The Importance of Market Research and its Application on the Slovak Mobile Operator Market

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Abstract— **The paper deals with the necessity to acquire new information about the requirements and needs of customers on the market. The basic tool to collect information about market is marketing research, which is dealt from the theoretical aspects in the first part of this paper. In the second part, we applied marketing research on the mobile operators market. The aim of this paper is to provide information obtained from marketing research, customer preferences, focused on services provided by mobile operators, performed on the market of mobile and data services in the Žilina region.**

Keywords—market research, mobile operator, Pearson Chi-Square test of independence, respondents

I.   Introduction

Nowadays it is important that companies have to be able to determine the market in which they will operate, produce products that satisfy target customers and also define the price of their offer. Company success is therefore affected by the application of appropriate administrative and marketing strategies. Marketing management has to apply long-term strategic perspective in creating marketing concept in relation to the environment and competition. Only in this way can achieve consistency between objectives, resources, skills and changing opportunities of the selected market. If the company wants to succeed in a competitive environment, must constantly adapt to changes in the environment and flexibly meet customer requirements.[1]

If marketing managers should make correct, effective and on time decisions, they require daily information. Important factors of obtained information are: relevance, reliability, availability, format and supplier of information, frequency of delivery, their quality, quantity and time. [1]

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Marketing scholars are increasingly aware that as marketing problems become ever more complex, diversity in research methods is more likely to produce a robust understanding of marketing phenomena [8] Marketing research is criticized for "an alarming and growing gap between the interests, standards, and priorities of academic marketers and the needs of marketing executives operating in an ambiguous, uncertain, fast-changing, and complex marketspace. [6] In the article we focus on reseach, which results will be usefull for Slovak mobile operators.

II.   Marketing research

Previous mentioned reasons lead companies to create marketing information system (MIS) in the organizational structure. This includes staff, equipment and information technologies for collecting, sorting, analyzing data and then distribution of necessary and correct information to marketing manager at the relevant quality and at the right time.

Among the crucial component of MIS we can include the marketing research. Marketing research is according to ESOMAR (European Society for Opinion and Marketing Research) listening to the consumer.

Marketing research can also be defined as "an objective and systematic search and analysis of information relevant for the identification and solution of any problem in the field of marketing." [4]

In practice, it often happens that the concepts of research and survey are confused. Survey is a single activity that runs in a shorter period of time and does not go into such depth and detail. The survey can be denoted as a process of examining market itself at a certain time and current (i.e. short-term) detection of the situation there. Research takes into account the long dimension and the process consists of an analysis, observation and market prediction. [5]

Research methodologies in the field of marketing have always been diverse, ranging from qualitative research methods to highly quantitative modeling approaches. Particularly with the rapid growth of internet and on-line marketing, and with vast quantities of data from this area becoming available, various approaches for analyzing these data have been applied vigorously in recent years. [3]

A.   *Importance of Marketing Research*

Marketing research is particularly important. Companies have to know the needs and demands of their customers, but also of the public and whole society. Just so they can adjust their maximum bid to satisfy their needs, requirements and

apply the concept of holistic marketing. Its results are the basis of managerial decision-making at all levels. At the strategic level they can provide information about where should companies effectively direct their marketing activities, how to support them at a tactical level and help provide feedback, i.e. whether the activities of the company have produced the desired effect.

B. *The Process of Marketing Research*

Marketing research that is properly created can provide valuable information to managers about the effectiveness of used marketing mix tools, customer preferences, market position compared with competitors and so on. [7]

The process of marketing research process is costly not only in financial terms but also in terms of time and human resources. It should be performed by certain principles and rules: *systematic, objectivity, ethics.*

III. Methods

In this paper methods were used: Pearson´s Chi-Square test of independence, Spearman correlation coefficient, Phi, Cramer's V, Kendall´s tau-b, Kendall´s tau-c. There were used also some methods formal logic, such as methods of induction, deduction, comparison, synthesis of knowledge. Information gathering was performed by polling method.

IV. Characteristics of the Slovak Telecommunications Market

The mobile data and telecommunications services have own characteristics and specificities. Despite market capacity exceeding market potential is the level of competition in the telecommunications market relatively low. Low level of competition is caused by the strict regulatory actions of the Telecommunications Office of the Slovak Republic and enables telecommunications companies to achieve high yields due to high prices of mobile and data services. The low level of competition also does not oblige mobile operators and telecom service providers to adapt their offer to the specific needs and requirements of customers.

In recent years there has been a slight loosening of regulatory actions and increasing of competition by the entry of Telefónica O2 to a particular market, which led to a partial reduction of revenues of mobile operators and decline in prices of mobile and data services. Still relatively low level of competition at the market means that mobile operators are insufficiently flexible to respond to the real needs and requirements of their customers.

For these reasons, there is the need to obtain additional information about the requirements and preferences of customers in selected market. Each customer may perceive differently the quality of service and may also have different requirements for these services. We believe that exact this information could lead to a competitive advantage at the market of mobile and data services in the future. Marketing

research of preferences is performed due to lack of information of this kind on the market.

The mobile data and telecommunications services market is regulated by the Act of Electronic Communications no. 351/2011. The institutions affecting the market in Slovakia and providers of telecommunications services and networks are:

- Ministry of Transport, Construction and Regional Development (MTCRD)

- Telecommunications Office of the Slovak Republic (TOSR).

According to the Statistical Office of the Slovak Republic the total revenues from own services and products in 2012 in the telecommunications sector represented 2,126.1 million €. This amount is 0.62% decrease in sales in 2011 and 7.32% decrease compared to 2008.

Mobile operators with the largest market share in the Slovak telecommunications market in 2011 are:

- Slovak Telekom, Inc. (42% share),

- Orange Slovakia, Inc. (35% share),

- Telefónica O2 Slovakia, Ltd. (7% share).

A. *Market Analysis*

The market potential can be calculated by a qualified estimate. In the calculation we used data of the Statistical Office of the Slovak Republic about population (to 31. December 2011, the population of the Slovak Republic was 5 404 322). Data of market potential is based on the number of residents who are or may potentially be mobile phone users. It is made up of people of Slovak Republic from the age of 5 years, namely 5,114,774 inhabitants.

Market capacity is all sold quantity of product, respectively services on the market by all sellers for particular time. In this case, for the need of capacity calculation we based on market data about the number of sold and active SIM cards of all mobile operators. According to the Statistical Office of the Slovak Republic in 2011, the number of active SIM cards of mobile services was 5,983,059.

Market saturation is the ratio between the market capacity and market share, expressed in %. In our case, the calculation is as follows:

Market saturation = (market capacity)/(market potential)*100=5983059/5114774*100=116,98%

The calculation shows that the market is oversaturated. The result, greater than 100 % indicates the fact that there are customers who own and use active SIM cards of multiple mobile operators at the market.

Total estimated revenues in the mobile market in 2011 based on the annual reports of Slovak Telekom, Inc., according to individual mobile operators are as follows:

Orange Slovensko, Inc., 746 million €,

Slovak Telekom, Inc., 470 million €,

Telefónica Slovakia, Ltd. 166 million €.

B. *Market Specifics*

- *Low level of competition on the market of mobile operators*

On the Slovak mobile operator market, there were only two companies until 2006. The arrival of the third mobile operator has caused slightly sharpen competition, but in some cases their behaviour in the market still looks like a cartel in some way. For example, the regulation of roaming prices of calls within the European Union (EU). In countries outside it, the operators set the prices and fees freely. Despite the arrival of Telefónica Slovakia, Ltd., to the market of mobile operators there has been only a slight decline in average revenue per user (ARPU) of mobile operators in recent years. This fact also represents still low competition in the market.

TABLE I.   AVERAGE MONTHLY REVENUES OF MOBILE OPERATORS

ARPU	3.Q/2009 (na 1 zákazníka v €)	3.Q/2010 (na 1 zákazníka v €)	2011 (na 1 zákazníka v €)
Orange	21,30	20,60	20,10
Telekom	18,80	16,00	15,00
O2 Telefónica	13,80	12,80	12,30

Source: Self processed

- *Large sales volumes, regularity of transactions and contracts tying*

Telecommunication market reaches high annual revenues. The largest part of incomes is produced through providing of mobile and data services. The big advantage for mobile operators is the regularity of deals. They are made predominantly monthly, while customers are contractually tied to regular payments during one- or two-year tying.

- *Market capacity and potential*

Another distinctive feature of the market is that the market capacity exceeds market potential. This means that there are customers who use the services of more than one mobile services provider at the same timer. Penetration of mobile services at the level higher than 100% is not completely effective, because a rational consumer is not able to use more mobile phones and mobile services at the same time.

- *Ownership links between mobile operators*

Ownership links between operators means predominantly majority shares of large and successful international telecommunications companies in various companies operating in the telecommunications market at a national level in the EU. Large telecommunications companies operate across the European Union and are linked to each other through capital, whether through majority or minority shares in smaller national telecommunications companies.

- *Market regulation*

Specific regulators of the market are government bodies - the Ministry of Transport, Construction and Regional Development (MTCRD) and the Telecommunications Office of the Slovak Republic (TOSR). Areas of their control and regulations of relevant market are defined by the Act no. 351/2011.

- *Customer´s sensitivity to price change*

Low level of competition is reflected in comparable prices for mobile telephony and data services of all mobile operators operated on limited market. A specific feature of the market is that customers who are sensitive to small changes in prices have the will to switch to another mobile operator in the case of a more favorable offer. Phone number taking to another mobile operator was limited by regulatory actions in the past. Gradually, these barriers are breaking down, but customers are still limited by one or two-year tying to their mobile operator and high fees for changing.

- *The level to which operators reflect customer requirements*

Telecommunication companies react not flexible to the demands of their customers from a subjective point of view and the price of mobile and data services are still disproportionately high.

- *Selected market is a market of services*

Provision and consumption of mobile and data services is determined by the specific features of services, i.e. variability, inseparability, intangibility, perishability. [2]

V. **Discussion**

With regard to the market characteristics, specifications and current developments related to the decrease in the market, it is necessary to obtain additional information regarding customer preferences. Due to the vastness of the telecommunications market and a wide range of services, we decided to focus on the market of mobile operators and mobile and data services. The survey aim is to identify the requirements and preferences of customers for services provided to them. Marketing research of customer preferences in mobile and data telecommunications services is realized due to lack of information of this kind on the market – technical information and information from secondary sources.

For the purposes of the selected project we have established the following hypotheses:

Hypothesis 1: *There is a relationship between the respondent's occupation and daily duration of mobile telephony and data services usage.*

Hypothesis 2*: Respondents with higher monthly incomes prefer a comprehensive package of services to mobile operators to using only certain selected services.*

Hypothesis 3: *The most important requirement of the respondents to the services provided by mobile operators among the requirements for price, volume of prepaid data,*

minutes and SMS, signal quality and availability, service quality, shopping and payment convenience, comprehensiveness of services and security of data flow is the price.

Data collection was conducted according to timetable from December 2012 to the end of January 2013. Place of data collection - several towns in the Žilina region.

The base set is made up of people of Žilina region according to each district at the age of 18 and over. The sample (the selected set) was determined by quota sampling based on demographic characteristics: age and gender. Through this method a quasi-representative sample of respondents was called, which can be considered representative, but only on the same likelihood principle.

The sample size of respondents was determined by freely available on-line calculator of the company Creative Research Systems, which is engaged in marketing research, surveys and statistical data processing.
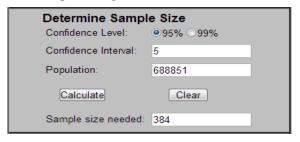

Figure 1.   Calculation of the size of needed respondent sample

The above calculation indicates the need to address a request to complete a questionnaire to 384 respondents. This sample was calculated at 95 % confidence (accuracy) interval of estimate and margin of error in the estimate equal to 5. The margin of error reflects the width of the confidence interval, which reflects the degree of particular parameter uncertainty.

Hypothesis 1: Respondent's occupation and daily duration of mobile telephony and data services usage

TABLE II.   RELATIONSHIP BETWEEN SELECTED VARIABLES

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	235,624[a]	20	,000
Likelihood Ratio	250,707	20	,000
Linear-by-Linear Association	68,950	1	,000
N of Valid Cases	400		

Source: Self processed

"Pearson Chi-Square test of independence tests the null hypothesis H0, which expresses the independence of variables." This method is a part of a two-dimensional inductive statistics. "If the p - value is lower than the chosen significance level (traditionally 5% = 0.05), the null hypothesis is rejected." "Chosen significance level reflects the probability of an error committed if we reject the null hypothesis, which is in fact true. That means, if we find that the relationship between the selected variables exists, but in fact there is no relationship between them."

In our case, the null hypothesis (H0) claims that the relationship between these variables exists. On the other hand, hypothesis H1 declares the existence of the relationship between occupation of respondents and duration of mobile and data services usage.

The resulting p - value of the test is less than 0.05. This means that it is possible to reject the null hypothesis (H0) and confirm the existence of a relationship between occupation of the respondents and their daily usage of the services provided by mobile operators. Hypothesis 1 of survey confirmed.

TABLE III.   THE EXISTENCE OF CORRELATION BETWEEN THE SELECTED VARIABLES

		Value	Asymp. Std. Error[a]	Approx T[b]	Approx. Sig.
Nominal by Nominal	Phi	,768			,000
	Cramer´s V	,384			,000
Ordinal by Ordinal	Contingency Coefficient	,609			,000
	Kendall´s tau-b	,402	,027	13,441	0,000
	Kendall´s tau-c	,323	,024	13,441	0,000
Interval by Interval	Spearman Correlation	,492	,031	11,266	0,00[c]
	Pearson´s R	,416	,036	9,118	0,00[c]
N of Valid Cases		,400			

Source: Self processed

Correlation between variables is expressed by correlation coefficients. Most used coefficients (Pearson's coefficient and Spearman correlation coefficient) show values of a middle positive correlation between the occupation of respondents and daily duration of mobile and data services usage at the significance equal to 0. This means that entrepreneurs and employees daily use mobile operator services more than unemployed, students and pensioners. For mobile operators the customer segments – entrepreneurs and employees are more attractive to them terms of use frequency.

To confirm positive correlations there are also further calculations of correlation coefficients in the above table.

Hypothesis 2: Monthly incomes of respondents and complexity of mobile and data services

TABLE IV.   RELATIONSHIP BETWEEN MONTHLY INCOMES AND COMPLEXITY OF SERVICE USAGE

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	71,455[a]	6	,000
Likelihood Ratio	74,563	6	,000
Linear-by-Linear Association	17,187	1	,000

N of Valid Cases	400		

Similar to previous situation, p – value, by Pearson´s Chi-Square test of independence, is 0, so less 0.5 (significance level). Rejection of the null hypothesis (H0) can be proved that between the monthly income of the respondents and the use of a comprehensive package of services of mobile operators is a relationship in this case.

TABLE V.   RELATIONSHIP BETWEEN MONTHLY INCOMES AND COMPLEXITY OF SERVICE USAGE

		Value	Asymp. Std. Error[a]	Approx T[b]	Approx. Sig.
Nominal by Nominal	Phi	,423			,000
	Cramer´s V	,423			,000
Ordinal by Ordinal	Contingency Coefficient	,389			,000
	Kendall´s tau-b	,224	,046	4,858	,000
	Kendall´s tau-c	,256	,053	4,858	,000
	Spearman Correlation	,247	,050	5,074	,000[c]
Interval by Interval	Pearson´s R	,208	,051	4,233	,000[c]
N of Valid Cases		,400			

Correlation coefficients of 0.2 have little positive correlation between selected parameters. Respondents with increasing monthly income prefer the use of a comprehensive package of services provided by mobile operators to using only certain selected services. Hypothesis 2 confirmed.

Hypothesis 3: *The most important requirement of the respondents to the services provided by mobile operators among the requirements for price, volume of prepaid data, minutes and SMS, signal quality and availability, service quality, shopping and payment convenience, comprehensiveness of services and security of data flow is the price.*

The table shows order of respondent requirements sorted by relevance to provided services of mobile operator.

TABLE VI.   ORDER OF RESPONDENT REQUIREMENTS TO PROVIDED SERVICES

Factors	Average	Sequence
Favourable price of provided services	4,78	1.
Possibility of choice of required services combination	4,28	2.
Volume of prepaid data, minutes, SMS	4,20	3.
Quality and availability of signal coverage	4,08	4.
Possibility of mobile phone purchasing for a special price	3,96	5.
Net and data flow security	3,32	6.
Pre- and post-selling service quality	3,22	7.
Complexity of offered service package	3,16	8.
Purchasing and payment comfort	2,84	9.

The most important requirement among the requirements in the table above for and data services the respondents considered favourable price. Hypothesis 3 is confirmed. Other important requirements of respondents include choice of the combination of services and prepaid data volume, minutes, SMS. It is interesting that the possibility to purchase a mobile phone for a special price is perceived by respondents as less important compared to the quality and availability of signal coverage. The least important requirement respondents identified are purchasing and payment comfort associated with the service provided.

VI.   Conclusion

The aim of this paper was to provide information about requirements and preferences of customers for mobile and data services. For the vastness of the telecommunications market and a wide range of services provided, we decided to focus exclusively on the market of mobile operators and mobile telephony and data services. Marketing survey of customer preferences was conducted in Žilina region and survey sample consisted of 400 respondents– aged 18 years or more.

Acknowledgment

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