Adopters and non-adopters of Internet banking: A segmentation study.

Abstract

Purpose – This study examines Internet banking adoption and resistance behaviour in Greece in order to develop profiles of adopters and non-adopters of the service. The aim is to illustrate customers' resistance behaviour towards Internet banking. Existing research does not explain resistance behaviour, since it does not clearly distinguish non-adoption from resistance. Consequently, it has not recognized the different types of non-adoption.

Design/methodology/approach – A measuring instrument was developed and utilized in a survey of a convenience sample of 1,200 customers. The derived dimensionality of the relevant perceptual variables was used to explore the existence of different customer segments through cluster analysis.

Findings – Three segments were identified, where the description of their profiles is based on customer perceptions of the service and general usage data. Across these segments adopters and non-adopters were found to have different characteristics. With regard to demographics, only income was found to be associated with segment membership.

Research limitations/implications – Perceptual and usage variables are useful in market segmentation. The results also suggest the possible existence of sub-groups within each segment characterized by different aspects of resistance behaviour. Further research could identify and explore their potential and study non-adopter behaviour.

Practical implications – The managerial implications of the new evidence offered by this study are discussed.

Originality/value – The customer segments identified in this study are based on new links found between the factors that drive diffusion and resistance to diffusion and general usage data. Non-adopters across the segments resist for different reasons. This has implications for the targeting of campaigns.

Keywords: segmentation, adoption and resistance behaviour, Internet banking

Paper type: research paper

Introduction

Technological developments in the retail financial services industry have significant implications for banks' marketing efforts, and especially their distribution and communications policy since they impact on the interface with the customer. Understanding the factors that influence the diffusion of technological innovations is important in identifying market opportunities (Rogers, 1995). The challenge for marketers is to overcome the resistance of the majority of consumers to adopting and using new computer-based technologies, such as Internet banking. New applications based on technology must be tailored to the needs of different customer segments (Burke, 2002), and understanding the impact of innovation on different categories of adopters and non-adopters is of potential value to the sector.

The banking sector has experienced rapid developments in the use of technology (Hughes, 2006), and therefore presents a useful context in which new technological interfaces, such as Internet banking have been applied, illustrating the challenges for service marketers. Internet banking, a relatively new such channel, has not yet reached high levels of adoption and use by bank customers (Durkin, 2007). The Greek banking sector has experienced particularly low rates of use [1], and thus it provides a useful context to study the nature of non-adoption across different customer groups. Non-adoption may be passive, relating to lack of perceived need for the service, or it may be the result of active resistance. While a number of aspects may characterize adoption behaviour, it is not clear whether the absence of these factors, or the existence of other factors, characterize resistance behaviour. Recognizing that non-adoption is not always a result of active resistance by customers, are there different types of non-adopters? This paper presents the results of a segmentation study of the Greek banking market by examining Internet banking adoption and resistance behaviour in order to answer this question.

Conceptual background

Market segmentation

The concept of market segmentation is based on the premise that the market presents heterogeneity in consumer needs (Beane and Ennis, 1987), thus different groups of consumers exist where people in each group are similar in certain ways. While it may be possible to segment the total market according to some criteria, such as demographics and usage patterns (Beane and Ennis, 1987), the resulting segments may not be useful in marketing decision making (Alfansi and Sargeant, 2000). In order for the results of a segmentation study to be useful, the derived segments have to be accessible through marketing communications and channels of distribution, measurable, and substantial enough, so that marketing activity can take action (Kotler, 2000). Thus, members in each segment are given a profile according to the criteria chosen by the particular segmentation approach taken and this is useful for targeting and positioning the appropriate marketing response. While several variables can be used to segment a market (Alfansi and Sargeant, 2000; Beane and Ennis, 1987; Kotler, 2000), according to Kotler (2000), market segmentation variables are usually selected from four broad areas, namely, geographic, demographic characteristics, psychographic characteristics (such as lifestyle), and behavioural characteristics (such as benefits sought, and usage patterns).

Within the financial services market, banks have often relied on the traditional methods of segmentation, such as demographic characteristics (Minhas and Jacobs, 1996). Studies, such as Stafford (1996) on bank service quality, reveal the importance of gender segmentation. However, the widespread use of demographic variables to segment markets has received criticisms (e.g., Harrison, 1994; Machauer and Morgner, 2001; Minhas and Jacobs, 1996). Harrison (1994) emphasizes the value of benefit segmentation in terms of looking at internal aspects of consumer behaviour rather than the observed. Moreover, Minhas and Jacobs (1996) support benefit segmentation of bank customers, since this approach helps to overcome the disadvantages of the other methods. The main strength of benefit segmentation, the authors note, is that the benefits sought have a causal relationship to future behaviour. In addition, they recognize the difficulties in choosing the correct benefits and making certain that consumers' stated motives are their real motives. Machauer and Morgner (2001) found that benefit segmentation is a more effective method of bank customer segmentation, and that customers' attitudes towards technology and information services are of vital importance for segmentation. However, given the limitations of the different approaches of segmentation, a

combination of methods would be a more viable option to utilize the results (e.g., Alfansi and Sargeant, 2000). Therefore, the approach taken in this paper is that research should examine segmentation based on customers' perceptions on the benefits sought, which reflects consumer motivations, as well as on demographics and general usage patterns, which indicates who is in each segment. Thus, the resulting segments are potentially useful for managerial action and for the marketing discipline, in terms of identifying specific actionable groups of customers.

So far, segmentation research based on adoption of new self-service technologies in banking has mainly focused on adopter and non-adopter segments, considering the adopt/not adopt pair as a unique choice outcome (Ozdemir and Trott, 2009). In these studies, the perceived benefits of using the innovation together with customer demographics were used to profile the segments. Although the combination is useful, it does not consider the possible heterogeneity of non-adopters (Laukkanen *et al*. 2008; Lee *et al*., 2005), thus it has not explained the range of behaviours involved. Non-adopter segments may reject or delay for different reasons, or passively resist the adoption of the service. Rogers (1995) proposed that individuals differ on the basis of their innovativeness and classified them as innovators, early adopters, early majority, late majority, and laggards. While this framework is easy to use and comparisons can be made, it does not consider resistance behaviour and its application has been questioned in relation to technological innovations (Mahajan *et al*., 2000). As suggested by Moore (1991), the needs of the early market are different from those of the mass market for new technological innovations. Consequently, the above might suggest not only the existence of different types of adopters but also the existence of different types of non-adopters.

Adoption and resistance of new technology

Empirical research on the acceptance of self-service technologies by bank customers has focused on the factors affecting their adoption and usage, mainly through the study of the perceived attributes of these innovations as well as the characteristics of those groups most likely to use such technologies. These studies are mainly based on the theories developed by Rogers (1995), Davis (1989) and Davis *et al*. (1992) and subsequent extensions (e.g., McKechnie *et al*., 2006; Ozdemir and Trott, 2009), with the construct of perceived risk added (Curran and Meuter, 2005). The theories are applied and/or extended to explain adoption and diffusion behaviour towards the technological interface taking a consumers' and a supplier's perspective. In addition, interactivity (Kimiloglou, 2004; Yadav and Varadarajan, 2005b), and emotions (Black *et al*., 2001) seem to be relevant influencing factors. However, there is limited research on resistance behaviour (Ellen *et al*., 1991; Gatignon and Robertson, 1989; Ram and Sheth, 1989). According to Molesworth and Suortti (2001), resistance behaviour results in several outcomes. Rejection is the strongest form of resistance. The other outcomes of such behaviour are postponement or delay, mainly caused by situational factors or the product's perceived complexity (Wood and Moreau, 2006), and innovation opposition which can lead to a further information search resulting either in adoption or rejection. Innovation opposition though causes someone to delay or reject. Thus, resistance behaviour includes rejection and delay. Sheth (1981) proposed the concept of innovation resistance and argued it is the "*less developed concept*" in diffusion research. The work of Ram and Sheth (1989) on innovation resistance conceptualizes such behaviour. Innovation resistance consists of both functional (product usage, product value, and risks of usage) and psychological barriers (traditions and norms, perceived product image) (Ram and Sheth, 1989). In addition,

consumers' resistance may take the form of inertia, that is, inability to change (Yadav and Varadarajan, 2005a). Thus, non-adoption may be related to passive resistance behaviour.

The majority of diffusion research does not distinguish clearly between non-adoption and resistance, since it has not considered the different types of non-adoption that include different levels of resistance which might represent a number of different behaviours. According to Gatignon and Robertson (1989), the variables related to rejection are somewhat different from those related to adoption and therefore rejection is a different form of behaviour than just being the opposite of adoption. However, much research in marketing assumes a symmetrical or linear relationship between the positive and negative factors. That is, they are assumed to be the opposite sides of one dimension. As a result, the literature has not considered the different types of non-adoption that include different levels of resistance which might present different behaviours. For instance, a comparison of the influencing factors in the frameworks of Rogers and that of Ram and Sheth suggests that the factors proposed by Ram and Sheth are essentially the negative sides of the five factors proposed by Rogers. According to Suzuki and Williams (1998), non-adoption may be associated with a lack of need of the innovation and not resistance, also adoption of the innovation and partial use of it may show some degree of resistance to the full use of the innovation. In addition, someone's indifference to the acceptance of an innovation may reveal inertia or non awareness, which suggest passive resistance. Based on the above, non-adoption may be the result of different kinds of resistance or lack of need by individuals. Thus, resistance is a sub-set of non-adoption. Resistance behaviour includes active resistance, which is characterized by delay or rejection, and passive resistance (inertia, lack of awareness), which may be associated with delay or rejection. Hence, non-adopters either resist for different reasons (characterized by the above types of resistance) or simply don't act (characterized by a lack of need). Drawing on the above theories and relevant empirical work, our study investigated the different aspects of bank customer perceptions on Internet banking in Greece to develop profiles of usage and resistance behaviour.

Method

The different aspects of the constructs involved were operationalized based on existing empirical work (Churchill, 1979). An initial measuring instrument of 103 items was developed and qualitative research, in the form of personal interviews with 16 independent judges representing the target population from different backgrounds, was conducted to assess content validity and relevance of the initial items to the research context. This resulted in modifications and elimination of 6 items from the initial list of items. An initial questionnaire was then developed and pilot tested through a convenience sample to assess its quality. Twelve items were eliminated and modifications were made so as to enhance construct validity and to improve response validity. The resulting refined questionnaire with the remaining 79 items (7 point scale) and some general usage and demographic variables (see Appendix) was translated into Greek and utilized together with the English version in a survey. An additional conditional question recording customer intentions was included to indicate propensities of use or non-use, thus examining the different phases of resistance behaviour concerning the latter ('Yes': intention to use; 'No-Yes': later intention to use; 'No-No': rejection). The 'Yes' category includes both existing users and imminent adopters.

Due to cost and time constraints, as well as the need for a workable response rate, a convenience sample of 1,200 cases was chosen from individuals in employment and students in Athens. It was considered that those employed in various positions in public and private organizations through various contracts, and students, are more likely to be Internet users and thus more informed respondents. The chosen sample was based on the availability of contact persons to allow access and support data collection. From the questionnaires distributed through the delivery and collection method to thirteen private organizations, three government departments, and two schools of higher education, 281 complete responses were considered for statistical analyses (a response rate of 23.4%). The profile of sample respondents is provided in Table 4.

Results

Constructs' dimensionality

The 79 perceptual variables (Appendix) were subject to multivariate analyses in order to identify their resulting dimensionality. In that respect, multidimensional scaling (Churchill and Iacobucci, 2002), principal components analysis [2] (Tabachnick and Fidell, 1996), and hierarchical cluster analysis by variables (Hair *et al*., 1998) were employed. The results of the three methods converged in a solution of 5 dimensions explaining the sample's perceptions on the different aspects examined. The variables that represent each dimension are included in the Appendix. Based on the resulting dimensionality and their memberships, the following interpretation is provided.

The first dimension 'INTERACT' (a= 0.95) represents the 'interactivity' variables as these were hypothesized, except two variables representing emotional aspects in another dimension.

The second dimension 'KNOWLEDGE' (a= 0.90) refers to various benefits and knowledge aspects. Benefits and knowledge are found to be interrelated insofar as a person is prone to acknowledge and appreciate whatever proves to be beneficial for himself. Once s/he becomes aware of what is useful or beneficial, s/he builds up a good knowledge of that and cherishes it as a privileged sort of information to utilize in the best possible way.

Respondents perceived that the aspects of 'human interaction' and those related to their concerns on possible 'risks' are grouped together in the third dimension 'HUMANRISK' (a= 0.90). This dimension could suggest that respondents valuing the human interaction with the provider of financial services are more concerned with the different risks involved.

In the fourth dimension 'EMOTIVE' (a= 0.80), emotional elements and the variables related to perceived difficulties are grouped together. The joint variables in this dimension may suggest that, in general, various perceived difficulties raise the negative aspects of the emotive element (Watson and Spence, 2007; Wood and Moreau, 2006), exactly because a person feels that s/he is in an uncertain situation which s/he has to get out of.

The variables referring to 'lack of trial' aspects are grouped together. It seems that 'LACKTRIAL' (a= 0.90) tend not to be associated with the different risks, but rather they represent a different aspect of the marketing phenomenon.

Customer segmentation

The derived dimensionality of perceptual variables was used to classify respondents into customer segments. Non-hierarchical cluster analysis was employed in this respect. In addition, there is an examination of whether the resulting clusters (segments) are associated

with respondent demographics and general usage data (e.g., Alfansi and Sargeant, 2000; Minhas and Jacobs, 1996). Finally, a profile of the derived segments is given and interpretation is provided. The sample size permits the use of non-hierarchical cluster analysis (Schmidt and Hollensen, 2006). Both of the non-hierarchical and hierarchical methods used in this section are non-overlapping methods, that is, they produce clusters where it is not possible for a respondent to be a member of more than one cluster (Schmidt and Hollensen, 2006). While overlapping methods would provide a superior description of the sample, since they do not assume that clusters are exclusive thus considering the possibility that a respondent may be a member of two or more clusters, they are not usually applied in marketing research because of interpretation problems (Schmidt and Hollensen, 2006). For example, the case where a respondent weights highly on two clusters or weights equally across all clusters would present interpretation difficulties (Schmidt and Hollensen, 2006). In respect to this, principal components analysis of the 78 variables (one variable was eliminated because it loads below 0.30 across all components) was performed for the 5 components solution (explaining 48.3% of variance). In order to get the component/factor scores, components were rotated through the VARIMAX method and the rotated component solution includes variables with loadings greater than 0.40. Factor scores were extracted through the 'Regression' method and saved. The matrix of factor scores was clustered through the K-means algorithm since factor scores are uncorrelated and the statistics produced are invalid for correlated variables (Schmidt and Hollensen, 2006).

Moreover, given that cluster analysis is highly sensitive to outlier cases, the K-means clustering was chosen since the results through this method would be less influenced by outliers in the data (Hair *et al.*, 1998). Hierarchical clustering methods are more susceptible to outlier cases and early combinations of cases may persist throughout the analysis, leading to invalid results (Hair *et al.*, 1998). Outlier cases concern respondents that are very different from all others because they present a unique combination of characteristics (Hair *et al.*, 1998). Such cases were first identified and evaluated in terms of their possible impact. The K-means algorithm was first run with the number of clusters set at 30 (approximately 10% of observations) (Schmidt and Hollensen, 2006). The procedure revealed 14 outliers in clusters with one, two, and three member cases. A variable was defined representing outliers, where the outlier cases received the value of 0 and the rest of the cases received the value of 1. Chi-square tests were run between this variable and each of the demographic variables to examine whether there are any significant differences. Results revealed no significant differences between the outlier cases and the rest of the respondents in the sample on their demographic characteristics. Similarly, there is no association between the outlier variable and any of the general usage variables. However, there is an association between the outlier variable and intentions to use the service within the next 12 months, and the outlier cases are significantly different from the rest of the respondents concerning their responses to a number of perception variables. Thus, these respondents recorded a unique combination of values across the perception variables. However, their demographic characteristics are not different from the rest of respondents in the sample. As a result, although these cases were retained for subsequent analysis, given the lack of evidence supporting their elimination (Hair *et al.*, 1998), the possible effects by the outlier cases on the results are included below.

The K-means algorithm was performed using SPSS for two, three, four, five, six, and seven clusters at 100 iterations [3]. In order to establish the number of clusters, the Error sum of square measure (the average Euclidean distance from observations to their respective cluster center) [4] was used (Schmidt and Hollensen, 2006). Table 1 presents the size of clusters and the Error sum of square for each of the seven cluster solutions. Looking at the peak point, the point representing the number of clusters right after the peak is selected as the number of

clusters to be used (Schmidt and Hollensen, 2006). The Error sum of square measure improves from two to three clusters at approximately 8.4%, it decreases at 4.8% from three to four clusters, and thereafter decreases slightly less. The biggest drop is exhibited from two to three clusters. Thus, the Error sum of square measure suggests the three cluster solution as the most appropriate.

Five, six and seven cluster solutions were excluded since they include a one-member cluster (Hair *et al*., 1998; Schmidt and Hollensen, 2006). The three and the four cluster solutions were evaluated in terms of their ability to produce a significant meaning to each of the derived groups of respondents (Janssens *et al*., 2008). In that respect, the final cluster centres were examined. These represent the importance or weighting of each of the components to each of the three and four cluster solutions. Hierarchical cluster analysis through the Ward method was applied to the five component variables for both the three and the four cluster solutions, in order to generate the initial cluster centres. In turn, these results were the input in the K-means cluster analysis for both solutions.

TABLE 1: *K-means* cluster analysis.

Number of clusters	Size of clusters	Error sum of square
2	153 – 128	546.71746
3	85 – 84 – 112	500.80035 (- 8.4%)
4	83 – 81 – 70 – 47	476.83049 (- 4.8%)
5	66 – 83 – 61 – 1 – 70	466.77191 (- 2.1%)
6	1 – 63 – 56 – 37 – 57 – 67	445.40821 (- 4.6%)
7	67 – 5 – 62 – 29 – 63 – 1 – 54	429.31801 (- 3.6%)

Table 2 presents the results of the three cluster solution. As it can be seen from the extracted probabilities of the F-test, the differences in means are significant at 0.01 level (except 'EMOTIVE', which shows a result approximately significant at 0.01 level), showing that the clusters are different from each other. In the four cluster solution there are no important aspects that characterize the third cluster (approximately, 31% of cases), concerning the aspects of the five dimensions.

TABLE 2: Characteristics of three clusters.

Variable	Cluster 1 72 (25.6%)	Cluster 2 104 (37.0%)	Cluster 3 105 (37.4%)	MS between clusters	Error MS within	Sig.
INTERACT	**0.38132**	0.02327	-0.28452	9.513	.939	**0.000**
KNOWLEDGE	**0.70370**	0.47618	-0.95418	77.417	.450	**0.000**
HUMANRISK	-0.78286	**0.50696**	0.03469	35.491	.752	**0.000**
EMOTIVE	-0.22026	-0.06433	**0.21475**	4.383	.976	**0.012**
LACKTRIAL	-0.81569	**0.73916**	-0.17279	53.931	.619	**0.000**

Moreover, the cross-tabulation between the three and the four cluster memberships (Table 3) reveals that the two variables are strongly associated (chi-square value is significant at 0.01 level; contingency coefficient is approximately 78%). Table 3 also shows that the majority of cases in the second cluster (81.2%) and the fourth cluster (77.6%) of the four cluster solution are merged into cluster two of the three cluster solution. That is, the second cluster of the three cluster solution is mainly split into two clusters in the four cluster solution. The rest of the cases in the second and the fourth cluster are approximately allocated evenly to cluster one and cluster three of the three cluster solution, respectively. In addition, the Error mean square within clusters is not reduced remarkably in the four cluster solution. As a result, the three cluster solution was considered as more appropriate given its ability to describe each of the groups in the solution based on the importance attached to the aspects of the five dimensions.

TABLE 3: Cluster membership in three and four cluster solutions.

	Three Clusters			
Four Clusters	1	2	3	Total
1	63	0	0	63
2	6	52	6	64
3	0	0	87	87
4	3	52	12	67
Total	72	104	105	281

Pearson Chi-square= 430.881 (P= 0.000). 0 cells have expected count less than 5.The minimum expected count is 16.14. Contingency coefficient= 0.778 (P= 0.000).

The possibility of bias in the above K-means results due to outlier cases identified earlier was examined next. The 14 outlier cases were deleted from the database and cluster analyses were performed, as above, to examine whether there is any effect from these cases on the results. Both of the three cluster solutions without and with the outliers included showed a similar pattern. As a result, we can conclude the outlier cases are not effecting the cluster analysis result.

Cluster profiles

Cluster membership was cross-tabulated with demographics, general usage data, and intentions (Table 4). The Chi-square test revealed that only income, Internet banking use, ATM use, customer intentions, and degree of usage of financial services are associated with cluster membership. Thus, general demographic factors are not the main drivers behind cluster membership, however there are differences among clusters concerning Internet use, ATM use, and Internet banking use frequencies as well as customer intentions.

The following paragraphs present an interpretation of the derived clusters based on the above information. Each cluster is given a name that best describes their profile. Although the assignment of the labels is subjective, they do illustrate the key aspects of their respective cluster profiles.

Cluster 1 ('THE ADVANCED USERS'): individuals in this group have exhibited the highest values in the aspects of 'INTERACT' and 'KNOWLEDGE'. They present the greatest knowledge of the benefits of using the service and the awareness of the aspects of interactivity in their communication through computer-based interfaces. At the same time, they are those that are the least concerned with regard to the different risks involved in using the service, given their high level of knowledge. They are less influenced by emotional factors, they are more likely to prefer the computer-based interface compared to the human interaction, and the lack of trial is not important for them. Most of the individuals in this group are existing Internet banking users (69.4%) and they show the greatest likelihood of using the service within the near future ('Yes'= 88.8%) compared with the other groups. Thus, non-adopters in this group seem to exhibit delay ('Yes'= 19.4% and 'No-Yes'= 5.6%) but most likely not rejection ('No-No'= 5.6%). The last figure refers to a very small percentage of sample respondents that had previously used the service and discontinued it. In addition, compared with the other two groups, they are the most frequent users of the Internet, they use all alternative channels of distribution, they tend to use the financial services examined more frequently, and they tend to be of a higher income. Given their profile, this group mainly consists of people that were innovators and early adopters of the service.

Cluster 2 ('THE CONCERNED MAJORITY'): members of this group placed greater importance on the aspects of human interaction and are more concerned with the different risks involved and the lack of trial before adoption. They prefer interaction with people from the bank compared to interaction with the computer-based interface. While they may have the knowledge to understand the benefits of using the service, their desire for the presence of human interaction, their risk concerns, and their lack of trial seem to explain their resistance behaviour. 25% of individuals in this group were currently Internet banking users, and in their responses to future use of the service, only approximately 20% were negative ('No-No'). Thus, non-adopters in this group seem to exhibit either delay ('Yes'= 31.7% or 'No-Yes'= 23.1%) or rejection ('No-No') behaviour. This segment also tends not to consider emotional aspects and the negative elements associated with the service as important. Moreover, they are frequent users of the Internet, they are the majority of 24hour ATM users, and they tend to use less financial services compared with Cluster 1. Thus, given the above concerns, people in this group tend to belong to 'THE CONCERNED MAJORITY'.

TABLE 4: Demographic and general usage profile of clusters.

Demographic (frequency)	Cluster 1	Cluster 2	Cluster 3	Sig.
Female (52.7%)	32 (44.4%)	**57 (54.8%)**	**59 (56.2%)**	0.264
Male (47.3%)	**40 (55.6%)**	47 (45.2%)	46 (43.8%)	
18 to 25 (25.6%) (years of age)	10 (13.9%)	27 (26.0%)	**35 (33.3%)**	0.066
26 to 35 (41.6%)	34 (47.2%)	41 (39.4%)	**42 (40.0%)**	
36 to 45 (20.3%)	21 (29.2%)	23 (22.1%)	13 (12.4%)	
46 to 55 (8.2%)	4 (5.6%)	8 (7.7%)	11 (10.5%)	
56 to 65 (4.3%)	3 (4.2%)	5 (4.8%)	4 (3.8%)	
High school (3.9%)	2 (2.8%)	4 (3.8%)	5 (4.8%)	0.067(a)
Some college (21.0%)	11 (15.3%)	22 (21.2%)	26 (24.8%)	
University (42.3%)	**30 (41.7%)**	37 (35.6%)	52 (49.5%)	
Postgraduate (32.7%)	**29 (40.3%)**	41 (39.4%)	22 (21.0%)	
Government (10.0%)	5 (6.9%)	11 (10.6%)	10 (8.9%)	0.419
Private (62.3%)	49 (68.1%)	67 (64.4%)	68 (60.7%)	
Self-employed (12.5%)	11 (15.3%)	9 (8.7%)	14 (12.5%)	
Student (15.3%)	7 (9.7%)	17 (16.3%)	20 (17.9%)	
Single (68.3%)	46 (63.9%)	71 (68.3%)	75 (71.4%)	0.571
Married (31.7%)	26 (36.1%)	33 (31.7%)	30 (28.6%)	
Under 11,000 euros (13.7%)	4 (6.0%)	9 (8.8%)	**24 (23.5%)**	**0.041**
11,000 - 19,999 (25.5%)	17 (25.4%)	30 (29.4%)	**22 (21.6%)**	
20,000 - 29,999 (16.2%)	10 (14.9%)	17 (16.7%)	17 (16.7%)	
30,000 - 39,999 (9.6%)	9 (13.4%)	9 (8.8%)	8 (7.8%)	
40,000 - 49,999 (14.8%)	9 (13.4%)	14 (13.7%)	17 (16.7%)	
50,000 and over (20.3%)	**18 (26.9%)**	23 (22.5%)	14 (13.7%)	
Missing values (3.5%)				
Internet use:				**0.009**(b)
Few times a year (3.2%)	0 (0.0%)	2 (1.9%)	7 (6.7%)	
Once a month (1.8%)	0 (0.0%)	1 (1.0%)	4 (3.8%)	
Once a week (5.7%)	2 (2.8%)	6 (5.8%)	8 (7.6%)	
Few times a week (18.9%)	8 (11.1%)	21 (20.2%)	24 (22.9%)	
Daily (70.5%)	**62 (86.1%)**	74 (71.2%)	62 (59.0%)	
24hour ATM:				**0.001**
No (19.9%)	16 (22.2%)	9 (8.7%)	31 (29.5%)	
Yes (80.1%)	56 (77.8%)	**95 (91.3%)**	74 (70.5%)	
Internet banking use:				**0.000**
No (69.4%)	22 (30.6%)	78 (75.0%)	**95 (90.5%)**	
Yes (30.6%)	**50 (69.4%)**	26 (25.0%)	10 (9.5%)	

(a): More than 20% of cells (i.e., 3 cells: 25.0%) have expected count less than 5.
(b): More than 20% of cells (i.e., 7 cells: 46.7%) have expected count less than 5.

Cluster 3 ('THE UNCONCERNED MAJORITY'): the size of this group is approximately the same as Cluster 2. Individuals in this group placed the greatest importance on the emotional aspects and the negative elements associated with the service. However, they are

not concerned with any of the rest of the influencing factors. Thus, they use the 'EMOTIVE' element to evaluate the service given their lack of experience and their incapacity to understand this technological interface. This is the group with the least frequency of Internet use, and with the lowest number of Internet banking users (9.5%). Non-adopters in this group present delay behaviour ('Yes'= 28.6% and 'No-Yes'= 20.0%) and rejection ('No-No'= 41.9%). In addition, this is the group with the least users of all the financial services considered in this study. Their demographic profile can be characterized as the youngest (although not significant) with the lowest income among the three groups. While their age presents some potential of future adoption, factors such as lower income and no sophisticated financial needs, as well as the fact that they are not concerned with any of the influencing variables, except the 'EMOTIVE' element, suggest that people in this group belong mainly to the late majority of potential adopters. In addition, it is expected that they would exhibit resistance behaviour, not due to specific concerns, but because they are not motivated by the service.

Managerial implications

Computer-based technologies such as Internet banking provide both a communication and a distribution channel. Decision makers could use the findings of this study as an additional input into their respective strategies in these areas. Specifically, the profiles of the customer segments developed in this research, as well as the possibility of the existence of distinct sub-groups within each segment, could be utilized in communications campaigns and in distribution policy. The following last paragraphs of this section discuss the opportunities which are summarized in Table 5.

The first segment ('THE ADVANCED USERS') tend to possess more sophisticated financial needs than the other groups and uses all the alternative channels of distribution, and especially the phone. Members of this group are the most likely to use Internet banking regularly. They are more likely to be male and have a higher income compared with the other groups. Thus, banks could integrate their distribution policy in targeting this segment and support users across a range of channels. Being able to distinguish members of this group would encourage relationship marketing approaches to enhance the user's experience through better management of the 'interactivity' aspects, thus improving the interaction and possibly activating positive emotions. In addition, the small evidence of service discontinuance observed in the sample suggests that where members of this group do stop using the service it is worthwhile contacting them to find out the reason, because it may well be the result of a serious service failure. Also, given the high levels of 'KNOWLEDGE' characterizing their behaviour, providers should treat these people in some ways as if they are their employees, since they perform similar tasks to produce the services offered. Thus, it may be beneficial to treat members of this group as partners offering support, in the form of training and information.

Users from the second group ('THE CONCERNED MAJORITY') significantly differ from the users in the first segment in the psychological influences that impact on their behaviour. To encourage usage of Internet banking the provider needs to work harder to minimize perceived risks and offer support through human interaction. Employee support through the telephone might be very effective in respect to this group. Service discontinuance or even rejection is a high risk with this group. Thus, the provider should address possible concerns related to the various risks by providing evidence of the high reliability and safety of the system.

TABLE 5: Managerial Implications

	Segment 1 (The advanced users)	Segment 2 (The concerned majority)	Segment 3 (The unconcerned majority)
Users	- integrate policy - relationship marketing – deal with discontinuance - treat as employees	- minimize risks and offer human support - reliable & safe systems	- relationship marketing approaches to educate
Delayed adopters	- offer incentives - demonstrations via the website (artificial account) - use at least once	- 'bring the horse to the water' - offer trial via human support - heaviest ATM users	- target the young sub-group and persuade due to possible change in their lifestyle
Rejecters	- Identify reasons and convert	- Not likely to adopt	- Not likely to adopt

The implication of our findings in relation to non-users, is to realize that some non-users from all segments will adopt the service after a delay. Others will reject it, given their strong concerns and a possible weak need. And the rest will passively resist adoption, based on a possible absence of any concerns about the service. Non-users in the first segment (the advanced users), who may adopt after a delay, could be offered incentives to start using the service given that they are highly knowledgeable of its benefits and that they value the aspects of interaction. The challenge here is to 'make the horse drink the water' since 'the horse has been brought to the water'. Possibly some of these customers may not adopt the service due to their financial services needs already being served well by other channels. Early use of Internet banking could be considered as a substitute to the 'lack of trial', and this has practical implications. Offering demonstrations of how the service is used and producing a positive initial experience may be helpful here. This could be applied through the bank's website, given that these people are frequent users of the Internet and human interaction does not play an important role for them. Incentives, for instance emphasizing the control and responsiveness aspects of 'interactivity', need to be provided to pull these customers to the bank's website, given that these people value them. The task would be to persuade these people to use the service at least once, thus give them the chance to sense the above aspects. This could be achieved through persuading them to participate in a free session with an artificial account. This could be performed through the bank's website, where the customer could sense the aspects of control, among the others. This would also help to persuade some of the non-users from the second group (the concerned majority), given their concerns on the different 'risks' involved, their 'lack of trial', and their need for 'human interaction'. However, the case here is more to 'bring the horse to the water'. The use of direct mail communications to create awareness as well as within the branch communication activity could help achieve this. Thus, providers could offer human support in the branch to trial Internet banking services in order to better address their needs. Employees could assist non-users in this group by showing them how the service operates through a trial session using an artificial account, where the customer can practice with employee support. It is important here that the different concerns on the possible risks would be minimized. In this effort, the presence of the employee and the customer's initial experience from the trial session would be very important. This strategy could prove beneficial in terms of overcoming delaying

behaviour. However, the provider will need to persuade then of the benefit of the trial session, since they are not expected to take the initiative, given their concerns on the possible risks involved and the need for human interaction. Considering that people in the second segment are the heaviest users of ATMs, that is, a service where the human interaction is absent, the above course of action would seem to be justified to persuade non-users in this group to start using Internet banking services. It is debateable whether it is worthwhile marketing Internet banking to the third segment (the unconcerned majority). Individuals in the third segment are approximately 90% non-users. Given the absence of strong psychological influences in their behaviour, this kind of non-adoption seems to be characterized by passivity rather than active resistance. Individuals in this group are more likely to be younger (up to 35 years old), with high education but low income, and with the least sophisticated financial needs. Of this group, some 48% reported intentions of use Internet banking in the future , and thus might be responsive if and when their financial requirements change.

Conclusions and research directions

This study focused on identifying possible links between the perceptual variables and customer demographics and general usage data to facilitate Internet banking customer segmentation and targeting for adoption campaigns. The segmentation revealed three customer groups as the most appropriate and operational solution, illustrating the different aspects of customers' non-adoption of Internet banking. The study must be seen as exploratory given the chosen sample, the constructs involved, and the period of data collection (cross-sectional survey). While these groups seem to be comprehensive and only income and some general usage variables are significant in their classification, this segmentation has implications for future research directions. It shows that perceptual and usage variables are useful in market segmentation. Moreover, it reveals different types of adopters and the factors related to the different phases of non-adoption (delay, rejection, or passive resistance). Non-adopters across the three groups resist for different reasons, given the perceptual variables characterizing their profiles. Although the segmentation was not effective in identifying sub-groups within each of the segments, it may be that within each of the segments, smaller groups of customers exist. Further research could identify and explore their potential and study non-adopter behaviour further.

Given the ever increasing use of technology for customer service, not only in financial services, but across a range of sectors, improving our understanding of customer behaviour, in relation to the usage of technology, is becoming an important aspect of marketing knowledge. Our research adds to this knowledge in relation to understanding the different types of adoption and non-adoption. It also provides a useful segmentation framework for service providers in targeting users and non-users differently, based on the influencing factors characterizing their behaviour.

Notes

1. In 2006, 13% of Greeks have used the Internet for bank transactions (www.epractice.eu/document/3600).
2. Estimation of Kaiser's measure of sampling adequacy and the Bartlett's test of sphericity, which produced values of 0.879 and a chi-square statistic of 15,143.961 (P= 0.000) respectively, reveal that the variables are inter-correlated, thus the application of factor analysis is justified (Tabachnick and Fidell, 1996).
3. For each of the two, three, four, five, six, and seven cluster solutions, convergence achieved at 16, 9, 11, 11, 14, and 10 iterations, respectively.

4. The Error sum of square for each cluster solution was calculated from the sum of distances from cluster center.

APPENDIX: Final measures representing the constructs.

I. GENERAL USAGE PROFILE

Internet use; Banking methods: Inside the bank; 24-hour ATM; Bank by phone; Internet banking; List of financial services provided by banks: 'Check the balance of my accounts'; 'Transfer funds between accounts'; 'Make payments (credit card, telephony & electricity bills, other payments)'; 'Transfer funds from my account to other person's account; 'Get information on my investment portfolio (shares, mutual funds)'; 'Trade shares and check the status of my order'; 'Get information on different types of loans'; 'Get an update on my existing financing loan(s)'; 'Apply for a financial service'; 'Contact my bank to answer a question'.

II. PERCEPTIONS (Original source) (Cronbach's alpha in final measure)

(Variables' membership is indicated by the first letter of the respective dimension)

Human Interaction: (Walker and Johnson, 2006) (a= 0.8637)
(H) I prefer to deal face-to-face with the bank's department of customer services.
(H) I like to communicate with people when financial services are being provided.
(H) My particular financial service requirements are better served by people comparing to automated systems.
(H) I prefer face-to-face contact to explain what I want and to be given answers to my questions.
(H) I feel more confident when dealing with the bank's department of customer services than with automated systems.

Enjoyment: (Nysveen *et al*., 2005) (a= 0.8321)
I would find computer-based services such as Internet banking:
(E) enjoyable to use.
(E) pleasant to use.
(E) exciting to use.

Economic Gains: (Lockett and Littler, 1997) (a= 0.4938)
(a) The cost of Internet access is low. (eliminated)
(K) To the best of my knowledge, there are no bank charges for Internet banking services.
(E) I think that Internet banking services offer better credit terms comparing to the branch.
(E) I would purchase or rent any computer-based equipment only for the purpose of Internet banking.

Time and Energy Savings: (Walker and Johnson, 2006) (a= 0.3004)
Computer-based services such as Internet banking:
(K) are quicker to use than visiting the bank branch personally.
(K) provide greater convenience.
(E) make it difficult for me to get what I want.
(E) make it difficult to access the bank's department of customer services.

Usefulness: (Curran and Meuter, 2005; Wang *et al*., 2003) (a= 0.791)
(K) would be useful in conducting my banking transactions.

(K) Using computer-based services such as Internet banking would make my banking transactions more effective.
(K) Using computer-based services such as Internet banking would make my banking transactions easier.

Ease of Use: (Curran and Meuter, 2005; Lockett and Littler, 1997) (a= 0.3882)
(E) I would find computer-based technologies such as Internet banking difficult to use.
(K) It would be easy for me to acquire computer skills in order to use computer-based technologies such as Internet banking.
(E) I would find it difficult to remember the passwords and security questions involved in computer-based technologies such as Internet banking.

Interactivity: (McMillan and Hwang, 2002; Yadav and Varadarajan, 2005b)

Bidirectionality: (a= 0.8299)
(I) In my communication with the bank I am both a message sender and a message receiver.
(I) They would enable seller's messages to be directed at me with precision.
(I) They would enable mutual interdependence between me and the bank's department of customer services.
(I) They would enable mutual connection between me and the bank's department of customer services.
(I) They would enable informality in my communication with the bank.
(I) They would enable me to receive feedback from my bank.
(I) They would facilitate interaction with the bank's department of customer services.
(I) They would accept a large number of messages from users.
(E) They would make feel that I know the other party as an individual.

Timeliness: (a= 0.8530)
(I) They would enable shorter duration between receiving a message and sending a message.
(I) They would enable frequent exchanges of messages.
(I) I would receive prompt responses to my messages.
(I) They would load messages fast.
(I) They would reduce the waiting time for my response.
(I) I would receive timely responses to my messages.

Mutual Controllability (a= 0.9034)
(I) They would enable me to control how information sent by the bank is presented.
(I) They would enable me to change the content of the posted messages.
(I) They would enable me to personalize the content of the posted messages.
(I) They would facilitate the discovery of new ways of using bank services.
(E) They would make me feel that I am in a certain location.
(I) The timing of my communication could be kept flexible to suit my needs.
(I) They would create an environment in which I feel a part of.
(I) They would keep me alert to the information received.
(I) They would make it easy to manage the communication process between the bank's department of customer services and me.
(I) They would make it easy to find my way through the site.
(I) They would make it easy to manage the amount of information received.
(I) They would make it easy to manage the different options available.
(I) They would offer a variety of content of the posted messages.
(I) My attempts to change the content of the posted messages are successful.

Responsiveness: (a= 0.8082)
(I) They would enable a response to my communication.
(I) Messages exchanged would build on each other like a good conversation.
(I) Responses to my messages would correspond to the information solicited.
(I) They would provide immediate answers to my questions.

Awareness: (Gerrard *et al*., 2006; Sathye, 1999) (a= 0.8497)
I am aware:
(K) that banks provide Internet banking services.
(K) of what is needed to be done to become an Internet banking user.
(K) of what financial services could be offered through the Internet.
(K) of the level of computer skills needed to operate as an Internet banking customer.

Personal Capacity: (Walker and Johnson, 2006) (a= 0.6319)
(K) I have a well-developed ability to operate the computer.
(K) I can adapt to new computer-based services.
(K) I feel comfortable with technology-enabled services.
(E) I find technology-enabled services complicated to use.

Prior Experience: (Cheung and Lee, 2001)
(K) Overall, using the Internet has been a good experience to me personally.

Perceived Risks: (Chen and He, 2003; Walker and Johnson, 2006) (a= 0.8279)
(H) My expectation of losing money as a result of using Internet banking technologies is high.
(H) I will be concerned if I use the Internet for my banking needs.
(H) I believe that Internet banking technologies will not be reliable.

Privacy Concerns: (Gerrard and Cunningham, 2003) (a= 0.8763)
I am concerned that:
(H) third parties may be able to have access to customers' financial details.
(H) third parties may track bank usage patterns.
(H) customers' financial affairs may be passed on to other companies in the bank group.

Security Concerns: (Gerrard and Cunningham, 2003) (a= 0.8591)
I am concerned that:
(H) software problems may prevent customer access.
(H) PINs obtained by fraud may allow others to access to Internet banking accounts.
(H) hackers may be able to gain access to Internet banking accounts.

Lack of Trial: (Moore and Benbasat, 1991) (a= 0.8969)
(L) I haven't had a great deal of opportunity to experience Internet banking on a trial basis.
(L) I do not know where I can go to satisfactorily try out various uses of Internet banking.
(L) Internet banking is not available to me to adequately test various applications.
(L) I am not in a position to properly try out Internet banking applications before deciding whether to use them.
(L) There are not people from the bank to help me try the various uses of Internet banking.
(L) There are not people that I know to help me try the various uses of Internet banking.

Intentions - Based on my previous description: (Nysveen *et al*., 2005)
(a) I intend to use Internet banking services within the next 12 months. (YES, NO)
If NO, (b) I intend to use Internet banking services later than the next 12 months. (YES, NO)

III. DEMOGRAPHIC DATA

Gender; Age; Education; Employment; Marital status; Income.

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