An investigation of consumer behaviour in mobile phone markets in Finland

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Abstract

In recent years, the adoption of mobile phones has been exceptionally rapid in many parts of the world, and especially in Finland where cellular phones are nowadays almost as common as wrist watches. While mobile phone usage is rather an unexamined genre in academic literature, this exploratory study attempts to investigate consumer purchasing motives in cellular phone markets. This paper surveyed 397 Finnish consumers and looked at their motives to purchase new mobile phones on one hand and factors affecting operator choice on the other. The results indicate that while price and properties were the most influential factors affecting the purchase of a new mobile phone, price, audibility and friends' operator were regarded as the most important in the choice of the mobile phone operator. This paper concludes with a discussion of contributions and proposes ideas for future studies in this underresearched area.

Key words: consumer behaviour, mobile phone usage, Finland

Introduction

This paper purposes to study the motives that affect consumer behaviour as well as give insights into the use of mobile phone services including the perceived value-added services, and to collect general information about the users. Although it is evident that the large players in the telecommunications business constantly conduct market research, the problem is that the results obtained are usually kept inside company walls and therefore consumer behaviour in mobile phone industry is an unexamined genre in academic literature.

On this basis this investigation first describes the trends in the information and telecommunications (ICT) sector in order to illuminate the issues underlying consumer behaviour. This will be followed by review of recent studies concerning factors that seem to affect the choice of a mobile phone, operator as well as intention to adopt new mobile phone features and services such as multimedia messaging service (MMS) and sending e-mails. Finally, the paper reports the survey findings and ponders managerial and theoretical implications.

Literature review

The time we are living is maybe one of the most fascinating times to study mobile phone purchasing motives and perceptions of new mobile phone services. Although quite many instances have challenged the need for new mobile services (e.g. Bradner, 2002; Wagstaff, 2002), the current trend in the mobile phone industry is that we are experiencing a shift from second generation mobile phones to third generation. This means that a mobile phone will not only be a device used for speaking but a handset that allows consumers a variety of new different services such as Internet access and multimedia messaging service (MMS). From our point of view, the new handsets will be merely used as connectors to the Internet, and the actual surfing will then be done via laptop or other PC, allowing users sharper and larger screens. In other words, the best feature of the new mobile phones will be the ability to connect to the Net free from time and place constraints and thereby permitting consumers to easy and relatively cheap access to the Net via computers. We are currently witnessing this shift from modem connections to wireless Internet connections by the use of w-lan and GPRS network. In a nutshell, the real benefit of 3G mobile devices relates to faster, cheaper and easier access to the Internet, and most importantly, not bounded to place.

A recent consumer survey of 470 early adopters conducted by the the3Gportal.com on behalf of Tarifica (Jones, 2002) shows that 3G has the potential to be successful if it is launched and marketed to the right audience with the focus on real consumer needs. The initial success of 3G depends on the focus of operator launch strategies as well as key services such as peer-to-peer communication and content available. According to the report, while the so-called popular 3G services (e.g. gaming, gambling, and music downloads) were found unimportant, the survey suggests that e-mail, whether text based or multimedia, will be the breakthrough service.

Mobile phone choice and usage

In a recent paper, Liu (2002) studied factors affecting the brand decision in the mobile phone industry in Asia. It was found that the choice of a cellular phone is characterized by two distinct attitudes to brands: attitudes towards the mobile phone brand on one hand and attitudes towards the network on the other. While price and regularity of service were found to dominate choices between network providers, choices between mobile phone brands were affected by new technology features such as memory capacity and SMS-options, more than size. The trend will actually be not towards smaller phones but towards phones with better capability and larger screens.

In another study, Riquelme (2001) conducted an experiment with 94 consumers to identify the amount of self-knowledge consumers have when choosing between mobile phone brands. The study was build upon six key attributes (telephone features, connection fee, access cost, mobile-to-mobile phone rates, call rates and free calls) related to mobile phone purchasing respondents had to importance rate. The research shows that consumers with prior experience about a product can predict their choices relatively well but customers tended to overestimate the importance of features, call rates and free calls and underestimate the importance of a monthly access fee, mobile-to-mobile phones rates and the connection fee.

According to a recent report by In-Stat/MDR (2002) research institute, colour displays are now driving consumers into stores to purchase new mobile phones and related devices such as PDAs. The finding that colour display is considered more important choice criteria for consumers than for example higher data rates or new features, is quite interesting owing to the fact that other studies reviewed have not mentioned the importance of colour display. The report also indicates that there is real demand for colour display handsets and by the year 2008 it is expected that all mobile phones and PDAs are equipped with a colour display. The diffusion has started from Asian countries where for example just in Japan over million handsets with colour displays are sold every year. The diffusion speed is said to depend primary on manufacturing costs: at present manufacturing a black-and-white display is much cheaper compared to colour display. According to the report the manufacturing costs are $7-12 and $56-72, respectively.

These and other issues as well are next analyzed with data on Finnish consumers. Finland can be considered as one of the leading countries in the mobile phone industry. Not only due to Nokia but also some other macro- as well as microeconomic factors such as society's positive attitude towards new technologies and long geographical distances, have accelerated the diffusion of mobile phones in Finland.

Description of the survey data and methods

The data was collected by means of questionnaires within selected educational institutions in the Oulu region in Finland in September 2001. There were three target groups in the survey. The first group comprised secondary school students aged around 15. The second group included first-year students of the Faculty of Economics and Industrial Management at the University of Oulu mainly aged 18-26. The older students at the Faculty of Economics and Industrial Management and at the Technical Faculty at the University of Oulu formed the third group. Their age varied between 20 to 47 years, although most were aged between 20 and 30 years of age. The data consisted of 397 questionnaires, of which 146 were from female students and 151 from male students. Almost all (99.3%) of the respondents had at least one mobile phone in use at the time of the survey, which reflects the actual situation among the population in the Oulu region.

Questions inquiring the acquisition of a mobile phone and choice of the operator were implemented with 11 statements respondents had to importance rate on five-point Likert scales. The development of the scales was based on two sources. Not only did we utilise existing statements found in literature, but also our own knowledge followed by two focus group interviews conducted among 45 university students. In the first focus group the theme was mobile phone acquisition and in the second operator choice. Consumer purchasing motives concerning the choice of a mobile phone as well as operator are not well-known in theory, i.e. no commonly accepted knowledge of the factors influencing consumers' decision making exists. Therefore, the results obtained have some limitations and should be considered tentative.

Results

The trend that mobile phones are purchased earlier and earlier was verified with the data. While looking at the oldest surveyed group three (older university students), majority of them bought their first mobile phone at the age of 18 (24%), followed by the age of 19 (23%), and 20 (15%). In comparison, 33% of the youngest group (secondary school students), acquired their first mobile phone at the age of 15. This was followed by the age of 14 (27%) and 13 (18%). Thus, it can be stated that the age of buying the first mobile phone has lowered in just few years from 18 to 15 years.

Factors affecting the choice of a mobile phone

Price and properties were regarded as the most important motives affecting the decision to purchase current mobile phone model among the respondents as displayed. According to the survey close to 80 percent and over 85 percent, for price and properties respectively, felt that price and properties had affected their decision making at least *relatively much*. Price might have dominated the decision making in the sample more than it does for the whole population, as the average net income in the target groups was relatively low. Employer's order or salesman's recommendation were regarded as the least important motives.

A factor analysis (table 1) of the 11 statements suggests that three factors (see e.g. Sharma, 1996; Hair et al., 1995) for more detailed presentation of factor analysis method) were chosen in terms of eigenvalue of larger than 1.0. The Bartlett's test of sphericity was highly significant indicating high correlation between the variables. The second factor analysis presented in this paper satisfied the above mentioned tests also. The identified factors represent 52 percent of the variance of the variables. The first factor can be called manufacturer as the highest loadings relate to three variables pertaining to properties, image, and new services. The second factor exhibits largely loadings for four variables relating to market conditions. Price and audibility had the highest loadings for the second factor. The third factor is defined by two items relating to other people's influence. Thus it can be called influential persons. Influence of the manufacturer explained most of the total variance (20%).

Table 1. Factor analysis on mobile phone choice

	Factors		
Motive	Manufacturer	Telemarket conditions	Influential persons
Image	.83		
Services	.79		
Properties	.78		
Price		.72	
Audibility		.65	
Type		.64	
Free calls		.55	
Salesman			.73
Family			.64
Employer			.57
Friends			.48

Factors affecting the choice of an operator

The choice of the operator was affected primary by price and audibility: around 83 percent felt that price the operator charges had affected their choice at least *relatively much*. In addition, audibility was the second most important motive: 82 percent felt that audibility had affected their decision at least *relatively much*. Other motives of significant importance were properties, friends' choice of the operator, contract type and free calls. Salesman and employer were the least important affecting the choice of one's operator.

A factor analysis (table 2) of the eleven statements was carried out. Four factors explaining 62 percent of the variance of the variables were identified. The factors can be labelled as 1) features and brand, 2) quality of the operator, 3) components in pricing, and 4) influential persons. The first factor has the highest loadings for four variables pertaining to operator's features and brand. The second factor, quality, has the highest loadings for three variables relating to price, audibility and type (supply of different contract types). The factor three can be called components in pricing, because two of the highest loadings for this factor refer to free calls and family's operator type. The final factor refers to employer's or salesman's influence and can thus be labeled as influential persons. The influence of the first factor, features and brand, is the highest explaining 22 percent of the variability.

Table 2. Factor analysis on operator choice

Factors				
Motive	Features and brand	Quality	Components in pricing	Influential persons
Image	.80			
Services	.76			
Properties	.71			
Friends	.51			
Price		.81		
Audibility		.60		
Type		.51		
Family			.78	
Free calls			.58	
Employer				.79
Salesman				.68

Use of mobile phone services

Respondents were inquired about the services they are using at present as well as their intention to use the services in the future. Most popular services used nowadays are logos and ringing tones. Over 70 percent of the respondents had ordered logos and tones for their mobile devices. These two were followed by phone bill inquiry (61% had ordered) and call forwarding (54% had used). Only five percent of all respondents had never used any of these fours. According to the data, the use of mobile phone services seems to remain at the same level during the next 12 months. The question inquiring groups' intention to use new mobile phone services (e.g. MMS) revealed that majority agreed at least *relatively much* with the statement that there is no need for the mentioned mobile services. High price of the services was the most important motive decreasing the number of potential users. According to the survey over 90% of each group felt that high price had affected at least *relatively much* their use of mobile services. Interestingly, inability to use the services or ignorance about them had only minor impact on respondents. Additionally, approximately two thirds of each group considered that poor usability had had only a little effect on their use of the services. Other factors affecting the adoption of mobile services such as small screen size, slow data transfer and poor functionality had relatively low impact on the possible adoption.

Conclusion

This exploratory study was conducted to increase our current understanding of the mobile phone market in general and analyse consumer decision making in particular. The study attempted to cast light on the much unexamined area of mobile phone purchase, operator choice, and use of mobile phone services. The main results of the study indicate the following. First of all, the age of purchasing a mobile phone among young Finns has lowered in just a few years from 18-19 to 14-15. Secondly, the factors underlying purchase of a mobile phone were found to be manufacturer, market conditions and influential persons. For the choice of operator the factors were found to be features and brand, components in pricing, quality, and influential persons. Thirdly, only about 15 percent of the respondents felt that their use of mobile services would increase in the next 12 months.

Although the results of the study are tentative, the findings contribute to the existing though scarce literature on consumer behaviour in mobile phone markets. For managers the results provide interesting aspects of mobile phone choice on one hand by arguing that consumers tend to value properties more than other people's opinion, and by claiming that operator choice is mostly affected by price and audibility. At present, the operator market in Finland is one of the most aggressively competed markets, and the competition is driven by price discounts. Although price was found an important variable affecting consumer choice, audibility was practically speaking of equal importance.

There are many interesting avenues for further research. A more rigorous study on the factors that seem to influence the choice of a mobile phone and an operator is needed in order to get a better understanding of consumer motives.

References

Bradner, S. (2002). Giving away their future. *Network World*, Aug 26, 19(34), 28.

Hair, J.F., Anderson, R.E., Tatham, R.L., and Black, W.C. (1995). *Multivariate Data Analysis with Readings*. NJ: Prentice Hall.

In-Stat/MDR (2002). The worldwide PDA market: the next generation of mobile computing. *Research Report*, (Accessed November 5),
Available from http://www.instat.com/press.asp?ID =364&sku=IN020003ID

Jones, S. (2002). 3G launch strategies, early adopters, why & how to make them yours. *Tarifica report*, (Accessed October 17),
Press release available at: http://www.tarifica.com/ press/view_release.asp?pressid=83

Sharma, S. (1996). *Applied Multivariate Techniques*. NY: Wiley.

Liu, C.M. (2002). The effects of promotional activities on brand decision in the cellular telephone industry. *The Journal of Product & Brand Management*, 11(1), 42-51.

Riquelme, H. (2001). Do consumers know what they want?. *Journal of Consumer Marketing*, 18(5), 437-448.

Wagstaff, J. (2002). SMS: Keep it plain and pithy. *Far Eastern Economic Review*, 165(37), 40-41.