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Segmenting the fixed and mobile service markets in the USA: A cluster analysis[1]

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Abstract

The purpose of this study is to develop market segmentation of the USA fixed-line and wireless phone service sectors. In order to better understand user perceptions and behaviors when using these services, market segmentation techniques serve as an essential tool that may be utilized by marketers, strategists, managers, and other decision makers. In this paper, two datasets based on survey results obtained from 3,251 and 5,060 users of wireless and fixed-line services respectively were subjected to two-step clustering analysis procedures. As a result, a number of unique market segments emerged and several practical recommendations were suggested.

Keywords:

Fixed-lines, wireless services, cluster analysis, market segmentation, information technologies

Introduction

The fixed and mobile telecommunications markets have been growing globally. The International Telecommunication Union (ITU) reports that in 2005, one-third of the world's population was subscribed to mobile services, and that over a half of the world's population was subscribed to fixed-line services. The Compound Annual Growth Rate (CAGR) from 2000 to 2005 was 5.2% for fixed phone lines and 24% for mobile subscribers (ITU 2007). Many industry analysts further predict growth in these markets due to the expansion of the networked economy, and the extended reliance on telecommunications networks for business and leisure (e.g., The Yankee Group 2004).

Telecommunication growth patterns can differ from one country to another. These differences can be attributed to technological and economic substitutions, and to factors such as the existing density of fixed and mobile telecommunications services (Banerjee and Ros 2004). Thus, this study focuses on a single country, namely the United States of America (USA), for several reasons. First, the USA is one of the largest markets, with over 200 and 360 million mobile and fixed-line subscribers, respectively, lagging only behind China (ITU 2007). Thus, it is a lucrative market with large potential profits at stake.

Second, the growth pattern in the USA is interesting. While the CAGR for 2000-2005 for cellular mobile subscriptions is positive and large (+13%), there was a cumulative decline in the number of fixed phone lines in the same years (-1.9% in total, and -3% adjusted to the population) (ITU 2007). That is, there is a reversal trend that can result eventually in a number of mobile service subscribers exceeding that of fixed-line subscribers. This phenomenon can be generalized to other

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[1] The names are presented alphabetically; all authors contributed equally to the manuscript.

developed and affluent countries, in which the density of cellular and fixed-line services is high. For example, a similar pattern is observed in the UK, Canada, Hong Kong, and Italy, just to name a few, using the same ITU data.

The numbers above indicate that the telecommunications markets in developed countries in general, and especially in the USA, have entered a period of significant turmoil. There is a global shift to advanced interoperable standards; at the same time, competing technologies such as WiFi and WiMax start to appear, and offer free of charge communication means (Damsgaard et al. 2006). Such technological advancements, topped with de-regulation, have brought, in part, intensified competition to current telecommunications markets. In the USA, the 1996 Telecommunications Act opened the mobile market for regulated competition and facilitated the entrance of new participants in both the fixed and mobile sectors. The increase in the number of players resulted in strong price competition and decline in the average revenue per user, especially in the mobile market (Hatton 2003).

Given this turmoil, it is important for managers of telecom companies to fight for the retention of subscribers (Turel et al. 2007). For this, they need to understand the consumption and switching behaviors of subscribers, and the factors that affect these behaviors (Turel et al. 2006). It has been demonstrated that user perceptions regarding telecommunications services can affect their churn intentions and price tolerance (Kim et al. 2004; Turel and Serenko 2006). These perceptions and behaviors, however, pertained to the whole population, and not to different segments, thus, yielding limited practical recommendations. Cluster analysis is an effective strategy to deal with the problem of data sparseness, and help contextualizing findings and recommendations (Clarke and Wheaton 2007). Accordingly, this study attempts to better understand the composition of the fixed and mobile markets through segmenting them based on key perceptions and loyalty behaviors. These inter-group characteristics are then linked to demographic attributes. Next, the knowledge about the market is translated into practical recommendations that may help service providers enhance the use of their services and reduce churn.

The rest of this manuscript is structured as follows. In the next section, background information is provided. It includes (1) an overview of the USA telephone market, (2) a review of key antecedents and models of loyalty in the telecommunications context, and (3) a description of market segmentation. Section 3 describes the methodology used for segmenting the fixed and mobile telecommunications markets, and offers results. This study utilizes datasets of 3,251 and 5,060 subscribers belonging to the mobile and fixed telecommunications markets respectively, collected in the years 2004-2006. The last section presents conclusions and directions for future research.

Theoretical Foundations

An Overview of the USA Telephone Market

The USA telecom market is one of the largest and most complex telecom sectors globally. It includes advanced telecom services (e.g., high speed Internet), international, local, and long-distance telephone services, as well as mobile wireless services. This paper, however, focuses primarily on telephone services market. Until 1980s, subscribers had no or little choice when selecting their local telephone company. In the 1980s, business customers had more alternatives via competitive access providers. After the introduction of the 1996 Telecommunications Act, the residential and business markets had many telephony choices pertaining to all sub-markets (i.e., local access, long-distance, international and mobile services). For example, by June 2006 competitive local exchange carriers captured already 17.3% of the local-access market, leaving about 80% of the market in the hands of incumbent service providers (FCC 2007).

The main players in the telephone market are BellSouth Telecommunications, SBC Communications, and Verizon. Some of these players have acquired or merged with others so that they can extend their service reach and breadth. For instance, SBC communications announced the acquisition of AT&T in 2005. Thus, the number of players in many of the sub-markets has not grown substantially. The telephone market has also experienced a convergence trend, and many players provide multiple services, such as fixed-line and mobile wireless services (i.e., dual and triple-play).

The telephone market is an important component of the USA economy. USA consumers spend on average about 2.3% of their annual expenditures on telephone services (i.e., telephone expenditures were $990 per household in 2004). This percentage has been fairly stable in the last 25 years, ranging from 1.9 to 2.4 (FCC 2007). While the telephone expenditure is stable, its composition has changed over the years. The same FCC report shows that while in 1980 100% of the expenditure pertained to fixed-line services, in 2005 only 57% pertained to fixed-line services, and the rest related to mobile wireless services (see Figure 1). As can be seen, if this trend continues, USA consumers will soon spend more on mobile than fixed-line services. Since many households may have a single fixed-line but many mobile phones (potentially one for each household member), the percentage of wireless subscribers (65.6%) has passed that of fixed-line subscribers (60.1%) in 2005 (FCC 2007).
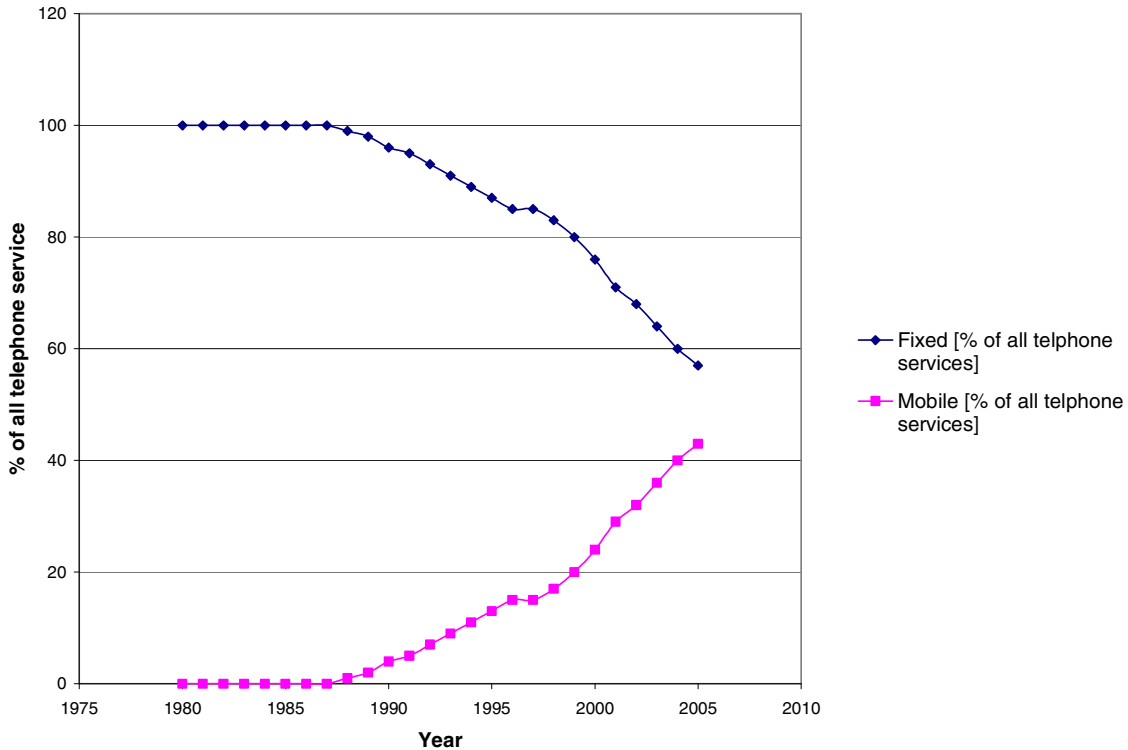
Figure 1: Trends in the composition of the telephone market in the US (1980-2005) (based on data from FCC 2007)

This trend is further supported by the residential line numbers. In 2003, a decline has started in the number of primary and non-primary residential lines. At the same time, the number of households with wireless services only has increased from close to 0% in 2000 to 11.3% in 2005. Indeed, the growth of the mobile market has been steep. The number of mobile subscribers has exceeded 200 M, the average minutes of use per month has gone up to 740, and the average monthly bill has gone down to about $50 in 2005, compared to $96 in 1987. Furthermore, whereas wireless service providers' revenues have more then tripled from $32.9 B in 1997 to over $100 B in 2005, the revenues of fixed-line local service providers have only marginally increased from $97 B to $121 B during the same period. These numbers further demonstrate the turmoil that the USA telephone market is experiencing, and the need to further understand subscribers and their switching behaviors, in both the fixed and mobile telephone markets.

Predicting Loyalty in Telephone Markets

Customer loyalty is a favorable attitude towards a specific service provider that consists of two dimensions: (1) repurchase likelihood (RL) and (2) price tolerance (PT) towards the service provider's price and towards competitor pricing (Fornell et al. 1996). That is, the concept of loyalty captures financial and quality sacrifices users make when staying with a specific service provider. Loyalty is one of the major concepts in consumer behavior, and a large part of a telecom service provider's effort is aimed at creating and maintaining loyalty among its customer base. Loyalty is important because it positively impacts important outcomes, such as customer retention, repurchase, long-term customer relationships and company profits (Willis et al. 2007). That is, loyalty is a primary factor in reducing churn (i.e., switching/abandoning behaviors).

Several attempts have been reported in the telecommunications policy literature to understand the concept of loyalty and its antecedents. It has been demonstrated that customer loyalty in the German mobile market is predicted by user satisfaction, and that loyalty in turn, affects retention (Gerpott et al. 2001). In the Korean market, it has been found that while switching behavior is dependent on the level of satisfaction with alternatives and specific service attributes (e.g., call quality, handsets etc.), loyal behavior is predicted by attributes such as call quality and handset type (Kim et al. 2004). In other words, loyalty

is strongly affected by satisfaction and moderately by switching barriers. It has been also shown that loyalty in the context of Canadian mobile services is comprised of two distinct, yet correlated dimensions, namely repurchase likelihood and price tolerance, due to the existence of switching barriers (Turel and Serenko 2006). The latter study also demonstrated that loyalty is strongly predicted by customer satisfaction.

Several issues about these studies are noteworthy. First, all of them focus only on mobile wireless services, thus omitting fixed-line ones. Second, loyalty as a concept has been treated inconsistently in the literature. While some conceptualize it as a behavioral intention (e.g., willingness to recommend a service) (Kim et al. 2004), others operationalize it as an attitude (Turel and Serenko 2006). Our study follows the latter approach, and applies the American Customer Satisfaction Model (ACSM) to predict loyalty in both the fixed-line and mobile markets. This model was selected because it is robust across industries and technologies and has been successfully applied to various means of communications (Dow et al. 2006; Turel et al. 2006). The ACSM is briefly described in the paragraphs below (see Fornell et al. 1996 for a detailed description).

The ACSM is a general, cross-industry model that offers a market-based performance measure for firms, industries, sectors, and nations. It measures the quality of the goods and services as experienced by consumers, and gauges their actual and anticipated consumption experiences (Anderson and Fornell 2000). According to the model, loyalty and price tolerance are affected by user satisfaction, and satisfaction is positively associated with prior expectations, perceived quality, and perceived value. The prior expectations (PE) construct represents both previous experience with the service and forward-looking beliefs regarding a provider's ability to offer the desired quality. Perceived quality (PQ) is the served market evaluation of recent service usage experience. It is derived from the degrees of customization and reliability of the service. Perceived value (PV) adds the price dimension to perceived quality and therefore addresses the perception of quality for money. In addition, it controls for differences in income and budget constraints that enables cross-industry comparisons (Fornell et al. 1996). These three constructs lead to customer satisfaction (CS), which is defined as a subscriber's reaction to his or her judgment of the state of fulfillment (Oliver 1997). Satisfaction, in turn, affects the two dimensions of loyalty (i.e., price tolerance and repurchase likelihood).

What is Market Segmentation?

It is now generally accepted that it costs more to attract new customers than to keep existing ones (Kotler et al. 2005; Massnick 1997). In the past, many managers believed in the concept of mass marketing and argued that it creates the largest market potential, which leads to lowest costs and largest revenues. Today, most companies are moving away from mass marketing to market segmentation and targeting (Bikert 1997). According to Kotler et al. (2005), segmentation is splitting a market into smaller groups of buyers with distinct needs, characteristics or behaviours that requires individual products or marketing mixes. Nowadays companies realize that they cannot appeal and reach all consumers in the marketplace. Moreover they know that they can not target all consumers with the same service, product, and the same strategy. In segmentation, rather than trying to compete with other companies in an entire market, each company identifies sub-markets that it serves best and most profitably. Hence, using market segmentation, companies divide large heterogeneous markets into smaller homogenous segments that can be reached more successfully.

There are several ways to segment a market: (i) geographic segmentation based on dividing the market into different geographical areas such as nations, regions, cities, etc., (ii) demographic segmentation based on age, gender, family size, etc., (iii) psychographic segmentation based on the social class, lifestyle, and/or personality characteristics, and (iv) behavioural segmentation based on occasion segmentation, benefit segmentation, loyalty status, and user status (Kotler et al. 2005). Cooper and Inoue (1996) tackle segmentation using the concept of competitive market and consumer structures. The idea is to cluster the market by targeting competitive consumers' groups. This is done through what they call "switching probabilities" and "product attribute rating." This led them to position the segments and understand the difference between them. Marcus (1998) argues that segments derived from complex statistical techniques should be useful for the managers to design effective communication strategies. Customer Value Matrix that identifies key segments and helps designing effective marketing strategies is a useful alternative.

Technically, there are several ways to segment the market. Statistical techniques vary from K-mean, Two-Step to hierarchical clustering. The basic objective is to propose natural groupings of consumers based on similarities and association measures, i.e., sort consumers into homogenous sets called segments. Segmentation requires the selection of a set of variables/criteria that help differentiating between unique clusters or groups of consumers. Segments are usually defined in terms of inter-group homogeneity and intra-group heterogeneity. Respondents belonging to the same cluster exhibit the same behavior and fit the same profile that leads to inter-group homogeneity. Conversely, respondents belonging to different clusters have different profiles leading to intra-group heterogeneity (Brusco et al. 2002; Chaturvedi et al. 1997).

Methodology and Results

Study Design and Descriptive Statistics

Two datasets of 3,251 and 5,060 data points pertaining to mobile and fixed-line phone services respectively were subjected to cluster analysis. The data were collected in 2004-2006 by the National Quality Research Center at the University of Michigan. The following constructs of the American Customer Satisfaction Model were measured by using the original instruments (see Fornell et al. 1996 for scale descriptions): prior expectations, perceived quality, perceived value, customer satisfaction, repurchase likelihood, and price tolerance. Those are well-established, valid and reliable constructs that have been successfully tested in multiple studies. In addition to scale items, basic demographic information was also solicited. A list of potential respondents was randomly generated from the phonebook of the USA population; only one person from each household was surveyed. Each individual responded to the questionnaire pertaining to either mobile or fixed-line services. Only those who had used a mobile phone were allowed to respond to items relating to mobile services. An acceptable level of response rate was achieved. Overall, it was believed that the selected subjects relatively accurately represented the entire USA population of mobile and fixed-line services. Table 1 presents age and gender statistics. Wireless and fixed-line datasets were analyzed independently.

	Fixed-line	**Wireless**
Age - Range	18 – 84	18 – 84
Age - Mean	50	46
Male	39%	52.5%
Female	61%	47.5%

Table 1: Descriptive Statistics

Procedure

This study has an exploratory purpose. Therefore, cluster analysis seems to be a natural technique to segment both the fixed-line and the wireless market. This approach is best suited to identify consumption/behavior patters and create a consumer typology. Six variables that capture three stages of consumer behavior were used: 1) pre-purchase dimension (prior expectations); 2) actual purchase dimension (perceived value, perceived quality, and customer satisfaction); and 3) post-purchase dimension corresponding to behavioral outcomes (price tolerance and repurchase likelihood). Since the K-means analysis can only be used when the number of expected clusters is known, the Two-Step clustering technique was used that allows testing similarities and associations between segments in both samples without making any assumption on the final number of clusters. Two-Step clustering is a good substitute to hierarchical clustering because of a large sample size and known average number of services in the industry. Specifically, we are more interested in exploring differences in behavior between the samples using the actual industry segmentation structure than predetermining the number of segments.

Data

Missing item values for the six abovementioned variables were replaced with the mean. No missing values were replaced for all categorical scales (age, sex, and income). However, since age was measured using an open-ended question, it was recoded into five main age classes. Moreover, results from cluster analysis need to be reformatted. Since each respondent belongs to a specific segment, a cluster number is allocated to that consumer. For instance, if somebody belongs to the kth segment, he/she will be allocated the number k for cluster k. The ultimate objective of categorizing all variables is to cross-tab all results to profile consumers in both markets and obtain more robust results.

Algorithm

The following algorithm was used independently on both datasets:

1. Inter-group homogeneity: test unidimensionality with each sample for multiple-indicator constructs – confirmatory factor analysis, discriminant and reliability measures. This ensures that the each variable measures only one dimension.

2. Intra-group heterogeneity: test mean differences between samples – one-way ANOVA. This ensures that there is a significant behavioral difference between both samples.
3. Test customer groupings: create clusters-categories – allocate each respondent to a given category using a two-step clustering procedure.
4. Cross-tab those categories with respondents demographics to design their profiles.
5. Predict cluster membership: run a discriminate analysis to explore what is/are the variable(s) that discriminate the most among respondents.

Results

Inter-group homogeneity

Each dataset (wireless and wired phone services) was analyzed separately. For multiple-indicator constructs (prior expectations, perceived quality, perceived value, and customer satisfaction), Cronbach's alpha exceeded the cut-off value of 0.7, corrected item-to-total correlations were over 0.5, and each item loading in confirmatory factor analysis with Varimax rotation was above 0.7. To test for discriminant validity, a matrix of loadings and cross-loadings was constructed and each item loaded higher on its own construct than on other cross-loading measures. Therefore, some confidence in inter-group homogeneity was developed.

Intra-group heterogeneity

To make sure that both samples present different profiles of consumers, an ANOVA test was conducted that showed a significant difference at the 0.01 level between fixed-line and wireless consumers (see Figure 2). Fixed-line consumers exhibited higher scores on all measures. This means that compared to fixed-line consumers, wireless customers are relatively more satisfied, have higher perceived value, prior expectations, and perceived quality. In addition, they are less price-sensitive and are more willing to repurchase. This is mainly due to the nature and market structure for both products.
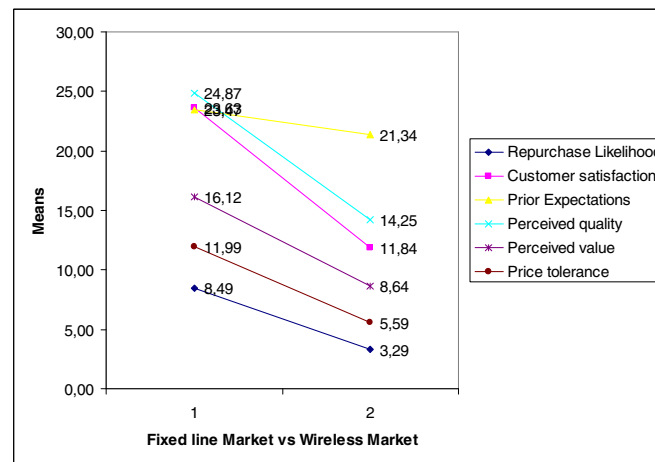

Figure 2: Means plots for the fixed-line and wireless markets

Customer groupings testing and cross-tabbing

To test customer groupings, first, clusters were generated by applying the Two-Step clustering option in SPSS. Second, the correspondences between different segments were explored through the log-likelihood approach for distance measurement. Segments were created by entering continuous (price tolerance, perceived value, prior expectations, perceived quality, repurchase likelihood, and customer satisfaction) and categorical variables (age, gender and income). This combination may lead to very complex and dynamic segmentation strategies.

Fixed-line market

Table 2 demonstrates that there are two main segments:

Cluster 1: The high score segment that is composed of 70% of all respondents with high measures on all six attributes corresponding to the three purchase dimensions: (i) respondents have high prior expectations, (ii) they perceive the company services as being of high quality and high value hence making them relatively highly satisfied, and, (iii) they are very likely

to repurchase services from their actual service provider. This explains why they have a high price tolerance to switch to other companies.

Cluster 2: The low score segment that comprised 30% of all respondents with low scores on all six attributes corresponding to the three purchase dimensions.

	Minimum	Maximum	CLUSTER 1 Mean	CLUSTER 2 Mean
Prior expectations	3	30	23.47	21.34
Costumer satisfaction	3	30	23.62	11.83
Perceived quality	3	30	24.87	14.25
Perceived value	2	20	16.11	9.63
Repurchase likelihood	1	10	8.49	3.29
Price tolerance	0	25	11.98	5.59

Table 2: Centroids for the fixed-line clusters

In this project, three demographic indicators, such as age, gender and income, were employed in the analysis of categorical variables to profile consumers into different sets. Note that the distribution of demographic data was approximately equal in both clusters.

Wireless market

For wireless services, five clusters emerged (see Table 3); clusters 1, 2, 3 and 5 were high-score segments that represented 82.5% of the market, and cluster 4 was a low score one that embraced only 17.5% (see Table 4 and Figure 3). In some aspect, this classification was somewhat similar to the one obtained for the fixed-line market. It is noted that even though clusters 1, 2, 3 and 5 exhibit the same means, respondents do not necessarily behave the same way in these four segments. To uncover their hidden profiles, we need to characterize those segments in term of age, gender, and income (see Figure 4 for more detail).

	Minimum	Maximum	CLUSTERS 1	2	3	4	5
Prior expectations	3	30	23.08	25.32	24.59	19.07	23.83
Costumer satisfaction	3	30	22.54	25.52	24.37	11.52	23.19
Perceived quality	3	30	25.10	27.12	26.30	14.71	25.47
Perceived value	2	20	15.18	17.17	16.36	8.2	15.39
Repurchase likelihood	1	10	8.01	9.00	8.71	3.14	8.13
Price tolerance	0	25	11.39	13.10	12.26	5.7	11.47

Table 3: Centroids of the wireless clusters

Clusters	Percentage
1	16.8%
2	18.1%
3	20.0%
4	17.5%
5	27.6%

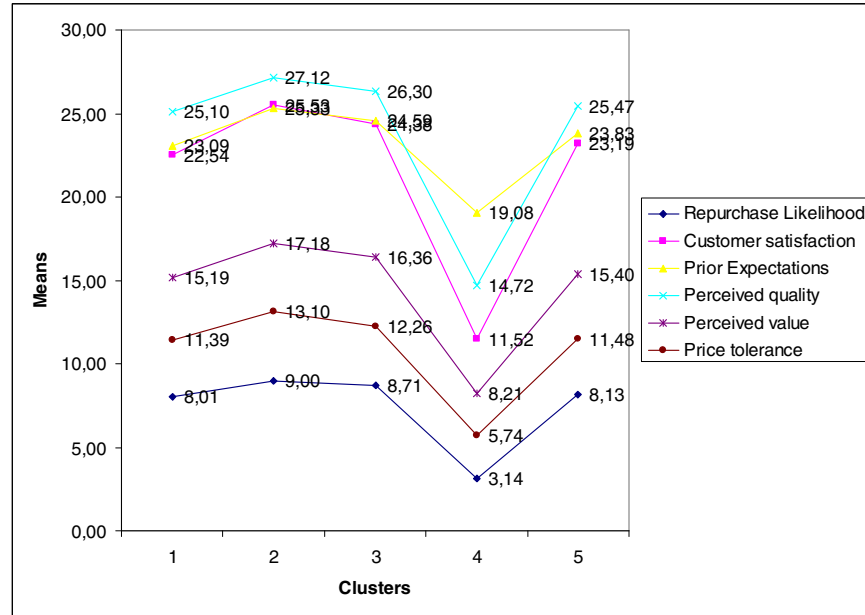**Table 4:** Respondents distribution per wireless clusters

Figure 3: Means plots for the wireless clusters

o *Cluster 1*: this segment is composed of an even representation of young males and females. All of this cluster's respondents are distributed between the two first age categories: 5.7% for the 15-25 years old category and 11% for the 26-30 years old category. Moreover, most of the respondents are located in two income clusters: below $20K and $40-60K which is consistent with the age distribution findings. Respondents in this segment are also very satisfied. They said that, on average, if the company increases its price by 13% (highest rate in the sample) they will switch to another company. This explains why they have the highest repurchase likelihood.

o *Clusters 2 and 3:* these segments are only composed of females. While the target market of cluster 2 is exclusively composed of elderly people, 50 + years old, cluster 3 is geared towards young adults (31-40) and mature adults (41-50). Most of the respondents have an income below $30K for cluster 2 and $40-80K for cluster 3.

o *Clusters 4 and 5:* they are composed mainly of young and mature adults as well as elderly people with almost no representation of their younger counterpart. While cluster 5 is predominantly composed of men, cluster 4 is evenly composed of both sexes. Further, both clusters mostly appeal to the $40 60K respondents. Finally, it is important to note that both clusters differ with regards to one important element – cluster 4 is a low-score segment while cluster 5 is high-score one (see Table 3).

In summary, clusters 1, 2, 3, and 5 are high-score segments. More precisely, cluster 1 is more geared towards young generations with a relatively low income. Both sexes are evenly represented in this segment. Theses respondents are very satisfied with the services they receive; hence they are not price sensitive and are very loyal to their actual service provider. These consumers maybe considered as regular cell phone users. Cluster 2 is the target market for elderly people not having high disposable income. These consumers might need a cell phone for basic usage. In contrast, cluster 3 suits adults with medium-to-high incomes. Finally, cluster 5 is almost exclusively composed of elderly men regardless of their income. Hence we can hypothesize that cluster 5 might be offered a wide variety of services when compared to cluster 2, and may be considered a business segment. At the same time, cluster 4 represents the only low-score segment where consumers don't have high expectation and hence are moderately-to-low satisfied. This is translated into their behavior, i.e., low loyalty and high price sensitivity.
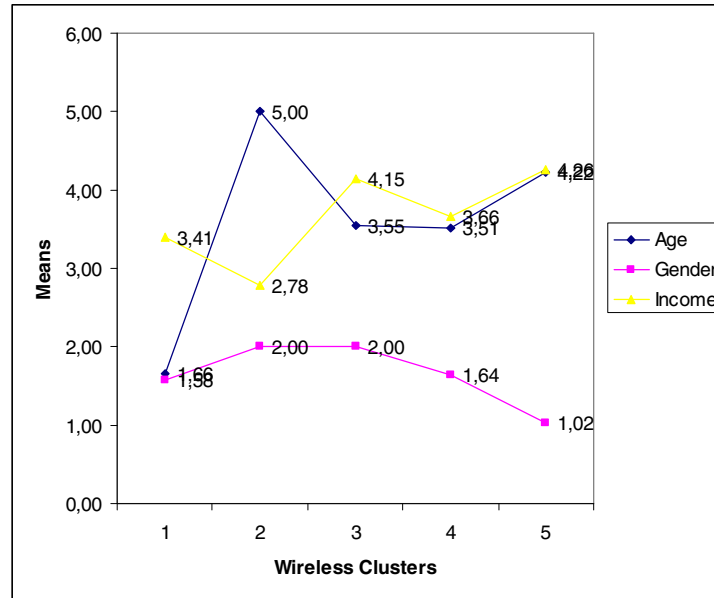
Figure 4: Demographic characterization of wireless segments

Predicting cluster membership

In order to assess the predictive power of each variable in predicting cluster memberships, a discriminant function analysis was done. This analysis may be used to determine which variable(s) discriminate between two or more naturally occurring groups. For instance, after segmenting the market using cluster analysis, managers would like to know how to classify new costumers according to a set of variables. This is achieved through discriminant analysis techniques. In the present case, one variable was entered at a time (see Table 5).

	Fixed-line	**Wireless**
Prior expectations	60.0%	27.7%
Costumer satisfaction	92.8%	36.7%
Perceived quality	88.8%	34.0%
Perceived value	88.9%	34.1%
Repurchase likelihood	88.6%	33.6%
Price tolerance	67.7%	23.6%
All combined	**95.6%**	**39.9%**

Table 5: Classification accuracy

First, the employment of all variables in the fixed-line and wireless market allows to correctly classify 95.6% and 39.9% of the customers respectively that shows the superiority of the fixed-line segment in terms of predicting customer perceptions and behaviors. Second, in both sectors, customer satisfaction exhibited the highest explanatory power (92.8% and 36.7% for fixed-and wireless sectors respectively); this means that a fixed-line company may use this construct to get a sense of the market and to classify customers with almost 93% accuracy. Third, prior expectations and price tolerance had the lowest predictive power for the fixed-line and wireless market. Fourth, wireless consumers have a very complex psychographic profile which means that companies need to use an optimal mix of those variables (i.e., the maximum is 39.9% predictive power when combining all variables together). Fifth, three purchase dimensions capture only part of wireless consumers' behavior.

In order to uncover other possible relationships in the wireless cluster, a second set of discriminant analysis was run with the demographic indicators. It was observed that age and gender were the best predictors (46.6% for age and 45.1% for gender) when compared to income (29.4%). Note that on average gender, age, and income classify individually 50% of all fixed-line respondents. These results are consistent with results of the cluster analysis witch makes our findings more robust.

Discussion and Conclusions

Based on the findings, several important points emerged that deserve attention. *First*, to effectively target consumers in both wireless and fixed-line markets, there is a need to design three diverse service communications plans and positionings in terms of (1) offered packages and prices, (2) consumer psychographics, and (3) consumer demographics, such as gender, income and age. It is those aspects that managers should employ as a starting point in their marketing campaigns. *Second*, strategies should be based on services differentiation with regards to the following three dimensions: prior expectations, actual service perceptions (perceived quality, perceived value and satisfaction), and behavioral intentions (repurchase likelihood and price tolerance). It is believed that this approach may serve as a complimentary technique to the usage of causal modeling. *Third*, fixed-line consumers demonstrate a higher level of prior expectations, perceived quality, perceived value, and satisfaction than their wireless counterparts. They are also more price-tolerant and are more likely to repurchase services from the same provided in the future. This supports prior findings by Turel and Serenko (2006) who empirically demonstrated that that the degree of customer satisfaction with mobile services is lower than that with fixed-lines. Anecdotal evidence and periodicals also frequently report on cases of customer disappointment with their mobile phone experience.

Fourth, it was discovered that the fixed-line sector is homogeneous whereas the wireless one is heterogeneous in terms of its underlying market segments. Recall that two and five clusters were identified in the analysis for these markets respectively (Table 2 and Table 3). Therefore, there is a need to further explore and focus on the structure of the wireless market since it represents a more ample ground for segmenting the current and potential customers. At the same time, in order to develop effective segmentation strategies, managers should be aware of segment dynamics. The following paragraph reports on the wireless sector in more detail.

As such, five segments were determined in the wireless market. These clusters are complementary and exclusive (see Figure 3). Different age classes and income classes could be targeted. Doing so, managers should keep in mind that elderly people are more satisfied, less price sensitive and more loyal. It is also interesting to note the youngest segment has high prior expectation and is not price sensitive. It could be argued that these respondents still leave with their parents and hence don't pay for the services. It's also noted that high score clusters, (i.e., clusters 1, 2, 3 and 5) have similar scores on the six psychographic variables but when it comes to age, gender and income, they represent different demographic profiles (see Figure 4). Even though the wireless market is unstructured compared to the fixed-line one, we notice that there are more satisfied fixed-line costumers. This may be due to the nature of competition and structures of both markets. Therefore, companies should focus on targeting and attracting young segments since their elderly counterparts are very satisfied and have high expectations. This latter segment acts as a "cash cow" which allows companies to finance other growing and potentially profitable segments. Moreover, there are more price sensitive costumers in the fixed-line market than in the wireless one.

Fifth, since age is an indicator of consumers needs, elderly people may have different requirements than younger individuals do especially in terms of price sensitivity, repurchase likelihood, and expectations. This could be explained by assuming that younger individuals more heavily engage in information searching and that elderly people ask for different services than the younger customers do. Overall, wireless respondents have a dissimilar profile than fixed-line ones because they have access to a wider variety of services and several service providers. As for the income, regardless of their wages, all respondents are fairly not price sensitive. They also have high expectations and are somehow satisfied. Moreover, there are more high-salary respondents with low price sensitivity in the fixed-line market than in the wireless market. This is related to value-services in the fixed-line sector (i.e., how consumers value the dollar service). People expect to have a higher value in the additional features they buy. This expected value service is translated into slightly higher price sensitivity. With respect to gender, it is noticed that both men and women are not price sensitive. More generally, wireless respondents behave as fixed-line customers when it comes to gender.

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