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INTERNET BANKING USAGE: AN EMPIRICAL ANALYSIS ON TURKISH CONSUMERS

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ABSTRACT

Turkey has a developed banking sector which has a very important place in Turkish economy. Internet banking applications started in 1997. Though it does not have a long history it has a very huge potential in the Turkish market. The aim of this paper is to explore if demographical factors are important in identifying the target customers for internet banking; to identify the perception of consumers regarding the attributes of internet banking usage; and to check if consumers perceive internet banking as a useful alternative channel. For this, an empirical research was conducted on 506 internet users over the age of 18, and two different clusters of non-users of internet banking and three different clusters for users of internet banking were identified, based on the demographic characteristics of respondents, which could be a valuable tool for marketing managers for identifying their segmentation and positioning strategies. Five factors were found to be as attributes of internet banking usage. Among the five factors, "security and trust" was found to be the factor that had the highest factor load for Internet banking usage. Finally, the discriminant analysis carried out reveals clues for bank managers about how to identify potential Internet bank users.

Keywords: *Internet Banking, Turkey*

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INTRODUCTION

Banking sector has an important role in world and Turkish economy and represents a very important amount in the total financial sector in Turkey (Cengiz, et al. 2007). The sector has gone through important changes throughout the years. One of the changes that make impact on the sector is

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the technological developments and the changes in the customer needs that lead banks to adopt internet banking. Internet banking, which uses emerging technologies, and enables customers to perform financial activities in virtual space, is an alternative to classical banking (Suh & Han, 2003). Banking is an information intensive sector creating the need to use information technologies effectively and efficiently (Liao et.al, 1999). Usage of information technologies as an alternative distribution channel has become inevitable as the emergence of technological developments made it possible for banks to offer more convenience to their demanding consumers by internet banking. The banks that are not able to adapt to this development are apt to get lost in the competitive arena. Acharya (et al 2008) found that community banks with a wider range of online banking services are more proficient than those limited with web presence. Of course the main reason behind this is the changing needs and demands of customers resulting from time constraints, increased literacy and technology use. Overall, it could be said that internet banking has become essential for gaining competitive advantage in today's fierce competitive environment and internet has become a popular delivery channel in the banking sector. It gains its popularity through the convenience it creates and empowerment of customers with greater control of their accounts. However, the acceptability of internet banking and people's perception about the usage of internet banking could change from country to country. Bank managers have stated that they had insufficient knowledge regarding the characteristics of Internet banking adopters and non-adopters. There is no comprehensive segmentation research regarding their internet banking users and potential users in the Turkish market (Özdemir et.al, 2008). However, it is very important for bank managers to take a more customer centric view in developing their internet banking channels. Further, bank managers need to consider effective segmentation and targeting strategies when considering development of technology based distribution channels (Gounaris, S. and Koritos, C., 2008) like internet banking. As for our knowledge, there is no study that segments the internet banking customers according to their demographic characteristics and offering a tool to bank managers to identify the possibility of the new customers to become an internet bank user or not in Turkey. So the aim of this paper is to:

- Explore if demographical factors are important in identifying the target customers for internet banking,
- Identify the perceptions of consumers about the attributes of internet banking usage,

- Identify if consumers perceive internet banking as a useful alternative channel and
- To develop a function to predict the potential internet banking users and internet banking non-users by using demographic variables.

The rest of the paper is organized as follows. In the next section, a review of the literature is given fallowed by, methodology, finding and finally conclusions and suggestions for further research.

LITERATURE REVIEW

Internet banking is a type of information system that uses the innovative resources to give the customers the opportunity to affect financial activities in a virtual space (Shih& Fang, 2004). Internet banking is defined as an internet portal, through which consumers can use different kind of banking services ranging from bill payment to making investment, thus webs just offering information through their web sites are not considered as using internet banking (Pikkarainen et. al., 2004). Some studies point out that online banks are the most profitable and wealthiest segment among other bank channels (Robinson 2000; Hitt and Frei, 2002). Thus special attention should be given to this subject. In relation to its importance in literature, a vast amount of research related with internet banking and different aspects of it can be found (Akıncı et. al., 2004). In the scope of this study we would focus on benefits and limitations of Internet banking and attributes of Internet banking usage.

Benefits of Internet Banking

Internet banking offers many advantages both for the banks and customers. First the advantage of it for banks is the potential savings from the cost of maintaining a traditional branch network, and it creates an opportunity to increase the consumer base by reaching a differentiated target group from the traditional bank customers (Özdemir et.al, 2008). This does not mean that traditional banks could completely be replaced by internet banking; however, it offers a good alternative channel. Howcroft (et. al 2002) have found that consumers have had a preference for a mix of delivery channels rather than exclusive reliance upon any one single channel. It has been proved that Internet banking channel is the cheapest delivery channel for banking products once established (Sathye, 1999; Robinson 2000; Pikkarainen et. all., 2004, Aladwani, 2001).

When considered from the consumers' point of view, it can be seen that Internet banking is beneficial to customers since it creates savings in costs, time, effort and space it offers; its quick response to complaints and its delivery of improved services that overall makes it easier for consumer to deal with their banking applications (Turban et. al, 2000, Özdemir et.al, 2008). Overall it could be said that time and cost savings and freedom from place are among the main reasons of Internet banking acceptance (Sathye, 1999; Robinson 2000; Pikkarainen et. all., 2004; Turban et. al, 2000; Polatlıoğlu and Ekin, 2001; Black et.al, 2002; Howcroft et al., 2002). Also delivery speed, ease of use, user enjoyment, control, and reliability has been found to contribute to usefulness in much technology based self implemented systems (Dabholkar, 1996). Liao and Cheung (2002) found that individual expectations regarding accuracy, security, transaction speed, user friendliness, user involvement, and convenience were the most important quality attributes in the perceived benefits of Internet banking.

Limitations for Internet Banking Usage

Those advantages, of course, do not guarantee the adoption of internet banking services by consumers since there might be some perceived risks related with the usage of Internet banking services, and consumers might have different expectations from banking services which could not be met through the usage of this channel. Thus, while developing strategies for Internet banking, it is very important to understand the customers, to keep up with their expectations.

A limitation for the use of Internet services is that people should have Internet access, which can be an important constraint limiting the usage, especially in developing and less developed countries, where computer ownership, Internet access, cost of Internet usage and literacy rates would be expected to be lower. Furthermore, consumers need firstly to learn how to use those services (Mols et. al 1999). Moreover, other than the above mentioned limitations, age could also be a limitation influencing this learning and adoption process. Sohail and Shanmugham (2003) have found accessibility of internet, awareness of internet banking, and customer reluctance to change are factors that significantly affected the usage of internet banking in Malaysia.

Though internet banking has grown rapidly, there is some evidence indicating that Internet banking acceptance is faced with some problems. Robinson (2000 as cited in Pikkarainen et. al., 2004) has found that half of the people that have tried internet banking will not actually become active

users of this service. Research indicates that loyal online customers are highly profitable; however, according to the observations of the sector analysts, only a small part of the online visitors turn back to make actual purchase. This implies that it is harder to generate loyal customers online, however at the same time, very important (Harris & Goode, 2004). To attract more customers for Internet banking it is important to identify perceptions of consumers about internet banking attributes. Some attributes mentioned in literature are given below.

Attributes for Internet Banking Usage

Perceived Usefulness: Customer perception of the usefulness and the ease of use affect the attitude significantly. At the same time, behavioral intention to use internet banking is highly related to attitudes; and perceived usefulness (Sohail & Shanmugham, 2003). Key quality attributes underlying perceived usefulness are expectations of accuracy and security (Liao and Cheung, 2002; Sathye, 1999; Howcroft et.al., 2002). Pikkarainen (et. al 2004) in their work found have that perceived usefulness and the amount of information were the most influential factors explaining the use of Internet banking services. Also Celik (2008) conducted a web based survey to find out the adoption of online banking among Turkish users and his finding was consistent with prior studies i.e. perceived usefulness plays a significant role in determining Turkish users' intentions do adopt online banking.

Security And Privacy: Protection of personal information, or specifically consumers' perception of the ability of the bank to protect personal information from unauthorized use or disclosure in other words privacy and security; impossibility of the transmitted or stored data to be changed by third parties without permission is very important in the acceptance of internet banking (Flavian et all, 2006). One of the important problems related with the usage of electronic commerce is the unwillingness of people to share information, especially sensitive information, like credit card numbers (Suh & Han 2003), distrust in the system (Marquez, 2000 as cited in Flavian et.al 2004) and a perceived lack of security (Sathye, 1999). This perception gains much more importance in the case of internet banking since internet banking sites are one of the locations where the most sensitive personal information is manipulated. The perceived usefulness and perceived ease of use may not fully reflect customer acceptance of internet banking, if perceived privacy, thus security is low (Suh & Han 2003). However contrary to other work related with the subject of security and privacy, Pikkarainen (et

al 2004) and Karjaluoto (et al 2001) have found a relatively weak relationship with the acceptance of internet banking services and security and privacy which may be due to the developed security systems of the country which the research has revealed.

Trust: A related concept is e-trust, which is viewed as mirroring offline trust and is defined as "the degree of confidence customers have in online exchanges" (Ribbink et al, 2004, p. 447). Trust is especially important in online transactions. Influence of trust on the online consumer depends on the product category considered, and it can be said that for products like financial services, higher levels of perceived risk is associated (Flavian et. al. 2006). Failure of the internet banking is largely attributable to the lack of trust consumers have in the electronic channels (Rexha et.al 2003). In their study Suh and Han (2003) have found that trust is one of the most significant factors in explaining a customer's attitude towards using internet banking. As suggested by the technology acceptance model, behavioral intention to use internet banking is highly related to trust. Customer confidence on internet banking would also largely depend on how banks deal with erroneous transactional and security concerns that may occur during Internet banking (Sohail & Shanmugham, 2003).

Personalization: Flavian (et al 2004) in their study have found the factor that they have named as "personal contact". Karjaluoto (et al 2001) in their study state that non-users' most important belief about internet banking service is that it provides no personnel service thus creating a reluctance to use that service. However, in the development of trust, a very important concept especially for banking, personal interaction plays a great role. It is crucial along the reconfiguration of relational bonds with clients in the banking sector (Kervenoael and Aykac 2008).

Convenience: Convenience may be the most important reason why people choose to shop online. This is also true for internet banking. Internet banking is beneficial to customers since it creates savings in costs, time, effort and space it offers, its quick response to complaints and its delivery of improved services makes it easier for consumer to deal with their banking applications (Turban et. al, 2000). It could be said that time and cost savings and freedom from place are among the main reasons of Internet banking acceptance (Sathye, 1999; Robinson 2000; Pikkarainen et. all., 2004; Turban et. al, 2000; Polatlıoğlu and Ekin, 2001; Black et.al, 2002; Howcroft et al., 2002).

Efficiency: To create efficiency web design is another important factor for the satisfaction of Internet banking consumers since it influences the ease of use, friendliness of the system, and navigation ability of consumers thus the overall efficiency of the system. Contents of the website, content layout and updates are important in the design of the web (Cristobal et. al, 2007). In order to improve web site usability, banks may wish to examine the navigational functions and compatibility of Web site software and hardware (Waite and Harrison, 2004). Overall, in the design of internet banking, offering enough information to compare products and making a good choice on a consumer friendly and attractive site is very important (Jun and Chai, 2001).

Activities to improve Web site usability may have limited success, since speed of download is also dependent on user software and method of connection. Thus to manage expectations in these areas it may be necessary to inform users of the most desirable technical specifications (Waite and Harrison, 2004). Another solution would be, as suggested by Sathye (1999), appropriate customer education to create familiarity with the technology and user experience and competence. Network speed, user friendliness of the technological system and user involvement in the system are important factors for the adoption of internet banking. However all those factors in turn are related to technological background of the system used. Provision of infra structural facilities is a factor that could lead to quicker diffusion of innovation. Studies reveal that there is a significant correlation between the website downloaded speed and web users' satisfaction (Sohail, & Shanmugham, 2003). Errors that might be inherent in the telecommunications system could also limit the adoption of Internet banking (Howcroft et. al, 2002), since it influences the security and the ease of use of the internet banking. Meuer (et al, 2000) and Joseph (et al, 1999) state that technological failures or bad technological design are sources of customer dissatisfaction in internet banking.

THE EVOLUTION OF INTERNET BANKING IN TURKEY

Liberization trends of the early 1980s introduced a major change to Turkish banking industry. Structural changes took place, where technology driven innovation emerged as an important factor (Ozdemir, Trott et al. 2007).Turkish banking sector has not only grown in numerical terms, it has also expanded in terms of technology and the range of new services. The sector has been viewed as the leader of technological innovations in Turkey (Polatlıoğlu and Ekin, 2001). Turkish banks have been implementing

programs and systems to provide better quality services (Yavaş et al., 1997) and innovative products like multi-channel banking services to their clients. Parallel to the Internet banking developments abroad, a number of leading Turkish banks have offered full-service Internet banking since 1997. Türkiye İş Bank was the first bank to introduce internet banking services in 1997 followed by Garanti Bank in the same year (Polatlıoğlu and Ekin, 2001). It is found that Turkish banks offer a wider range of services from their internet branches compared to British banks, despite the fact that the UK has a more favorable environment for internet banking in terms of the level of sophistication of its banking sector and technological infrastructure (Sayar and Wolfe, 2007).

The increase in the adoption of internet banking services and in the number of banks offering internet banking in Turkey is mainly due to the fact that Turkish consumers are becoming increasingly computer literate having access to internet in larger numbers. Though the targeted international banking consumers in Turkey represent a rather small portion of the entire banking sector, they represent the upscale and more profitable types of bank customers (Polatlıoğlu and Ekin, 2001). Exploratory analysis of Polatlıoğlu and Ekin (2001) in the Turkish market suggest that internet banking has a high potential to be successful with a high level of acceptance by the Turkish consumers who have access to the internet.

One factor that determines the level of demand for internet banking is the number of people that have access to internet (Sohail and Shanmugham, 2003). Thus, computer ownership and internet access rates could give some idea about the potential for this sector. In the Turkish market, computer usage rates for households between the years 2007-2011 has shown an increase form 19,7% to 42,9% and internet usage rate has increased from 30,1% in 2007 to 45% in 2011. (TUIK, 2011).Reports indicates that 26 of the 46 banks in Turkey provide Internet banking services. As of September 2011, total number of individual retail customers that logged on to their Internet bank at least once, and at least once during the last one-year were approximately 17 million, and 9 million, respectively. Internet banking usage is mainly concentrated in the biggest cities of Turkey. İstanbul, Ankara and İzmir are the cities that have the highest internet banking usage rates both for the entrepreneurs and for the individuals respectively (TBB, 2011).

METHODOLOGY

Research Objective

The aims of this research are to:

- identify the importance of attributes related to internet banking usage;
- identify the perceived usefulness of internet banking usage;
- explore if demographical factors are important in identifying the target customers for internet banking;
- develop a tool to predict the potential internet banking users and non-users by using demographic variables.

Data Collection

The research was conducted in three stages. The first stage is, a comprehensive review of literature regarding attributes of Internet banking usage. In the second stage, a survey was prepared and pre-tested to see whether the questions were appropriate to the Turkish banking context. In the third stage, a web server was hired to administer the questionnaire to internet users over the age of 18. The survey was put on the web server on 26 January 2009 through 26 February 2009. In order to obtain the responses, e-mail distribution lists were also used. The survey was conducted over the web because we just wanted to reach people that used internet effectively since it is the first requirement for using internet banking.

Questionnaire Design

A questionnaire was used as the instrument of data collection. 506 usable responses were obtained at the specified time period. The first part of the questionnaire included demographic questions and the second part included 30 questions (first scale) related with the attributes of internet banking usage and 6 questions (second scale) related with the perceived usefulness of internet banking usage. The reliability of the first scale was found to be as 0.9316 which is considered acceptable for exploratory research (Nunnally, 1978). For the second scale, reliability was found to be as = 0.8885 which is again acceptable.

Demographic variables used in the research were: age, gender, income, education, internet banking usage, internet usage period, internet banking usage period, frequency of internet banking usage and amount of

internet banking usage. Overall in the first scale related with the attributes of internet banking usage, 8 of the items related with efficiency and 3 of the items related with privacy were taken from (Parasuraman et al 2005). Convenience and accuracy related questions which consisted of 8 items were taken from Ibrahim et al (2006)'s study. Personalization and Contact related questions were also established using 2 different scales. From the scale of Ibrahim (et al 2006)'s study, 3 of the 4 questions related with personalization were taken. Contact scale was taken from Parasuraman (et al 2005)'s study. From this study 2 of the 3 items were taken. Security and trust questions were taken from Pikkareinen (et al 2004)'s study. However just 5 questions were taken from the original 6 questions. Some of the questions were not used since they were found not to be appropriate for the Turkish context in the pre-test. The scale items were measured on a five-point Likert scale, where 1=least important, 2=less important, 3=moderately important, 4=important and 5=extremely important.

Six perceived usefulness questions were taken from Pikkareinen et al (2004)'s study. Perceived usefulness of Internet banking was also measured on a five-point Likert scale, having the following properties: 1= Strongly disagree, 2= Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree.

Method of Analysis

To address the research questions, a mix of statistical analysis were conducted. A cluster was undertaken to classify Internet Banking users and non-users according to their demographic specifications. Factor analysis was used to shed light on the attributes that are important for Turkish consumers in Internet Banking usage. Finally, discriminant analysis was used to predict to potential internet banking users and internet banking non-users by using demographic variables.

FINDINGS

First, profile of the respondents will be given, followed by the cluster analysis of Internet bank users and non-users, fallowed by the factor analysis and discriminant analysis results.

Profile of the Respondents

Table 1 demonstrates the demographic profile of the sample. As could be seen from the Table, while 107 of the respondents do not use online

banking, 399 respondents do use internet banking. The total distribution of gender is almost equal and most of the participants are between the ages of 18-39. Considering the Turkish population, the distribution of the sample could be said to be a good representative of the general gender and age distribution. However, it can be seen that males who use Internet are more than females who use Internet. This finding supports the literature where Flavian (et al 2006) indicated that women were less likely to conduct their banking activities online. Most of the participants have at least a university degree. Almost half of the respondents stated that their monthly income is at least 3000 TL or over and most of the respondents have been using internet for at least 6 years.

Cluster Analysis

The general objective of cluster analysis is to participate, or sub-divide, a set of objects into homogeneous sub-groups, or into a hierarchical arrangement of homogenous sub-groups, so as to determine the characteristics specific for each cluster. To segment our respondents, we have used demographic variables. Since demographic profiles represent information that is easily obtained by companies and demographic characteristics are the mostly used tools to segment markets (Branca, 2008). Also in the literature a typical internet banking user is usually identified as to be younger, better educated, wealthier and with a good knowledge of computers especially internet (Al- Somali, et al 2009). Among the demographic variables especially age has been found to be an important attribute in online banking acceptance studies (Karjaluoto, 2002; Flavian et. al., 2006; Gan et. al., 2006). Also Polasik, and Wisniewski (2008) in their study, found gender to have a statistically significant impact on the decision to conduct banking operations on the internet. Finally income level has also been found to be influential in the adoption decisions of consumers (Karjaluoto, 2002; Flavian et. al., 2006). Thus using the demographic variables for clustering purposes was thought to be appropriate.

Thus in the context of this research, a hierarchical approach (using Ward's method) was undertaken through MATLAB. The cluster analysis was undertaken both for the respondents who do not use internet banking and for the ones who do use internet banking.

Table 1: Frequencies of Demographic Variables

	TOTAL		**USER**		**NON-USER**	
	n	%	n	%	n	%
Gender						
Male	274	54.2	226	56.6	48	44.9
Female	232	45.8	173	43.4	59	51.1
Age						
18-28	174	34.4	128	32.1	46	43
29-39	224	44.3	194	48.6	30	28
40-50	82	16.2	62	15.5	20	18.7
>51	26	5.1	15	3.8	11	10.3
Education						
Primary School	1	.2			1	.9
Secondary School	2	.4	1	.3	1	.9
High School	15	3	11	2.8	4	3.7
Undergraduate	236	46.6	189	47.4	47	43.9
Graduate	121	23.9	84	21.1	37	34.6
PhD	131	25.9	114	28.6	17	15.9
Income						
500 TL – 1000 TL *	15	3	9	2.3	6	5.6
1001 TL – 1999 TL	120	23.7	85	21.3	35	32.7
2000 TL – 2999 TL	132	26.1	110	27.6	22	20.6
> 3000 TL	239	47.2	195	48.9	44	41.1
Internet Usage Period						
< 1 year	6	1.2	1	.3	5	4.7
1-3 year	14	2.8	11	2.8	3	2.8
4-6 year	62	12.3	37	9.3	25	23.6
> 6 year	423	83.8	350	87.7	73	68.9

* Minimum wage for Turkey is approximately 600 TL.

Cluster Analysis for Non-Users of Internet Banking: Two significant clusters were obtained for non-users of Internet Banking, which could be seen below (Table 2). Cluster 1 composes of %47.6 of the non users and Cluster 2 composes of %52.3 of the non users.

Table 2: Two Clusters of Respondents Who Do Not Use Internet Banking

	Cluster 1 (n1=51) (%47.6) (Middle Income Youngsters)	Cluster 2 (n2=56) (%52.3) (Higher Income Middle Aged Customers)	Significance
Age			**.000***
18-28	46	0	
29-39	4	26	
40-50	1	19	
>50	0	11	
Gender			**.058**
Male	18	30	
Female	33	26	
Education			**.019***
Primary school	0	1	
Secondary School	0	1	
High School	2	2	
Undergraduate	28	19	
Graduate	19	18	
PhD	2	15	
Income			**.000***
500 – 1000 TL	6	0	
1001 – 1999 TL	26	9	
2000 – 2999 TL	10	12	
> 3000 TL	9	35	
Internet Usage Period			**.046***
< 1 year	1	4	
1-3 year	3	0	
4-6 year	16	9	
> 6 year	30	43	

*Significance level is 0.05

Cluster 1. (Youngsters with middle income): 90% of this cluster is between the ages of 18-28, 35% of whom is male, and 65% is female; 72% of this cluster has undergraduate and graduate education; 62% of this cluster has monthly income between 500 TL – 1999 TL; and 90% has also been using internet for more than 4 years.

Cluster 2. (Higher income, middle age group): In this cluster, there is no one between 18-28 ages however 56% is between 29 and over; 53% of the respondents is male and 47% is female; 83% has monthly income over 2000 TL and 76% of the respondents has been using internet for over 6 years.

Age, Income, Education and Internet Usage Period were the demographic variables that were used for identifying the clusters of Internet Banking non-users. However, gender was found not to be effective in segmentation of non-users.

Cluster Analysis for Users of Internet Banking: 399 respondents who are using internet banking were grouped into 3 clusters. Age, income, education and internet usage period were also found to be effective in identifying Internet Banking users as non users. The other 3 variables which are: internet banking usage period, internet banking usage frequency and internet banking usage amount were used to identify the differences between clusters as could be seen at Table 3.

Cluster 1. (Low Income Youngsters): 76% of the respondents in Cluster 1 are between 18-28 ages where 73% have undergraduate education; 72% of the respondents has monthly income between 1001 and 1999 TL; 75% have been using internet for over 6 years; 72% have been using internet banking for over one year; and 44% have been using internet banking at least once a week.

Cluster 2. (Higher Income Youngsters and Middle Aged): 76% of the respondents are between 18-39 ages, 39% have undergraduate education; 70% have monthly income higher than 3000 TL; 89% have been using internet for over 6 years, 64% have been using internet banking for over 3 years, and 48% have been using internet banking at least once a week.

Cluster 3. (Middle Income Middle Aged): 63% of the respondents are between 29-39 ages. 73% of the respondents have PhD. 83% of the respondents have income more than 2000 TL. 92% of the respondents have been using Internet for more than 6 years. 72% of the respondents have been using Internet banking for more than 3 years. 49% of the respondents have been using Internet banking at least once a week.

In both of the cluster analyses; age, income, education, internet usage period were used as identifier variables where gender was found to be ineffective for clustering Internet Banking users in Turkey.

Table 3: Three Clusters of Respondents Who Use Internet Banking

	Cluster 1 (n1=76) (%19)	Cluster 2 (n2=168) (%42)	Cluster 3 (n3=155) (%38)	Significance
Age				**.000***
18-28	58	50	20	
29-39	17	79	98	
40-50	1	31	30	
>50	0	8	7	
Gender				**.300**
Male	38	94	94	
Female	38	74	61	
Education				**.000***
Primary school	0	0	0	
Secondary school	0	1	0	
High School	0	11	0	
Undergraduate	56	133	0	
Graduate	20	23	41	
PhD	0	0	114	
Income				**.000***
500 TL – 1000 TL	8	0	1	
1001 TL – 1999 TL	55	5	25	
2000 TL – 2999 TL	13	47	50	
> 3000 TL	0	116	79	
Internet Usage Period				**.000***
< 1 year	1	0	0	
1-3 year	4	5	2	
4-6 year	14	13	10	
> 6 year	57	150	143	
Internet Banking Usage Period				**.000***
< 1 year	16	14	8	
1-3 year	27	42	29	
> 3 year	28	109	113	
Internet Banking Usage Frequency				**.001***
At least 1 a day	12	51	23	
At least 1 a week	34	82	77	
At least 1 a month	17	24	48	
Use less frequent	6	8	4	
Internet Banking Usage Amount				**.021***
Very little	11	14	10	
Little	13	13	21	
Most	37	90	92	
All	10	45	29	

*Significance level is 0.05

Factor Analysis

30 variables related with internet banking usage and customers' perception of those attributes were grouped by using factor analysis. As could be seen from Table 4, the scale was grouped into 5 factors as "security and trust", "efficiency ", "convenience and accuracy", "personalization and contact", and "privacy". The explained variance of the five groups is 64.874%. The Cronbach Alpha values for 5 dimensions vary from lowest .8811 to highest .9169 which is acceptable according to Nunnlay (1978).

The first factor "security and trust" explains 15.371 % of the total variance. "Security and trust" has a mean of 4.8271 and a standard deviation of .39027. This factor is the second most important factor in explaining the internet banking usage of the respondents. It comprises of 7 variables related with security and trust. This finding is expected for Turkish banking sector because of security problems that have emerged in the internet usage in previous years and consumers' concerns related with this issue. Also it supports some of the existing literature (Suh & Han 2003; Akıncı, Aksoy, Atılgan, 2004; Polasik and Wisniewski, 2009). However, there are also studies that do not support this finding (Pikkarainen et. all. 2004; Karjaluoto et all. 2001) especially in more developed nations.

The second factor named as "efficiency" comprises of 8 variables related with the factors that make it easy and quick to use the internet site, thus at the same time, creates efficiency for the bank customer in the usage of this site. It is also the second most important factor. "Efficiency" has a mean value of 4.6573 and a standard deviation of .41865. This factor explains 15.317% of the total variance. It shows that ease of use of the site, time savings and efficiency created by internet banking are very important for the bank customers.

Third factor named "convenience and accuracy" comprises of 7 variables explaining 12.306% of the variance. "Convenience and accuracy" has a mean of 4.7057 and a standard deviation of .40193. The fourth factor named "Personalization and Contact" has been found to be an important factor in our research. Personalization and Contact is composed of 5 variables and explains 11.266% of the variance. Mean and standard deviation of "personalization and contact" factor are 4.0827 and .62307 respectively. Finally the last factor is "privacy" consisting of three variables, which explains 10.212% of the variance and has a mean of 4.9114 and a standard deviation of .35201.

Table 4: Factor Analysis Results of Internet Banking Usage Attributes

	F1	F2	F3	F4	F5
Security and Trust (α =.9169)					
All operations in electronic banking are guaranteed	.541				
Online banking will provide secure and reliable services	.610				
I trust in the ability of an online bank to protect my privacy	.692				
I trust in the technology an online bank is using	.816				
I trust in an online bank as a bank	.833				
I am not worried about the security of an online bank	.848				
Influence of security on using an online bank	.785				
Efficiency (α= .8861)					
The site makes it easy to find what I need		.726			
It makes it easy to get anywhere on the site		.694			
It enables me to complete a transaction quickly		.671			
Information at the site is well organized		.712			
It loads its pages fast		.747			
This site is simple to use		.607			
This site enables me to get on to it quickly		.699			
The site is well organized		.672			
Convenience and Accuracy (α=.8611)					
All my banking needs will be included in the online banking menu options			.646		
All my online banking transactions will be performed accurately			.586		
All my online banking transactions will be processed efficiently			.667		
There will be no waiting time involved in obtaining online banking services			.666		
Online banking services will be easy to use			.606		
Online banking services will have convenient hours of operation			.612		
Accurate records of all my online banking transactions will be provided			.709		

Table 4: Factor Analysis Results of Internet Banking Usage Attributes, cont.

	F1	F2	F3	F4	F5
Personalization and Contact (α=.8238)					
This site has customer service representatives available online.				.746	
It offers the ability to speak to a live person if there is a problem.				.638	
Online banking service will be personalized.				.721	
Online banking will acknowledge me by name on the screen during the transaction				.695	
Online banking will provide brochures to educate me on how to use the services				.721	
Privacy (α= .8707)					
It protects information about my online-banking behavior					.839
It does not share my personal information with other sites					.821
The site protects information about my credit card					.693
Explained Variance	**15.7**	**15.3**	**12.3**	**11.2**	**10.2**

Table 5: Factor Analysis Results of Perceived Usefulness of Internet Banking Discriminant Analysis

Perceived Usefulness of Internet Banking (α= .8885)	**F1**	**Mean**	**Std**
Using an online bank for my banking services increases my productivity	.814	4.64	.605
Using an online bank enhances my effectiveness of utilizing banking services	.873	4.62	.709
Using online bank makes it easier for me to utilize banking services	.871	4.74	.512
Using an online bank enables me to utilize banking services more quickly	.850	4.77	.466
Using an online bank improves my performance of utilizing banking services.	.646	4.24	.712
Overall, an online bank is useful for me to utilize banking services	.833	4.67	.573
Explained Variance	**66.939**		

Perceived usefulness of internet banking was measured by six items taken from the work of Pikkarainen et. al, (2004). Those items were grouped using factor analysis and all the items were loaded to one factor explaining

66.939% of the total variance (Table 5). The mean related with the statements shows that respondents perceive usage of internet banking helpful in increasing their effectiveness, productivity and speed in banking operations.

DISCRIMINANT ANALYSIS

Discriminant analysis is used to predict the class (being a user or non-user of internet banking) of a new observation with unknown class. For a *k* class problem *k* discriminant functions are constructed. Given a new observation, all the *k* discriminant functions are evaluated and the observation is assigned to class *i* if the i^{th} discriminant function has the highest value (Hair et. al., 1998).

In the last part of this research, it was decided to discriminate among those who will use online banking and will not use online banking according to the determinant factors used in online banking usage, as well as to predict "group membership" of these two segments. The two determinants of online bank usage by people were employed as predictors in the discriminant analysis. The prior two groups of people were coded as "the people using online banking" and "the people not using online banking" and used in the same model as a dependent variable. The classification matrix shows all the people under original group cases were 78.9 % correctly classified into two separate groups or segments (people who use online banking and people who don't use online banking). This finding reflects that people are significantly discriminated from the simulated data.

Further details on the discrimination among these two segments of people were obtained as shown in Table 6. The discriminator factors of online bank usage as shown in Table 7 are: income, and internet usage period.

Table 6: Classification Function Coefficients

	Using Online Banking Applications	
	User	Non-User
Income	2.614	2.347
Internet usage period	13.724	13.041
(Constant)	-30.840	-28.782

F1 (Online banking user) = 2.614 Income + 13.724 Internet Usage Period – 30.840,

F2 (Non-user) = 2.347 Income + 13.041 Internet Usage Period – 28.782.

Suggested classification functions form the basis for assigning each case (potential internet bank customer) to a class (internet user or nonuser). In this research, there are two functions F1 for online banking users and F2 for non-users. Potential customers could be identified as probable internet banking users or no-users by using the functions. The potential customers would be assigned as probable user or non-user of internet banking by looking at the function that gives the highest results.

CONCLUSIONS AND RECOMMENDATIONS

The aim of this paper was to explore if demographical factors are important in identifying the target customers for internet banking and if they could be used to segment the market; to identify the perception of internet banking customers about the attributes of internet banking usage and, to clarify if consumers perceive internet banking as a useful alternative channel for their banking operations. This study is important since it sheds light on the perceptions of Turkish consumers regarding internet banking usage; and offers a tool for marketing managers to identify the probability of their potential customers to use internet banking. This knowledge would be helpful for marketing managers in designing more customer centric strategies by improving the performance of the system according to the needs of their customers thus also enhancing their customer relationship management efforts while facilitating the adoption of internet banking usage.

Thus in this paper a convenience sample of 506 internet users were reached through an online survey. The findings of the study revealed two clusters of non users of internet banking and three clusters of the users of internet banking. This segmentation is important since bank managers can develop strategies for the people in these clusters. It is identified that age and income level are two most important variables in defining segments for both internet banking users and non users. Thus in identifying target customers bankers should concentrate more on age and, income. Also design different communication strategies for different age groups. Further discriminant analysis functions developed in the research can be used by the bank managers to identify potential internet banking users and non-users

30 variables related with the determinants of internet banking usage and customers perception of those determinants were grouped by using

factor analysis and five factors named as "efficiency ", "security and trust", "convenience and accuracy", "personalization and contact", and "privacy" were found. The factor that explained the variance at most was found to be "security and trust" followed by "efficiency". "Security and trust" factor was found to be the factor with most factor loadings. However, it is not enough just to concentrate on improving security since a failure to meet the expectations of internet banking customers on any attributes would result not just as a dissatisfaction of the customer however the dissatisfied customer could reach many others through the internet creating a negative word of mouth communication.

Trust affects consumers' relationship commitment to banks and willingness to engage in online transactions. Perceived security and privacy issues have an important role in the formation of trust (Mukherjee& Nath, 2003).Thus, banks should concentrate on creating customer trust firstly. Customer confidence on internet banking would also largely depend on how banks deal with erroneous transactional and security concerns that may occur during internet banking. Thus, it is very important to solve the problems immediately and inform clients about it.

"Efficiency" factor could create an important usage barrier for consumers if the web site makes it harder for consumers to finalize their transactions. So it is very important to create a user friendly web-site. While designing the web site, marketing managers should keep in mind that some customers would prefer more of a human touch, which might be created by direct contact to a live agent. That would help customers solve their problems with the help of a real person immediately and reduce the perceived risks relate to the usage of the system.

As for the non-users, to attract them it would be a valuable strategy for marketers to educate potential users to improve their adoption process, and to minimize the perceived risks. Thus, it is important for software developers to pay attention to the informative content of services. In the marketing process of internet banking services, marketing experts should stress the benefits of internet banking usage. Banks should concentrate, in their advertising, more on informative issues rather than building only corporate images with less informative advertisements.

Personalization is also an important factor that makes it easier for people to use internet banking. For that, digital illusion of personalized interaction can be used in generating connections with the customer online. When used correctly, web sites can be a great tool in providing the feeling and experience of face-to-face communication and interaction. From the use of language on web sites to special features for different customers,

experiences can be designed for people to feel as close as possible to visiting a bank's branch and communicating with the bank's employees. Attention should be devoted to benefits provided for customers via their internet usage and premium experience concepts e-banking usage should be designed (Kervenoael et.al, 2006).

LIMITATIONS AND FURTHER STUDY

Convenience sample is an important limitation of this study. Another limitation that could be eliminated in future studies is that sample could have been selected from the actual internet bank users from the banks' client list. Thus, enabling researchers to develop bank specific strategies.

Further research should be undertaken to identify why people do not use internet banking, and to identify what could be done to attract non-users. Also the finding of our study could be tested further in another sample to see if there are any differences.

REFERENCES

Akıncı S., Aksoy, Ş., Atılgan, E. (2004), "Adoption of internet banking among sophisticated consumer segments in an advanced developing country", *International Journal of bank marketing,* 22(3): 212-32.

Al- Somali, S. A., Gholami, R., and Clegg, B., (2009), "An investigation to online banking in Saudi Arabia" *Technovation*, 29, 130-141.

Aladwani, A. (2001), "Online banking: a field study of drivers, development challenges, and expectations", *International Journal of Information Management*, 21, 213-25.

Bomil S., Ingoo H. (2002), "Effect of Trust on Consumer acceptance of internet banking", *Electronic commerce Research and Applications*, 1, 247-263

Branca, A.S. (2008), "Demographic Influences on Behaviour: An Update to the Adoption of Bank Delivery Channels" *International Journal of Bank Marketing*, 26 (4), 237- 259.

Cengiz, E., Ayyıldız, H. et al. (2007). "Effects Of Image And Advertising Efficiency On Customer Loyalty And Antecedents Of Loyalty: Turkish Banks Sample." *Banks and Bank Systems,* 2(1), 56-80.

Celik, H. (2008), "What determines Turkish customers' acceptance of internet banking?", International Journal of Bank Marketing, 26 (5), 353-70.

Cristobal, E., Flavia´n, C., Guinalı´u, M. (2007), "Perceived e-service quality (PeSQ) Measurement validation and effects on consumer satisfaction and web site loyalty", *Managing Service Quality*, 17(3), 317-340.

Dabholkar, P. A., (1996), "Consumer evaluations of new techology based self service options: an investigation of alternative models of service quality", *International Journal of Research in Marketing*, 13(1), 29-51.

Flavian, C., Torres, E., Guinaliu, M.(2004), "Corporate image measurament a further problem for the tangibilization of internet banking services", *International Journal of Bank Marketing*, 22(5), 366-384.

Flavian, C., Guinaliu, M., Torres, E. (2006), "How bricks-and mortar attributes affect online banking adoption", *International Journal of Bank Marketing*, 24(6), 406-423.

Gounaris, S. and Koritos C. (2008), "Investigating the drivers of internet banking adoption decision. A comperison of three alternative frameworks", *Internaional Journal of Bank Marketing*, 26(5), 282-302.

Hair, J.F., Anderson, R.E, Tatham, R.L. and Black, W.C., (1998), Multivariate Data Analysis, *Prentice Hall*, New Jersey.

Haris, L. C. and Goode M.M.H. (2004), "The four levels of loyalty and the pivotal role of trust: a study of online service dynamics" *Journal of Retailing*, 80, 139-158.

Hitt, L.M. and Frei, F.X. (2002), " Do better consumers utilize electronic distribution channels? The case of PC banking", *Management Science*, 48(6), 732-48.

Howcroft, B., Hamilton, R. and Hewer, P. (2002), "Consumer attitude and the usage and adoption of home-based banking in the United Kingdom", *International Journal of Bank Marketing*, 20(3), 111-121.

Ibrahim, E.E., Joseph, M., Ibeh, K.I.N. (2006), "Customers' perception of electronic service delivery in the UK retail banking sector", *International Journal of Bank Marketing*, 24(7), 475-493

Joseph, M., McClure, C., Joseph, B. (1999), "Service quality in banking sector: the impact of technology on service delivery*", International Journal of Bank Marketing*, 17(4), 182-91.

Jun, M. and Chai, S. (2001), "The key determinants of internet banking service quality: a content analysis", *International journal of Bank Marketing*, 19(7), 276-291.

Karjaluoto,H., Mattila, M., Pento, T. (2002), "Electronic banking in Finland: Consumer beliefs and reactions to a new delivery channel", *Journal of Financial Services Marketing*, 6(4), 346-61.

Kervenoel, R.D., Soopramanien,D., Elms,J., Hallsworth,A. (2006), "Exploring the value through integrated service solutions: the case of e-grocery shopping", *Managing Service Quality*, 16(29), 185-202.

Liao, S. , Shao, Y.P., Wang, H. and Chen, A. (1999), "The adoption of virtual banking: an emprical study", *International Journal of Information Management*, 19, 63–74.

Liao, Z., Cheung, M.T. (2002), "Internet based e-banking and consumer attitudes: an empirical study", *Information & Management*, 39, 283-295.

Meuer, M.L., Ostrom, A.L., Roundree, R.L. and Bitner, M. (2000), "Self-service technologies: understanding customer satisfaction with technology based service encounters", *Journal of Marketing*, 64, 50-64.

Mols, N.P., Bukh, P.N.D. and Nielsen, J.F. (1999), "Distribution channel strategies in Danish retail banking", *International Journal of retail and distribution management,* 27(1), 195-201.

Mukherjee, A. and Nath, P. (2003), "A model of trust in online relationship banking" *International journal of bank marketing*, 21(1), 5-15.

Nunnaly, J.C. (1978). *Psychometric Theory*, McGraw-Hill, New York, NY

Ozdemir, S., P. Trott, P., Hoecht, A. (2007), "New service development: Insights from an explorative study into the Turkish retail banking sector." *Innovation: Management, Policy & Practice*, 9(3/4), 276-289.

Özdemir, S., Trott, P. and Hoecht, A, (2008), "Setting internet banking adopter and non-adopters in the Turkish retail banking sector", International Journal of Bank Marketing, 26 (4), 212-236.

Pikkarainen, T., Pikkarainen, P., Karjaluoto, H., Pahnil, S. (2004), "Consumer acceptance of online banking: an extension of the technology acceptance model", *Internet Research*, 14(3), 224-235.

Polatlıoğlu V.N., Ekin,S. (2001), "An empirical investigation of Turkish consumers' acceptance of internet bankig services", *International Journal of Bank Marketing*, 19(4), 156-65.

Polasik, M, and Wisniewski T. M (2009), Empirical Analysis of Internet Banking Adoption in Poland", *International Journal of Bank Marketing*, 27(1), 32-52.

Rexha, N., John, R.P. and Shang, A.S. (2003), "The impact of the relational plan on adoption of electric banking" *Journal of services marketing*, 17(1), 53-67.

Ribbink, D., Riel, A., V. Liljander and Streukens, S. (2004), "Comfort your online customer: quality, trust, and loyalty on the internet", *Managing Service Quality*, 14(6), 446-56.

Robinson, T., (2000), "Internet banking still not a perfect marriage" Informationweek.com, April 17, 104-106.

Sathye, M. (1999), "Adoption of internet banking by Australian consumers: an empirical investigation", *International Journal of Bank Marketing*, 17(7), 324-334.

Sayar, C., Wolfe, S.(2007), "Internet Banking Market Performance: Turkey versus the UK", *International Journal of Bank Marketing,* 25(3), 122-141.

Shih, Y., Kwoting, F. (2004), "The use of decomposed theory of planned behavior to study internet bankng in Taiwan", *Internet Research*, 14(3), 213–223.

Sohail, M. S.,Balachandıran, S. (2003), "E- banking and customer preferences in Malaysia: An Empirical Investigaton", *Information Sciences*, 150(3/4), 207-217.

Suh, B. & Han, I. (2003), "The Impact of Customer Trust and Perception of Security Control on the Acceptance of Electronic Commerce", International Journal of Electronic Commerce, 73, 135-161.

TUİK, 18 August (2011), "2011Yılı Hane Halkı Bilişim Teknolojileri Kullanım AraştırmasıSonuçları",http://www.tuik.gov.tr/PreHaberBultenleri.do?id=2055, access date 1/1/2011.

Turban, E., Lee, J., King, D. and Chung, H. M. (2000), *Electronic Commerce: A Managerial Perspective*, Prentice-Hall, Upper Saddle River, NJ.

Türkiye Bankalar Birliği (2011), İnternet ve Mobil Bankacılık Hizmetleri Eylül 2011, http://www.tbb.org.tr/pretablo.do?tb_60&usp_id=2, access date 5/10/2011.

Waite, K., Tina H., (2004), "Online banking information: what we want and what we get" *Qualitative market research: an international journal*, 7(1), 67-79.

Yavaş U., Z. Bilgin, and Shemwell, D.J. (1997), "Service quality in banking sector in an emerging economy: a consumer survey", *International journal of bank marketing*, 15, 217-23.