5%	14.0%	6.0%	4.9%	1.6%
Better service	3.9%	2.6%	9.0%	14.3%	20.9%	26.7	13.9
Marketing efforts	14.4%	11.1%	16.7%	17.9%	9.2%	6.7%	3.7%
Better access	0.2%	0.3%	1.5%	2.3%	8.6%	53.0%	29.9%
Higher privacy	0.7%	1.8%	5.9%	7.9%	16.1%	39.4%	21.4%

The most important factors in starting to use Internet banking are first and foremost better access to the services (convenience), better prices and higher privacy. Better service (i.e. preferring self service over office service) was also of above the average importance. Two factors that the respondents did not consider relevant to their adoption decision were banks' marketing activities and personal recommendations from friends and colleagues.

The demographic profile of the active users of Internet banking resembles the general demographic structure of Estonia. The Internet bank users live in different regions and belong to all income and professional groups. Somewhat surprisingly no remarkable differences existed among the different age groups. From the age 55 upwards the usage rates drop a little.

Table 3. Main obstacles in adopting Internet banking (results of a preliminary study, 100 respondents). Likert scale ranking from 1 (unimportant reason) to 7 (important reason)

No=100	1	2	3	4	5	6	7
Computers are difficult	**42.1%**	12.6%	6.3%	11.6%	5.3%	11.6%	10.5%
No access to Internet	**21.4%**	8.2%	4.1%	4.1%	6.1%	19.4%	**36.7%**
Internet banking is expensive	39.3%	11.9%	8.3%	17.9%	3.6%	9.5%	9.5%
Low security	**32.5%**	13.3%	8.4%	10.8%	13.3%	10.8%	10.8%
Have had no chance to try	35.5%	5.4%	2.1%	6.5%	6.5%	14%	**30.1%**
I prefer personal contact	**65.4%**	10.3%	3.9%	6.4%	3.9%	5.1%	5.1%

The most important factors discouraging the use of Internet banking are lack of Internet access and not having a chance to try out Internet banking in a safe environment (Table 3). The first problem would be difficult for a bank alone to solve but banks have already responded by creating possibilities for

Internet bank access in their offices. Those customers who feel that having no access is an unimportant reason have listed security concerns and lack of trying possibilities as most important. Similar research in other countries has revealed that lack of personal contact might be an obstacle in convincing people to use electronic channels but it is obvious from the Estonian data that a large majority of the population does not want to have personal contact. This also verifies the hypothesis that one of the reasons for starting to use Internet banking is a wish to avoid personal contact with bank personnel.

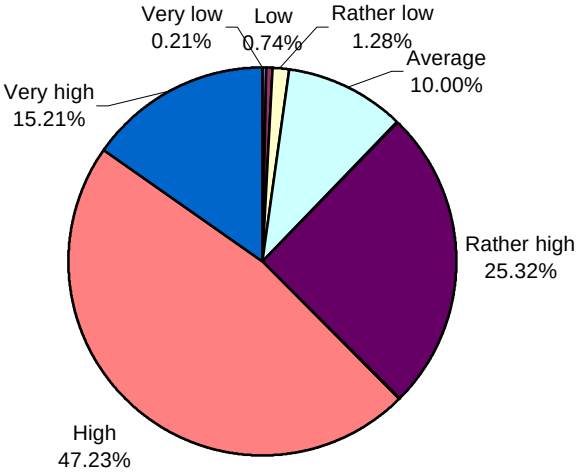

Figure 3. General satisfaction levels of Internet bank users.

One of the survey questions addressed also the satisfaction with bank services in general as several researchers have indicated that heavy users of innovative bank services tend to be also generally more satisfied with the overall banks performance. Currently only data about the active users of Internet banking is available and thus there is no possibility for a comparison with non-users. As seen from Figure 3, only 2.2% consider their overall satisfaction lower than average whereas 87.8% consider their satisfaction higher than average.

5. Critical Environmental Factors Contributing to the Success of the Estonian Internet Banking

For national banks in a country with low population density servicing outlaying areas effectively can be costly. Estonia is a very small country but it has its own remote areas where online banking is the only possibility to offer banking services at all. AC Nielsen has noted that in the Nordic countries it is the combination of population density (creating the need for online banking) and an established Internet economy that has facilitated the penetration of electronic banking.

Achieving critical mass is key success factor in electronic banking development. This can be achieved when there is substantial Internet penetration and banks are able to provide services, which have very broad demand. In this case the satisfied users will serve as endorsers and marketers of the service. The power of person-to-person communication and word of mouth can never be underestimated.

Estonian Internet banks are successful because they enjoy a wide demographic appeal to different age segments. In countries with more mature banking industries Internet banks tend to attract younger

generations who are financially not so affluent. Thus banks are also not so motivated to invest into Internet strategies.

Following analysis of the critical success factors is based on the interviews conducted with the industry experts.

Enabling environment

Internet penetration alone although being an important precondition does not guarantee online banking penetration. In general the Estonian government has taken a laissez faire approach to the regulation and supervision of the economic policy (Kalkun, Kalvet 2002). It has been pointed out in the interviews that in the evolutionary phase of new technologies and phenomena it is vital to avoid over-regulating as this can slow down and restrict development. Governments' main role is enhancing the enabling environment, as it is known that the direct intervention into financial markets may have poor results. Governments' own usage of ICT has generated positive publicity, which has fostered positive attitudes nationwide.

All of the persons interviewed for the study underlined that readiness of the telecommunications infrastructure is playing a key role in the success of Internet banking. The telecommunications monopoly of Estonia came to an end earlier than for example in Latvia and Lithuania and this is one of the explanations behind the lower Internet and also electronic banking usage n these countries. The same opinion has also been validated in international research (Claessens 2001).

Another important aspect in developing electronic financial services is the quality of the regulatory framework. Designing a public key infrastructure is a crucial question. However, it must be noted that the existence of relevant laws does not automatically mean that relevant services will be launched immediately. For example that enforcement of the Digital Signature Act did not bring along any changes in the way e-business is conducted.

Estonia features also a relatively low level of Internet connection costs. One of the explanations for this is free telecom market in Estonia, with two big competitors on ISDN market. For example, the monthly fee for ISDN connection in Netherlands is 30 euros, in Finland 65 euros and in Estonia 15 euros (Kerem et al 2002).

ICT usage promotion initiatives

Obviously the level of Internet usage is important for the success of Internet banking but internet penetration alone does not guarantee online banking penetration.

The initiatives most commonly pointed out by the respondents where those combining Internet access with relevant training for wider segments. The importance of the Tiger's Leap program is based mainly on the fact that it has succeeded to connect all the schools to the Internet and the future gains from this initiative are expected to be high. Look@world project was mentioned mainly because one of its aims is to provide basic computer and Internet training for 100 000 persons who are currently not using Internet. The importance of the Public Internet Access Point network is twofold. Besides providing possibilities to use Internet for wider public the initiative has also generated positive media attention, which has helped to shape favourable public opinion towards technology use.

Another possibility is to promote the Internet as a channel for accessing information and using services via adding content that is relevant and useful for the target groups. From among the several web services the tax board and e-government were pointed out most often.

Market characteristics

Experience from other European countries shows that Internet banking is stronger and has started off earlier in countries with a few major players (Sweden, Finland, Estonia) (Economist 2000) compared to highly competitive markets (like UK and also Norway).

Late start of contemporary banking in general has contributed to the rapid adoption of most up to date technologies, as old technologies can be very expensive to develop further. Some of the Scandinavian banks are still dependent on the information systems of the 1970s. There are no old payment methods used in Estonia like Giro system in Scandinavia. Lithuanian banks decided to continue using book payments and are now having hard time trying to re-train their customers to start using Internet.

As mentioned previously the small size of the market is positively linked to the development of Internet banking as banks can cooperate closely in the field of developing standards to offer services to third parties. Up to now, all developed standards are public and are not patented, that allows fast and coordinated spreading of bank-link, and ATM. Common standards are useful and efficient not only for users of these services, but also for brick-and-mortar and virtual shop owners, as the implementation of common standards does not require considerable technological expenses. In Finland, for example, there are multiple technological standards for some e-banking services that complicate fast spreading of these innovations (Kerem et al 2002).

Management aspects

There are also some general management aspects, which have made it possible to achieve 22% of Internet bank usage rate. Estonian banks have adopted a long-term perspective - implementing Internet in banking is not a campaign but long-term process which is looked upon as an investment, not an expense. Although price incentives can play significant role in getting customers online the service needs to be based on quality rather than price only.

Developing technological solutions should was not done with a product or line of business in focus but with a customer relationship focus with integrated delivery of products and services. Success or failure in Internet banking is greatly determined by the integration of technology infrastructure with the business processes.

The Estonian experience suggests that multi-channel strategy is most viable with different channels complementing each other and catering for different needs of the customers. It should be also pointed out that Estonian Internet banks have simple and clear user interfaces and the pricing policy has favoured using electronic channels. A critical factor for changing customer behavior is a feeling of comfort and security. Estonian banks have been successful in delivering user-friendly solutions that are secure, and are also perceived to be secure.

Estonians are generally very technology prone and the small size of the market gives excellent conditions to experiment with new solutions.

Availability of broad range of electronic services

The Internet banks serve also as gateways offering identification and authorization services to a number of third party service providers. There are user-friendly opportunities for conducting business over the Internet with telephone companies, Energy Company, tax board and other institutions. Demand for those services influences also the usage rates of Internet banks. For example in 2002 81867 private individuals submitted electronic tax declarations 79727 of them did it through Internet banks and 2140 through tax board's own home page. (20.3% of declarations were submitted electronically).

This is increasing the benefits of Internet banks for the consumers and is a win-win situation also for the banks and service providers.

6. Concluding Remarks

The reasons behind the success of electronic banking in general and more specifically Internet banking are complex. It is clear that banks activities alone may not be sufficient in achieving growth if general infrastructure, economic environment and government initiatives are not supportive.

Although the usage levels of Estonian internet banks are remarkably high compared to the other East European countries and comparable to the adoption rates in the Scandinavian countries it is clear that still a potential for further growth exists.

One of the main reasons why the user base cannot grow is the limited access to Internet among some customer groups and the growing digital divide. This means that unless specific measures are employed on a state level the activities taken by banks are not so significant. However, banks have also found possibilities to contribute to improving Internet access and user skills by participating in training projects and supporting public Internet access points.

The other big group of non-users is those who use Internet but are not using Internet banking. According to Emor (2002) 43% of Internet users (aged 15-74) are not using electronic banking services. In some cases the non-usage actually means that someone from the household takes care for all the banking activities of the family. If the family members do not have individual bank loans and do not use sophisticated banking services they pool together their household bills and one person pays them. As banks own marketing activities were not seen as crucial in the adoption decision it is clear that advertising alone cannot convince the non-users of Internet banks to start using the services.

The current paper is based on the first results of a comprehensive customer survey and we intend to do a more thorough analysis in the near future.

References

1. Avlonitis, G. J, and P. Papastathopoulou (2000) 'Marketing communications and product performance: innovative vs. non-innovative new retail financial products millennium' *International Journal of Bank Marketing*, 18(1): 27-41
2. Black, N. J., A. Lockett, H. Winklhofer and C. Ennew (2001) 'The adoption of Internet financial services: a qualitative study' *International Journal of Retail and Distribution Management*, 29(8): 390-398
3. Christiansen, H. (2001) 'Electronic Finance: Economics and Institutional Factors.' OECD Financial Affair Division Occasional Paper No. 2.
4. Claessens, S, T. Glaessner and D. Klingebiel. (2001) 'E-Finance in Emerging Markets: Is Leapfrogging Possible?' World Bank Financial Sector Discussion Paper No. 7
5. Crisp, B., S. Järvenpää and P. Todd (1997) 'Individual Differences and Internet Shopping Attitudes and Intentions.' Working Paper. University of Texas. Unpublished 19 p
6. Emor. (2002) E-seire aruanne märts-mai
7. Emor. (2002) Hansapanga klientuuri rahulolu.
8. Estonian Bankers Association (2002) 'Brief History, Estonian Commercial Banks in 1988-2001' URL (consulted Nov 2002) http://www.pangaliit.ee/1988-2001eng.pdf
9. Estonian Ministry of Foreign Affairs http://www.mfa.ee. A Dynamic Economy http://www.vm.ee/estonia/kat_172/397.html
10. Forrester Research (2000) Best of Europe's Net Banking, November
11. Global Information Technology Report 2001-2002: Readiness for the Networked World. The World Economic Forum and the Center for International Development (CID) at Harvard University
12. Kautz, K, Larsen, E. Å. (2000) 'Diffusion theory and practice. Disseminating quality management and software process improvement innovations'. *Information Technology & People*, Vol. 13, No. 1, pp 11-26
13. Kerem K., O. Luštšik, M. Sõrg, and V. Vensel. (2002) 'E-Banking In Estonia: Development, Driving Factors and Effects'. Paper presented on the 10th Annual Conference on Marketing and Business Strategies for Central & Eastern Europe. Vienna.
14. Polatoglu, V. N. and S. Ekin, (2001) 'An empirical investigation of the Turkish consumers' acceptance of Internet banking services' *International Journal of Bank Marketing*, 19(4): 156-165
15. Rogers, E. M. (1995) Diffusion of Innovations. 4th ed. The Free Press, 518 p.
16. Sahlen, A. (2002) 'Foreign Bank's Entry into the Baltic States Banking Market: Swedbanks Experience', paper presented on the conference "Financial sector reforms in Central and Eastern Europe: the impact of foreign banks entry", Tallinn, April 26-27.
17. Scandinavian Models. Economist Survey 20.05.2000.
18. Taylor Nelson Sofres Interactive. (2002) 'Global e-commerce report.' URL (consulted Nov. 2002) http://www.tnsofres.com/ger2002/index.cfm
19. Wolcott, P, L. Press, W. McHenry, S. Goodman, and W.A. Foster, (2001) 'Framework for assessing the global diffusion of the Internet'. *Journal of the Association for Information Systems* Vol. 2, 50 p