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Competition in the Mature Markets of Professional versus Final Consumer Information Products

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Abstract

Factors are explored of decision making in regard to buying and/or upgrading information products. Mature information product markets are considered. Comparing two cases - professional and final consumer information products - the decision making process is considered on the choice of product variant. We distinguish three groups of users according to their ultimate decisions to either not to upgrade the existing system, or to upgrade it with the existing provider, or to switch to another provider. Consumer decision is based on multiple characteristics of information product quality, network effects, price and switching costs, whereas producers have to compete not only with their competitors, but also with the previous versions of the own products. Based on the considered cases, differences in consumer priorities are discussed in the markets of professional versus final consumer information products.

Keywords


INTRODUCTION

The dichotomy of consumer loyalty and propensity to switch between brands or providers is one of the important dimensions of information and high technology products.

The majority of research investigating information products considers the emerging or growing markets of those products. Meanwhile, many of the markets of information products and services have been growing towards the stage of maturity. Mature markets display some features which are worth special attention by researchers and practitioners. While information products, even when well established, are still dynamic in nature, avenues for maintaining the existing level of operations and for market growth through acquiring new customers are often limited. Market responses to product quality, marketing expenditure, pricing strategies and other market signals are mixed. Therefore, there is a need for tuning up complex strategies in mature market situation, as long as information products are concerned. Such strategies include either convincing existing customers to upgrade to a newer product, or providing potential customers with incentives for switching from other brands or providers. Practically, in such markets, product providers need to develop distinct strategies, which allow them to compete effectively not only with their rivals, but with the earlier versions of their own products (Kazakevitch and Torlina 2003).

In this study, the following question is addressed: what are the user priorities that affect decision making on purchasing or replacing the existing version of the information product for a new version in mature high technology and information product markets? In order to answer this question, the key factors of decision making are explored with regard to buying or upgrading information products. A conceptual framework is suggested which reflects the decision making process using the examples of two specific groups of the mature markets of such products. Accounting software for small and medium enterprises (SMEs) represents the category of professional information products, while the mobile telephony services represent the category of final consumer products/services. The comparison is based on two case studies (Kazakevitch, Torlina and Hendricks 2005; Kazakevitch, and Torlina 2008).

An interdisciplinary approach is used combining economic theory with information systems research. The theories applied in the study allow for developing a model explaining consumer behaviour in mature high
technology and information product markets, as well as for distinguishing such behaviour with regard to professional versus final consumer products. Our approach is based on the assumption that in both market categories, consumers face the choice between the following options: to continue using the existing version of the product; to upgrade it with the current provider; or to switch to another provider. An essential feature of the model is interfacing user strategies with vendor strategies via market structure.

The rest of the paper is structured as follows. In the next two sections we discuss the key theoretical concepts and describe the model, underlying assumptions, and the rationale for the inclusion of the factors underpinning consumer behaviour in high tech and information product markets. In the following sections we present some results of model’s quantification and empirical tests. In conclusion, we discuss the results of our empirical study and the applicability of this approach to markets with similar structures.

**KEY CONCEPTS**

In this section, based on the existing literature, the key concepts are discussed which this study is grounded on.

Mature markets are worth paying special attention for a number of reasons.

(i) Mature markets are characterised by high market penetration. Many of high technology and information product markets have achieved a mature stage, with market penetration of some products from 75% to 100% of the market base (Shankar, at al. 1999). This means that the potential for reasonable customer base growth has been mostly exhausted.

(ii) The level of penetration in mature market affects competitive strategies. Cherdon (2001) suggests that the market is “mature” when it is in a state of “workable competition” and no single player any longer holds a dominant position. Consequently, this means limited market growth and intense competition between firms for market share. The potential for new entrance have been mostly exhausted.

(iii) Different stages of market lifecycle generate different market response and effect brand growth differently. For example, Shankar, at al. (1999) note that products entering market at mature stage are most disadvantaged - they grow more slowly, have lower response to product quality, and have the lowest response to marketing spending.

(iv) Traditionally, market maturity is associated with industry stability where, simple (one-dimensional) strategies, work (Hewitt-Dundas & Roper 2001). Miller et al. (1996) argue that simple, one-dimensional strategies involving either price- or quality-based competition are likely to be most appropriate to mature industries. While the argument here suggest that information product markets are “emerging” because of dynamic nature of the product, our research shows that dealing with software and communication products presents more complex situation. Namely, when information products are concerned, there is a need for embedding the “stability” and limitations of mature market situation into dynamic complex (emerging) strategies.

Consumer behaviour and decision making with regard to information products have been explored from the perspectives of various disciplines. Factors and conditions affecting software acquisition, acceptance, and continuity of use have been discussed, with a comprehensive body of research developed in economics, marketing, and information systems. The literature reflects different aspects of how software is being selected through the market (Waterman 1991; Varian 1998; Macdonald & Sharp 2000; and Zheng Zhou et al, 2002), adopted (Rogers 1976), accepted by users (Davis 1989; DeLone & McLean 2003; and Seddon 1998), and how, with time, the perceptions of the system change shaping users’ intentions to repurchase software or switch to another provider (Karahanna et al 1999; Bhattacherjee & Premkumar 2004). The majority of seminal research focuses on either individual user perceptions or internal business view of success. Marketing research, in general, is more concerned with what products users choose to buy rather then how they make decisions. Meanwhile, there is a need for an integrated approach, which allows exploring interaction of businesses with their market environments for decision making (Brown & Eisenhardt 1995).

In order to connect market and business perspectives, the characteristics of information product markets must be considered. High technology and information markets are a special case with quite distinctive characteristics (Shapiro and Varian, 1999). **Switching costs, network effects, and customer lock-in mechanisms**, in addition to **price incentives**, **product utility** and **quality** appear to be those factors influencing both consumer choice and providers’ competitive strategies in mature markets.

**Quality** of digital products, in general, and software product, in particular, is an important factor of user’s choice of the product variant from those available in the market. Quality is a complex characteristic, which among other components includes product content and functionality, user interface, ease of learning, warranty, service and quality of user support. DeLone & McLean (2003) and Wong & Jeffery (2001) offer a comprehensive discussion on multiple views on information product quality.
Initially, the concept of network effect has been well established in the literature on infrastructure and utility sectors (Economides, 1996). Network effect is a positive externality that occurs where the benefit, consumers perceive to be available from using a product, depends on how many others use it (Van Hoose 2003). One of the key characteristics of mature information product markets, important for the following analysis, is that the consumers of information products tend to form consumer networks. Such networks can create significant externalities offering extra value for new and existing customers, and hence induce purchasing decisions. Strategies of high tech and information product vendors normally include creating conditions for expanding or at least stabilising these networks (Farrell and Shapiro 1988; Shapiro & Varian 1999; and Cherdon 2001).

According to Klemperer (1978a, b, c, & 1989), consumer switching costs (CSCs) may include transaction, learning, artificial and contractual costs. Transaction costs, as defined by Klemperer, are those costs incurred by a consumer when ceasing a relationship with one supplier and switching to a rival brand. Learning costs occur where learning is undertaken by consumers enabling them to use the features of a newly acquired product or version. Switching costs, in terms of both lost productivity and money spent, may outweigh any perceived benefits. Artificial costs are created by firms in order to increase customer loyalty. Consumers who do not remain loyal to a company are penalised relative to those who remain loyal. Contractual CSCs are induced by contracts that commit consumers to buy a product or to use a service from a firm for a particular period of time or for a particular number of purchases.

Consumer lock-in is as a general situation, induced by a seller of good or service, where CSC are higher than the perceived benefit from using an alternate product (Van Hoose 2003). Zauberman (2003) suggested that consumer lock-in tends to decrease consumers’ propensity to search and switch; while further that lock-in occurs due to consumer’s preference to minimise immediate costs and an underestimate impact of future CSC. Shapiro & Varian (1999) categorised several types of lock-in effect, including durable purchases, loyalty programs, brand-specific training, the absence or insufficiency of tool for converting data into different formats, etc.

As long as market structures and competition are concerned, the majority of literature devoted to switching costs, network effects, and customer lock-in mechanisms has been dealing with oligoplistic markets, where market power is exercised by competitors at acquiring their market shares and affecting market prices, while innovations, product variety, quality, or upgrade are not predominant competitive tools. Goods are assumed to be homogenous, and each firm is assumed to possess some market power that allows for pricing at above marginal cost and obtaining monopoly profits (Chen & Hitt 2002; Elzinga & Mills 1998, Farrell & Shapiro 1988; and Klemperer 1987a, b, c, 1988 and 1995). Meanwhile, the market structure of software and mobile telephony services, like many other markets of high technology and information products, comprises the features of both oligopolistic and monopolistic competition.

In this paper, we combine the existing theory of network effects and CSC in oligopolistic markets with a model of monopolistic competition in the markets of high tech and information products (Kazakevitch & Torlina, 2003). This combination leads to developing a new theoretical model of consumer behaviour in mature high tech and information product markets.

A MODEL

We consider a market of an information or high technology product that satisfies the conventional properties of monopolistic competition (Jehle 1991). The market consists of a number of providers. For the purposes of this study, the providers can be considered as mono-product firms. Product variants, produced by different providers, are viewed by buyers as close though not perfect substitutes for one another. Therefore, each of the providers can be considered as the monopolist of its particular product variant with a limited degree of monopoly power. Such a monopolist is enjoying a monopoly power and making economic profit during only a short period of time - from the introduction of a unique product or technology until such a technology becomes available to rivals, or until a new ‘more innovative’ product is introduced by a rival. Providers’ objective is profit maximisation. Willingness to supply product to the market is elastic and increases with increase in price. Users’ objective is utility maximisation. User’s demand is elastic and decreases with increase in price.

A conceptual model suggested in this paper is based on and is a further extension of both the conventional model and the model of monopolistic competition in information product markets developed in (Kazakevitch & Torlina 2003).

From the supply side perspective, information products possess some distinctive properties. Those properties include: (i) Multiple and heterogeneous sources of value embedded in the product itself; (ii) Specific production cost structure - high fixed costs, negligible variable costs and, therefore, zero marginal cost. Initial fixed costs, usually including high marketing and promotion expenditure, in most cases are sunk costs, that cannot be recovered if a product fails; (iii) Extreme economies of scale - in the general case of information product there are no natural or economically justified limits to production of additional copies; (iv) No direct interconnection
between costs spent on the production of the first copy and product price; and (v) Product valuation by potential consumers and consumer demand are key price determinants.

An assumption of the neoclassical model of monopolistic competition is reconsidered that the technology used in the production of all product variants is perfectly available to all the providers. We also see the information technology at the core of the product as perfectly available to everyone wishing to enter the market as well as to the existing market participants. However, each portion of cutting-edge technological information spills over not immediately. Its availability, for the time being, may be restricted by commercial secret protection, patenting or licensing. Therefore, within each particular short-run period, each of the firms possesses some unique product-attributeable elements of otherwise common technology. These unique elements of use of the technology are what make the product variants different. Those elements are also embedded in the unique cost structure of each of the product variants. The differences are viewed by the buyers as differences in several quality characteristics. For the purpose of the model, “quality” is considered as perceived quality that may include real improvement as well as subjective user perceptions or successful marketing component.

In (Kazakevitch & Torlina 2003) we show how multiple quality characteristics can be aggregated and the aggregate is used in the model as an endogenous scalar variable. From the individual consumer’s perspective, it is the aggregate perceived quality variable allowing each consumer to consider one product variant to be of a better quality than another one. From the vendor’s perspective, higher quality can be achieved only through improving product features or setting up services supporting the product, thus increasing the costs. Each firm is characterized with its cost elasticity of quality.

For the purpose of this study, it is also assumed that the costs of switching from the current provider to a different one, embedded in the product and/or product support, are heterogeneous, can be viewed differently by individual consumers, and can be aggregated into a scalar variable similarly to product quality characteristics. We assume that generally, imposing switching costs, discouraging consumers from switching to other providers, is not free to the provider. Furthermore, the expenses incurred as the result imposing the switching costs can be themselves accounted for as a component of the costs of production of the new product version.

In addition, a structured understanding of the mature market of software product is introduced. A market is considered as mature if: (i) the number of users is not substantially growing; (ii) all the users have acquired a “previous” version of a digital product variant from a chosen provider; and (iii) now are facing the emergence of a new generation of the product they are using. Customers-users are facing the choice of one out of three possible strategies (See Figure 1):

- **Not upgrading the current version of software.** The user chooses this strategy if the opportunity cost associated with using a not upgraded software package does not exceed the cost of upgrading (with either the current or a different provider).
- **Upgrading with user’s existing provider.** This is the optimal strategy if a positive net benefit is expected as the result upgrading, and the net benefit of upgrading with the current provider is greater than the net benefit of switching to another one.
- **Switching to another provider.** Like in the previous case, the net benefits of upgrading should be positive. However, the net benefit as the result of switching to another provider is greater than of remaining loyal to the current one.

The choice of an upgrade strategy by users is generally based on the following factors:

**Costs of not upgrading.** If users decide not to upgrade the current versions of the product, generally they may incur the costs that would not be incurred otherwise. In particular, those costs are due to lower productivity of the older versions; possible decrease in the communality with other users who opt for upgrading; downgrading
the level of support of older versions by providers; inefficient work on or incomplete compatibility with a newer hardware; etc.

*Quality of new versions.* Users might be the more interested in upgrading the more improvement in the quality of the product is achieved by the provider(s). Therefore, investing in the quality of new version is the main tool by which providers tries to retain existing users and attract new users, who have been previously using competing products.

*Prices for new versions.* Users are inclined to compare prices for the new versions of competing products.

Switching costs of upgrading with the current provider and costs of switching to a different provider (embedded into the product). Users compare the switching costs of upgrading with the current provider versus the costs of switching to an alternative one. Those costs may include the costs of data conversion and other costs of implementation; the cost of training; etc. Providers include switching costs tools in their production and marketing strategies, insuring that unavoidable switching costs of upgrade for newer versions of their product are lower than the costs of switching to other providers.

*Policies increasing comparative costs of switching for (locking in) existing users.* The switching costs of upgrading are technically inevitable. Some time and work are required for replacing one product with another one; for adjusting certain settings, for converting/transferring data, as well as for training personnel. Meanwhile, providers can actively affect the level of switching costs for their existing users, making transition to different providers more difficult. For example they can limit convertibility of data, or just lock their users into a purchasing/servicing contract.

Policies decreasing comparative costs of switching to the new versions of their products by both existing users and “newcomers” (users coming from other providers). In particular, providers may wish to supply data converters and/or training for personnel. Such measures, however, are not cost-neutral.

*Network effect.* The more users decide to upgrade their product with a particular product, the more users may feel to be under pressure to do so. Providers therefore may wish to invest in creating or upgrading industry standards, such as data format or communication protocol, that are able to affect the magnitude of network effect. In our further consideration, we assume that network effect is associated either with the quality of the product or with the cost of switching to other providers.

Summarising all the above-mentioned factors, increase in quality, cost of switching to other providers, and network effect can be generally attained only at additional costs. The providers are characterized by generally different cost functions. Therefore, the incremental cost of increase in quality differs from one firm to another. Each of the firms sets the price to cover the costs and to earn profit, depending on anticipated number of users. Different incremental costs allow them for different degrees of freedom in setting a minimum price, which covers providers’ costs and returns at least normal profit. Therefore, on users’ demand side, relative increase in quality, as well as in switching costs, causes relative increase in demand for particular provider’s product variant. Increase in demand is also amplified by the network effect. Relative increase in price causes decrease in quantity demanded. Firms’ cost-quality and switching cost inducement decisions affect their relative competitive positions. Total change in demand for the product of a particular firm can be negative or positive and varies from one firm to another. Ultimately, in the mature market of a particular type of software product, with the release of new generation (versions) of the competitive products, a new equilibrium position for each of the providers can be characterised by increased, decreased or unchanged market share.

In this study, we are concerned with the “consumer choice” segment of the model (Figure 1). In other words, we address the question: how certain factors affect the consumer strategy with regard to upgrading to a new version/brand of the product. The decision whether to upgrade an information product with the same provider, or switch to another provider, or not to go for an upgrade for the time being, is considered as the dependant variable of the model. Factors affecting consumer choice are treated as independent variables.

**SOME EMPIRICAL EVIDENCE**

The discriminant analysis has been applied to establish a relationship between independent variables (factors), in terms of their relative importance, and dependant variable (consumers’ decision with regard to upgrade and loyalty). Generally, this statistical tool is designed for determining which variables discriminate between two or more groups of cases in the sample. It allows studying the difference between groups simultaneously, determining whether meaningful differences exist, and, identifying the discriminating power of each variable (Klecka 1980).

Group differences are described and factor ranking is obtained by computing classification function for each of the groups of cases with respect to dependant variables: $S_i = c_i + w_{i1}x_1 + w_{i2}x_2 + \ldots + w_{im}x_m$, where the subscript $i$ denotes the respective group (in our case – customers who are not upgrading, upgrading with the...
same provider, and upgrading with a different provider; the subscripts 1, 2, ..., m denote m independent variables (in our case – factors affecting consumer decision making); \( c_i \) is a constant for group j, \( w_{ij} \) is the weight for variable j in the computation of the classification score group i; \( x_j \) is the observed value for the respective case for variable j. \( S_i \) is the resultant classification score. The weights, obtained for each of the variables indicate, how much or how little each factor contributes, positively or negatively, to the differentiation between the groups. The overall Wilks’ Lambda indicates that there is a significant difference among groups across all independent variables, if the significance level is below 0.1. Two variants of the discriminant analysis were undertaken – on aggregated and disaggregated variables for each of the cases. The aggregate analysis was conducted on the variables, combining the ranks of detailed variables in the following ones:

- Price factor
- Quality factor
- Switching cost factor
- Network factor

### Accounting Software for Small and Medium Enterprises

The importance of the above-mentioned factors of the consumer choice of software products was verified for the market of accounting software used by small and medium enterprises (SMEs). Accounting is a key function required for any small business. Accounting software was among the first computer information systems widely adopted by SME in Australia. In 1997 76% of small businesses were already using computers with 75% of them reported using Accounting and bookkeeping packages. The growth continues since, and was strengthened further by introduction of GST, growing use of IT and eBusiness by SMEs. Sensis Reports 2008)

The data was collected by interviewing the representatives of 120 SMEs who are the current users of one of 11 accounting software products. A structured Likert scale questions were asked corresponding to 4 aggregated and a number of detailed factors identified as specific to this software product market. For the case of accounting software, the aggregated variables corresponded to the following specified detailed variables. **Price Factor** - price factor is considered; price is acceptable or prohibitive; search for price–value tradeoff is important. **Quality Factor** – functionality; reliability; speed of data processing; user friendliness; on-line and off-line customer support; security; data validation tools; flexibility of customisation. **Switching Costs Factor** – contract lock-in, training, data conversion, artificial switching costs. **Network Factor** – benefits from use by other businesses; data connectivity; peer recommendation; recommendation by accountant; compliance with industry standards.

Based on the collected data, the factors are ranked within each of three groups of users who have chosen one of the above-mentioned product upgrade/no upgrade options.

<table>
<thead>
<tr>
<th>Aggregate decision making</th>
<th>Attitude towards upgrade</th>
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<tr>
<td></td>
<td>Non-upgrading</td>
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<tr>
<td>Price factor</td>
<td>.366</td>
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<tr>
<td>Quality factor</td>
<td>11.875</td>
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<tr>
<td>Switching cost factor</td>
<td>1.385</td>
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<tr>
<td>Network factor</td>
<td>2.739</td>
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<td>Wilks’ Lambda</td>
<td>.961</td>
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The discriminant CFCs and corresponding ratings of the customers’ aggregate decision making factors (Table 1) demonstrate the rating of factors by three groups of customers. The Wilks’ Lambda Significance levels (above 0.1) demonstrate insignificance of differences between the three groups with regard to the aggregate decision-making variables. Out of those variables, the most important appears to be the Quality Factor followed by the Network and Switching Cost factors. The Price Factor appears the least important in decision making.
Mobile Phone Services

The market of mobile phone services is an example of a mature high technology final consumer market. The mobile phone industry has been growing at an exponential pace in Australia during the recent decade, and has now reached the stage of maturity, where the absolute majority of population has a mobile phone. According to the Australian Mobile Telecommunications Association, “the total number of mobile phone subscribers reached 21.1 million at 30 June 2007, which implies a penetration rate of over 100 per cent” (AMTA, 2008).

A structured questionnaire with fixed alternatives and Likert scale answers has been developed. Questions were corresponding to five aggregated and a number of detailed factors specific to this product market. The population, which this study is based on, is the Australian mobile phone market. “Market” is defined as all those, within the age range, who own a mobile phone, as well as those considering purchasing a mobile phone. The sample consists of 120 university students approached on campus over a period of one week. The justification for the sample size is that such as size is sufficiently large for the purposes of parametric statistical analysis in general, and discriminant analysis in particular.

The set of factors for the case of the mobile telephony services market is similar to the case of accounting software. Here we distinguish two quality characteristic aggregates: Quality Handset Factor and Quality Financial Factor. The earlier one reflects the quality characteristics of the hardware component of the product, such as built-in video camera; internet access; and additional accessories. The latter one integrates the overall importance of the financial factors built into a contract or prepaid mobile phone product, including such components as cap on monthly bill; increased discounts in return for increased contract length; the opportunity to ‘roll over’ unused free monthly calls; a designated number of free SMS per month per recharge card; designated number of free calls per month per recharge card; a designated time of day to make free calls; etc. These Quality Financial Factors should be seen differently from the Price Factor, in this instance, since they indicate the flexibility of customer’s choice and, therefore, use-friendliness of the overall product. Furthermore, those “Financial Factors” are inseparable from innovation, research, and development, as they are enabled by advances in mobile network and information technologies.

Meanwhile, Price Factor includes the importance of price consideration and price-based search in decision making; and the perceptions that current prices are acceptable or prohibitive. Switching Costs Factor includes understanding that consumer user is currently locked in a current contract; learning time; financial incentives to switch; and consideration to switch from the prepaid option to a term plan or form a term plan to the prepaid option. Network Factor includes benefits of information contents provided within a given network; connectivity at discount rates within the same network; peer recommendation; and brand reputation.

| Table 2. Discriminant Classification Function Coefficients and Ranks of the Customers’ Aggregate Decision Making Factors (Mobile phone Services) |
|-----------------|-----------------|-----------------|-----------------|
| Aggregate factors of decision making | Non-upgrading | Upgrading with the same provider | Upgrading with a different provider |
| Price factor | 7.225 | 7.110 | 6.745 |
| Quality handset factor | .647 | 1.005 | .742 |
| Quality financial factor | 4.559 | 4.913 | 4.933 |
| Switching cost factor | 1.508 | .698 | 1.071 |
| Network factor | 1.752 | 2.236 | 2.026 |
| Test of Function | .773 | 28.919 | .004 |

The difference between the groups of customers with regard to their loyalty appears to be significant in this case. Ranking the relative importance of independent variables for discriminated groups has indicated that the Price Factor appears to be the most important for all three groups of customers, followed by the Quality Financial Factor. The Network Effect Factor also has the same rank among all three groups of customers. Differences between the groups’ ranking appear to be noticeable only with regards to the overall less important Switching Costs and Quality Handset factors (Table 2).

FINDINGS

The results obtained for both cases gives some insight into consumer behaviour as well as competitive mechanisms in mature information and high technology product markets.
A particular market structure always creates a supply side environment for consumer decision-making. The mature high technology market structure is a special case with quite distinctive both producers’ competition and consumer behaviour characteristics. As discussed earlier, in such markets, product quality, represented by a bundle of product features and services, network externalities and consumer switching costs, becomes increasingly important in producer and consumer market strategies, in addition to traditional market determinants. In this paper, we have presented a model of a mature market of high technology or information product, where traditional market determinants of utility and price have been complemented by quality, network effects, and switching costs.

The results of empirical study of two of such markets allow for considering differences between three groups of customers with regard to their buying behaviour and their decision making patterns. In the case of software for SMEs, this difference appears to be insignificant, whereas in the case of mobile phone services it is statistically verifiable. Insignificance of the difference, with regard to the aggregate factors between the three groups of customers in case of professional software, is an important result allowing for constructing a uniformed consumer demand function. Meanwhile the difference between the groups with regard to the detailed product specific variables appears to be statistically significant and can be suggested to the providers of this software for tuning up there production and marketing strategies.

The difference between the groups of customers with regard to their loyalty appears to be significant in the case of mobile services. The analysis indicates that in all three groups of customers Price Factor with such components as market price of the product, “value for money”, and attractive financial services and discounts strongly dominate the decision making. This is entirely opposite to the outcome for the professional software market where Quality, followed by Network Effect are the most important factors, and Price is the least important one.

Other factors, such as additional services enhancing social interaction, incentives and inconveniences of switching between providers, and novelty features of new products are more peripheral for the mobile services market. Interestingly, though, that the factors which seem to be the last priority in decision making process, appear to be real group differentiators. “Loyal upgrading” customers rank “novelty features” of a new product as relatively more important than “inconvenience of changing product”. "Loyal non-upgrading” customers demonstrate more conservative approach, indicating that in their decisions “inconvenience of switching products” prevail over obtaining “novelty features”. The third group, “disloyal “customers, found overall “incentives to switch to a new provider” more attractive then “novelty features” of current provider’s products. In terms of managerial relevance and focus of the strategic approach, further analysis is required in order to develop strategies allowing product providers to reduce or neutralize factors leading to the incentives to switch from one provider to another. Another aspect of these findings is that, even though we consider mature market rather than new adoption, psychological types of adopters of innovation (Rodgers 1976) may play considerable role in decision making. Further research is needed to explore if this is the case.

The impact of the Quality Variable on decision making process (from both the demand and supply side perspectives) can be stronger or weaker. For product providers this can be an important signal in regard to the role of product innovation in strategic decision making. While professionals value the quality of product and the network effect, final consumers consider the price and financial factors as their top priority. In the earlier case, stronger impact of the quality and network factors means that the innovation component of the business strategy is more important; and unique quality characteristics, for the time being, can remain a source of economic profit. In this case the market structure tends to remain monopolistically competitive. In the latter case, weaker impact of the quality and network factors means that the innovation component of vendor strategy is less significant. The cost/price factors are becoming more important than the quality ones. This also may be an indication that the market structure tends to become an oligopolistic or competitive.

CONCLUSION

The paper gives some insight into both consumer behaviour and competitive mechanisms in information and high technology product markets. The traditional theoretical approach to market structures and competition has been modified to include specific characteristics of such products and markets. In particular, quality, switching costs and network effect are included in the model. The connection between business strategies and market environment has been taken in to account in the model. This enables theoretical analysis of competitive strategies with possible outcomes for practice.

First, we have developed a model, which incorporates new factors in an extended consumer demand analysis framework in relation to information and high technology products.

Second, we have discussed the results of empirical study of two of such markets. Questionnaires have been developed, and data collected for quantifying the “consumer choice” segment of the model with application to the Australian accounting software for SMEs and mobile phone services markets. The study has allowed for
considering differences between three groups of customers with regard to their buying behaviour and their decision making patterns.

Third, comparing these two cases gives some insight on buyers’ preferences in professional versus final consumer information and high technology product markets.

In conclusion, we believe, the suggested approach can be applied to other markets with similar structures. The outcome of constructing and quantifying the model is that it allows analysing consumer decision making factors in a particular type of market. Where the context and the factors affecting a specific market are identified, the suggested approach provides a tool for ranking each of the factors and sub-factors. This allows, further, comparing their relative importance with regard to consumer demand determination for a high technology product.

While the suggested approach can be used for the analysis of market structures of mature markets of information and high technology products, as well as for practical decision making and strategy formulating by both consumers and producers, the concept itself, and especially the implementation discussed in this paper, are not free from limitations. In particular, a more representative sample in both cases as well as the demographic dimension of analysis (for the case of final consumer market) is desirable for more conclusive results.

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