Consumer awareness in public services environment – quantitative examination of water consumption habits in the city of Szeged

KLÁRA KAZÁR

The accurate knowledge of the customers is an essential part for good management in the public service sector, as well. However, water service market is one of the priority areas because water is a scarce resource as the world's population keeps growing, while the amount of fresh water available is dropping day by day. The question, whether the consumption of this scarce resource is done consciously, has gained crucial importance among the leaders of water suppliers. My objective was to find an answer to what extent the awareness of concerning water use is present in the residential sector. My research was based on a pattern observed in the households of the city of Szeged. In a primary research I observed the factors affecting per capita water consumption, and mapped out the dimensions characterizing awareness, then identified separate consumer groups based on the extent of conscious behavior. Although I have come to the conclusion that the desired attitude towards water consumption would be the spread of conscious consumption, and it has not completely taken place among Szeged consumers, yet.

Keywords: water consumption, consumer behavior, consumer consciousness, consumer awareness of water

1. Introduction

The accurate knowledge of the customers is an essential part for the good management in the public service sector, as well. However, the water service market is one of the priority areas, because water is a scarce resource as the world's population keeps growing, while the amount of fresh water available is dropping day by day. The question, whether the consumption of this scarce resource is done consciously has gained crucial importance among the leaders of water suppliers. Due to my involvement in the city of Szeged, my objective was to find an answer to what extent awareness concerning water use is present in the households of the city.

In the theoretical overview (Chapter 2.) I write about the marketing specialties and the consumer behavior theories of water consumption. In the first part the public service characteristics of water services and the marketing communication of the public utilities are introduced. In the case of water services consumer behavior is described with water consumption models and sustainable consumption theories.

During my primary research (Chapter 3.) I worked with a proportionally stratified sample set by the different parts of the city and by the consumer deciles with the number of 1237 cases. The methods applied included the analysis of variance, factor-, cluster- and crosstabs analysis. I would like to find an answer for the main question of my study with the help of the theoretical overview and my primary research.

2. Theoretical overview

In this part II. present the marketing specialties and the consumer behavior theories of water consumption.

2.1. The specific marketing aspects of water consumption

The specific marketing aspects of water consumption derive from the public service nature. Consequently, the marketing communication is different from the communication of the non-public service market which is introduced in Part 2.1.2.

2.1.1. The public service nature

"The nonbusiness sector includes the actors of economic life, whose main activity satisfies collective needs or/and this activity is in public service, the actors belong to the public service sector which produce collective needs services, i.e. public services" (*Dinya* et al 2004, p. 111.). It also includes water service.

It follows from the above, that due to the quasi-monopoly position of the service the consumer's decision does not happen between the products, services or competitors but the subjects of the choice are the consume/not to consume, or the amount of the consume. Water is vital for the human being, so the decision role concerns the consumed amount. It could be concluded that the consumption is not influenced by the other factors of the supplier therefore, the public utilities can ignore the marketing aspects. But this would be a wrong approach.

On one hand the public utilities need to match more actors (consumers, administration and public opinion) due to public attention. On the other hand marketing aspects should be considered for the public utilities, as well, to form and keep the satisfied consumers. If the water service market opened entirely for the organizations of the private sector, these aspects would rather come into view and the other consumer influencing factors (satisfaction, brand preferences, communication) would have a bigger effect.

2.1.2. Marketing communication of the public utilities

In the case of the marketing communication of the public utilities the nonbusiness nature appears in the aim, the theme and the target audience of communication (*Hetesi–Révész* 2004b). The general aim of marketing communication is to motivate costumers for purchasing a product or to use a service and finally, to increase the company sales. However, the main product of the public utilities (in this case water) is a particularly scarce resource with a great importance, it is necessary to consider the saving and the environmental issues in the service process, the public utilities are in public attention and their activity is often ruled by the government due to the public opinion. Thus, the general aim of the marketing communication loses its relevance in this service. The aim of the communication in this case could be the increase of consumer satisfaction and the reach of consumer loyalty, and their importance might grow with the liberalization of the market.

The theme of the communication should be different from the increase of the company sales. On one hand this theme could be the motive of scarcity or reserve depletion, or the supplier can motivate the consumers for the savings or the conservation of the resources (preservation of natural waters). These suppliers are in public attention, so their message should be communicated very carefully concerning the interests of each group.

These groups – the target audience of the communication – should be monitored separately because they have different information gathering and media using habits, and in several cases the content of the message can also be different. In this sense the residential consumers, the industrial users (business to business market), the local authorities and the government can be differentiated.

Révész (2002) pointed out that the helping tool of marketing communication can be branding, case marketing and relationship marketing in the case of the public utility services. With the help of branding they can justify their name, evolve the company's image and differentiate their service. This is particularly important for utilities in deregulated market to

keep their clients however, later the current monopolized markets can be in the same situation, so it is worth starting to work out the appropriate brand strategy. We can read about the importance of relationship marketing in *Payne* and *Frow* (1997). Internationally the public utilities market has already been opened for the new entrants in several countries. In this new competitive environment the public utilities should try to understand the consumer's needs better and they should ensure personalized services to keep their consumers.

In the study of *Hetesi* and *Révész* (2004a) we can read that after the deregulation of the public utility markets the increase of a company can be realized on three ways: by obtaining new customers, by encouraging more frequent purchases of the existing customers, or by reducing the tendency of defection. However, due to the scarcity of the main product, (water, energy) more frequent purchases are not good solutions, and the authors note that the cost of gaining new customers is higher than the cost of keeping the existing ones. It is needed to have detailed information about the former customers to keep and reach them with continuous and personalized communication, which can confirm the relevance of segmentation. Public utility services are in an advantageous position because they do not have to deal with building up the clients range, and they have already had some information about the existing customers. However, this is only invoicing information, in turn it would be worth gathering other kind of data (characteristics of households, family, consumer habits, lifestyle features) to implement more efficient segmentation.

2.2. Consumer theory of water

In the case of water services consumer behavior can be described with water consumption models and sustainable consumption theories. I would like to analyze conscious and less conscious consumer groups in my study, thus, the importance of segmentation in water consumption is to be presented in section 2.2.3.

2.2.1. Water consumption theories

In the study of *Salmana* et al (2008) the key question evolves the appropriate pricing strategy of the water suppliers. The demand for the influence factors of the consumers and their willingness to pay need to be known. The authors involved socio-economic variables in the influencing factors, which are in significant relationship with water consumption – except for the educational level. These variables were: the marginal price of water, the rate structure premium (it can show changes in consumer payment if price changes by one unit), the income, the household size, the house type and the number of bathrooms.

Papp et al (2007) are paying attention to the fact that in the future we can face several water availability problems (decrease in water resources due to climate change, large fluctuations in weather). Therefore, more efficient water management methods are needed, and in order to execute them it is essential to know the influencing factors of water consumption. According to the authors the demand-side can be modelled mainly by socio-economic factors. In their opinion there are five effecting factors of water consumption: the geographical status, the different consumer habits, the degree of civilization, the lifestyle – way of life and the economical status.

By *Fox* et al (2009) we can read that the water suppliers need more accurate forecast about the demand of water due to the increase of the number of the population and the changes in family structure. According to the authors the demand for water can be anticipated mostly by the physical property characteristics of the households. They examined what kind of relationship exists between the physical property characteristics and the demand of water, and whether it is possible to use these relationships for forecasting the demand of water. They

examined three variables in physical property characteristics: the number of bedrooms, the type of building and the existence of garden.

In the work of *Kayaga* et al (2003) the key question is whether in countries with lower income the water suppliers would need to have more efficient cost management to keep up the quality of the service due to the increase of the number of the population. Therefore, it is important to know the influence factors of the customers' willingness to pay the water suppliers.

The authors examined the relationship between the customers' loyalty and satisfaction. Taking into account the relationship between the loyalty and the willingness to pay, it can be said that the loyal customers pay their invoices earlier, which can result higher revenue for the supplier. The customer satisfaction can stay as an independent variable at the background of customer loyalty. However, this relationship can be influenced by several other external moderator variables. The authors mentioned here the gender, the number of years spent in formal education, the occupational status, the number of people in the household, the ownership status of the residence, the type of premises, the household income and the use of alternative water supply by the household.

In the study of *Jorgensen* et al (2009) we can read about the challenges concerning the water suppliers. Namely the demand of water is growing by the increase of the number of population, but the supply of water is narrowing due to the climate change. Therefore, the suppliers should try to have more efficient water management, so it is needed to explore the influence factors of the demand of water. Being different from the described models *Jorgensen* et al (2009) need to draw other factors into their model for the deeper understanding beside the used socio-economic variables. From these new factors the authors pointed out the role of the trust in their study.

In some of the presented models the role of the price and the socio-demographic factors are dominating (*Salmana* et al 2008, *Papp* et al 2007, *Fox* et al 2009), but in other described models the elements of the service marketing can be explored (*Kayaga* et al 2003, *Jorgensen* et al 2009).

2.2.2. Sustainable consumption – consumer awareness of water

According to *Náray-Szabó* (1999) the explosion increase of the consumption can cause big difficulties for the mankind, because it can lead to quick depletion of resources and the irreversible contamination of the environment. The consumer fever can be hardly broken, and there will be more and more needs. The problem of the environmental pollution can be more serious, because the amount of available water is dropping, even wars will be fought for water in the future according to the author. In relation to this approach the environmentally responsible behavior belongs to the topic of water consumption.

In the case of consumers' environmental awareness there are similar opinions in the examined studies. Based on *Nemcsikné* (2007), *Tóth* et al (2009) and *Vágási* (2000) it can be concluded, that some of the respondents can be considered environmentally responsible consumers, but the concept of responsibility-putting away appears in the rest of the respondents. Based on these studies there might be differentiated conscious and less conscious consumer groups in the case of water consumption, as well, which is examined in the primary research of my study.

2.2.3. The importance of segmentation in water consumption

It has already turned out that there can be different groups in conscious water consumption; therefore, it is worth reviewing the connection between water consumption and segmentation. In my opinion the supplier can send more targeted message to the consumers by separating different groups within the population, which can increase satisfaction. The importance of

satisfaction has already come into view in the water consumption models (*Kayaga* et al 2003), because it can result in loyalty, and the intention for achieving loyalty should be one of the primary goals of an organization focusing on the principles of service marketing.

More effective communication can be important because of the examined question, namely the increase of consumer awareness, as well. In the case of this scarce resource the existence of effective water management and conscious water consumption has gained crucial importance. The suppliers should motivate their consumers to acquire this kind of behavior. For the implementation one of the tools can be the segmentation based, more targeted communication.

After the review of the theories of specific marketing aspect and consumer behavior of water consumption, the primary research is introduced in the next part of the study.

3. Primary research

In this section I present the objectives of my research and the applied methodology. After that the answers for the research objectives and the limitations on applicability of the results is described.

3.1. Objectives of the research

In my primary research I would like to find an answer, whether the consumer awareness of water appears in the inhabitants of the city of Szeged. Awareness means the existence of water saving attitude and the efficient water management. During my research I wanted to find out, what the influence factors of water consumption are, what kind of factors can be evolved for consciousness, what kind of relationship there are between these factors and the socio-demography variables and what kind of groups can be created based on the dimensions of awareness.

3.2. Description of methodology

In the spring of 2010 I took part of a research which was conducted by the Faculty of Economics and Business Administration of the University of Szeged. The aim was to model the water consumption of the city of Szeged. As a result, I gained a primary database, and based on this my own primary data analysis was performed. I need to present the background of this research based on the research report of the project (2010).

The Szegedi Vízmű Zrt. – Water Supplier Ltd. of Szeged made a series concerning the period of 2002–2008, which contained the amount of water consumption (yearly aggregated data) and the consumer plants based classification of each consumer unit. The supplier handles the different parts of city of Szeged separately, due to the different consumption structure. Each part was assigned with a letter by the Szegedi Vízmű Zrt, which were called plants. Those units were taken into consideration in the definition of target population, which had already had consumer data for three years however, this condition was completed in the period of 2006–2008. The yearly total water consumption of each household was not able to exceed 300 m^3 (ignore the extremely high consumer units), and each consumer unit needed to behave stable, which means that the yearly total water consumption needed to be minimum of the amount of six-month consumption of the previous year, but maximum twice the amount of the previous year. Taking into account these conditions 54168 residential consumer units was added into the target population.

The supplier applied questionnaire method to explore the influence factors of water consumption. The questionnaire was made by an external expert group and accomplished by telephone interviewing (*Malhotra* 2008). There were different question blocks concerning the

points of water consumption, the attitude of the water consumer, the socio-demographic factors and the economical awareness towards water consumption.

The sample for query was evolved based on proportional stratification by the plant and urban deciles, and 1237 workable answers came from the sampled 4000 addresses (which were chosen from the plant and urban deciles, proportionally selected target population with 54168 cases).

3.3. The influence factors of water consumption

For the examination the influence factors of water consumption in the city of Szeged, the presented socio-demographic models (*Salmana* et al 2008, *Papp* et al 2007, *Fox* et al 2009) can be starting points. Considering the opportunities of the questionnaire and the overlap between these models, I examine the relationship between the water consumption per capita and the educational level, the economical status (socioeconomic status and occupational status of the head of household), the size of the household (the number of household members), type of the house (belonging categories based on plant codes) and the number of places with available water, with the help of analyzing of variance.

There are not significant relationships between the water consumption per capita and the educational level, and between the water consumption per capita and socioeconomic status at a five-percent significance level. In the case of the categories of occupational status, the number of household members, the type of house and the number of places with available water there are significantly different means of water consumption per capita (at a five-percent significance level).

In the case of occupational status the average water consumption per capita of part-time workers are higher than the average water consumption per capita of full-time workers, and non-workers have higher amount compared to part-time workers in the sample. There are significant difference between the full-time workers and non-workers at a five-percent significance level.

In the case of the number of household members the water consumption per capita of single-member households and two-member households can be considered equal at a five-percent significance level, and the water consumption per capita of three-, four- and five-ten-member households can be considered equal, as well, at the five-percent significance level. The group means of single- and two-member households and the four- and five-ten-member households are significantly different (on five percent significance level). The single- and two-member households show higher means of water consumption per capita.

The influence effect of the type of house can be described through categories of plant codes. Each plant can be contracted due to the similar consumption structure. Thus suburb (A-H-Z plants), periphery (D plant), garden city (R-S-U plants) and city center (B-P-E plants) can be differentiated. In the parts of the city it can be said that the households in the city center have lower means of water consumption per capita than the households in suburbs or the in garden city.

In the case of the number of places with available water the increase of it can imply the increase of the water consumption per capita until the households with 6-places with available water. The households with 2–4 places available water are different from the households with other number of places with available water significantly in the means of water consumption per capita (at five-percent significance level).

3.4. The dimensions of awareness

For the creation of the factors of the consciousness I tried to integrate the consciousness measuring variables with the help of factor analysis. Due to the information content

preservation of each variable (communality) I was able to include in the analysis eight variables. The KMO-value (0,516) and the result of Bartlett-test (sig<0,05) can justify, that the factor analysis can applicable on these eight variables. The four new factors can preserve 73,18 percent from the information content of the original variables. For the easier understanding I applied rotation which can help to make the data more clear (*Sajtos–Mitev* 2007).

The correlation coefficients – found in Table 1. – can determine which variables can be transformed into a common factor.

Table 1. Rotated component matrix

Variables	Factors			
	1	2	3	4
I prefer to do the washing up in flowing water	**0,933**	0,046	0,059	0,015
The pepople live with me prefer to do the washing up in flowing water	**0,932**	0,058	0,044	0,024
The people live wiht me prefer to have a bath than have a shower	0,046	**0,894**	0,005	0,021
I prefer to have a bath than have a shower	0,052	**0,890**	–0,003	–0,052
The water consumption cannot be reduced significantly	0,084	0,039	**0,786**	0,046
People use the water economically	0,005	–0,035	**0,762**	–0,074
If the price of water was reduced by half, the double amount of the water would be used	–0,095	0,008	0,126	**0,810**
If the price of the water was risen by double, the half amount of the water would be used	0,133	–0,038	–0,164	**0,750**

Source: own construction

In the first dimension the original variables are on the negative scales, so the higher values mean the preference of washing up with stagnant water. In the case of the first factor and the variables concerning the washing up, the higher factor scores mean the more conscious behavior based on the positive correlation coefficients. I called this factor economizing on washing up.

In the second dimension the original variables are also on the negative scales, so the higher values mean the preference of having a shower. In the case of the second factor and the variables concerning having a bath the higher factor scores mean the more conscious behavior based on the positive correlation coefficients. I called this factor economizing on bathing.

The third dimension relates to water savings. In the original variables the higher values mean the agreement with the statement, which reflects the awareness. Therefore, the higher values of the created factor mean the awareness and the greater degree of sparing, based on the positive correlation coefficient, so I called this factor water saving attitude.

The fourth dimension concerns about the effect of price changes. I do not consider conscious behavior when the consumed water volume changes due to the changes in prices, because the price of water should not influence the amount of consumed water, but the elements preference of environmental awareness should dominate. In the variables related to price changes the higher values sign the increase of agreement with the statement, which

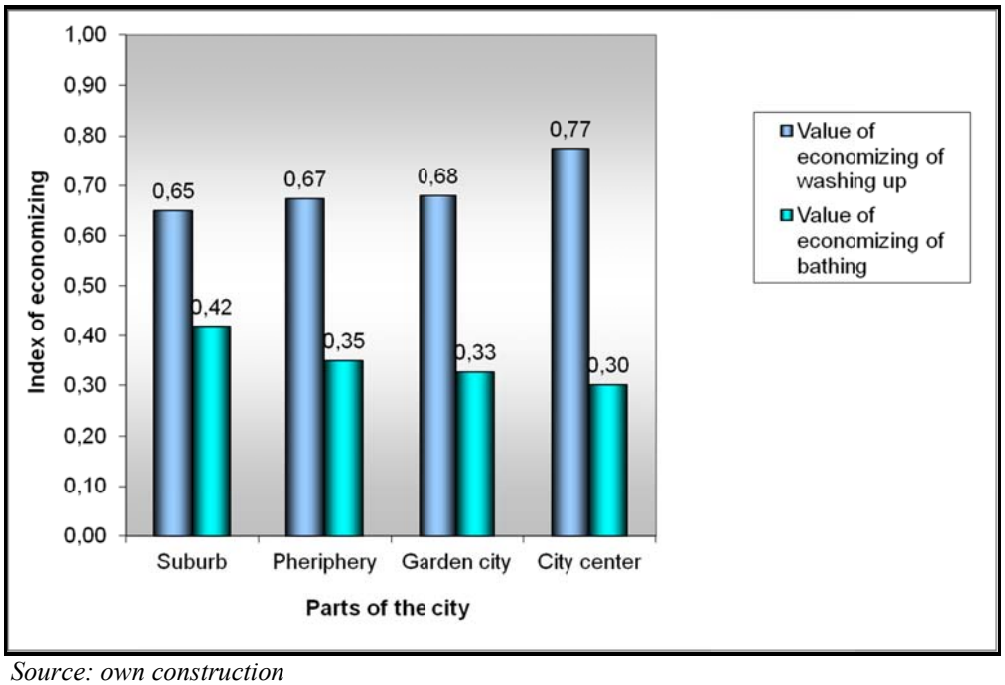
express the lack of consciousness. The higher factor scores mean the higher degree of agreement; therefore, there is a reverse sense connection between the awareness and the fourth factor. After that, for the easier understanding, I multiplied the last factor by minus one so that all high value reports of conscious behavior should act the same way. I called this factor reaction to price changes.

In the factors of the values above the average (positive values) mean the conscious, and the values below the average (negative values) reflect the less conscious behavior. For the easier visualization I made a linear transformation on each factor by the (x-xmin)/(xmax-xmin) formula (*Petres–Tóth* 2004), so the values of the factors belong to the interval [0;1] and the values became easier comparable. Then the closer values to one mean the more conscious households.

I examine the relationship between the four consciousness describing factors (economizing to washing up, economizing on bathing, water saving attitude, reaction to price changes) and the socio-demographic factors (occupational status, the number of places with available water, number of household members, the residential characteristics/part of the city) with the help of the analysis of variance. Sixteen tests were executed, significant relationship can be shown in ten pairs, but it is important to mention that the households in each parts of the city can behave differently concerning the awareness factors.

As an example I would show that there is significant relationship between the economizing on washing up and the parts of the city, and between the economizing on bathing and the parts of the city, as well, but the different behavior in the households in each parts of the city can be seen in the Figure 1.

Figure 1. Dimensions of consciousness and socio-demographic factors



Source: own construction

The behavior of the households in the city center can be considered conscious in economizing on washing up and less conscious in economizing on bathing. It can be concluded that it is worthwhile separating and examining the conscious and less conscious groups of consumers.

3.5. Description of conscious and less conscious consumer groups

Based on the theoretical overview and the end of the previous section, I think it is possible to separate conscious and less conscious consumer groups regarding consumer behavior. I attempted to do it by clustering based on the four awareness factors.

For the classification I chose the K-means cluster method because of the big size of the sample, but sometimes this method can select wrong initial value (*Székelyi–Barna* 2002). Therefore, I applied the first two steps of the cluster method and then I gave the centers of two-step solution to the initials of the K-mean method based on *Kovács* et al (2006). This way it can be eliminated from the program to start with an outlier value. So the groups can be called from the resulting final centers of the clusters.

In Table 2 the group means are higher than the main mean referring to the existence of consciousness, and the group means are lower than the main mean referring to the lack of consciousness.

Table 2. The final cluster centers made by K-means method

Clusters	**Economizing on washing up**	**Economizing on bathing**	**Water saving attitude**	**Reaction to price changes**
1	0,8326	0,8802	0,5379	0,7082
2	0,9402	0,1079	0,8033	0,7712
3	0,9355	0,1409	0,3478	0,3494
4	0,0901	0,0895	0,4508	0,7131
Total	0,7522	0,2922	0,5674	0,6465

Source: own construction

The cases in the first group are conscious in economizing on washing up, in economizing on bathing and in reaction to price changes. I called this group the consumers acting consciously. In the second group the cases can be considered conscious in economizing on washing, in water saving attitudes and in reaction to price changes, so I called this group the consumers thinking consciously. The third segment is conscious from the aspect of economizing on washing, but it is not from the aspect of the other three factors. I called this group the price sensitive unconscious. The members of the fourth group can be considered unconscious from the aspects of economizing of washing, economizing of bathing and water saving attitudes, so I called this group the squanderers insensitive to prices.

I was curious if the cluster membership is in relationship with the socio-demography factors (education, socio-economic status, occupational status, the number of places with available water, the number of household members and the residential characteristics/parts of the city), or not. It can be examined with the help of crosstabs analysis. It is important to mention that the cluster membership is based on consciousness attitudes not on the real water consumption data. There is a relationship between education, the occupational status, the number of household members, the number of places with available water and the cluster membership. But the socio-demographic factors do not form the clusters; it is not possible to identify the clusters based on these factors. The significant relationship in this case just refers to the fact that there are small shifts in the different groups. It is important to consider that the groups were evolved on the base of consciousness, and for example in any group any education type can occur. Moreover, the sample is representative from the aspect of water consumption, but it is not from the view of the socio-demographic factors, which can influence the distortion of the results, as well.

3.6. The limitations on applicability of the results

I find interesting to examine – beyond my research objectives – whether the conscious segments behave consciously indeed, they try to save water, or just they profess themselves conscious?

The exact water consumption of each cluster can be found in Table 3 The first two clusters can be considered declaring themselves conscious; however, the lowest exact consumption is produced by a less conscious cluster (this consumption belongs to the price sensitive unconscious).

Table 3. The means of yearly water consumption per capita in the clusters

Clusters	m^3
Consumers acting consciously	31,50
Consumert thinking consciously	33,16
Price sensitive unconscious	30,78
Squanderers insensitive to prices	33,52
Total	32,33

Source: own construction

This means that the respondents profess different opinion about their water consumption behavior from their real water consumption amount.

In the questionnaire there were two more questions concerning the appearance of awareness in reality: the knowledge about the exact amount consumed and about the real unit price of water. In these variables the choice of the real, correct answers and the correct estimate refers to conscious behavior.

The knowledge about the consumed amount can measure awareness. If someone is not clear with its consumed amount entirely, it is less probable that the water consumption is conscious and the intention for economical water usage exists. 37,8 percent of the 1204 respondents hit in the estimation their real consumption category, but 62,2 percent of them did not. This suggests that the consumers are not clear with their own consumed amount; therefore, they can be considered probably less conscious water consumers.

The question about the real unit price of water concerned the consumers knowledge about what the price of a unit of water (m^3) is without sewer charges. It can be concluded that – compared the answers with the real data – 19,9 percent of the 878 respondent was able to give the correct answer. The consumers are not clear about the unit price of water either, what can refer to the lack of awareness and the lack of information.

4. Conclusion

In my study I wanted to find an answer to what extent awareness concerning water use is present in the households of the city of Szeged. For answering this question I made a theoretical overview concerning the water consumption theories and I conducted my primary research.

In the case of water consumption the entire conscious behavior would be desirable, but it has not been realized, yet. The information and the motivation for more conscious behavior of the consumers would be the task of the suppliers and the management, but the implementation of the real action would be the role of the consumers, so both of the actors have responsibilities. It is important to notice that it is a less examined field, although fortunately, the importance of this area is growing. In connection with my results more researches are needed for which my study can be a starting point.

References

Dinya L. – Farkas F. – Hetesi E. – Veres Z. 2004: *Nonbusiness Marketing és menedzsment*. KJK-KERSZÖV Jogi és Üzleti Kiadó, Budapest.

Fox, C. – McIntosh, B. S. – Jeffrey, P. 2009: Classifying households for water demand forecasting using physical property characteristics. *Land Use Policy*, 26, 3, pp. 558–568. DOI:10.1016/j.physletb.2003.10.071.

Hetesi E. – Révész B. 2004a: A kapcsolati marketing és a kommunikáció szerepe a közüzemi szolgáltatóknál a piaci liberalizáció folyamatában. *Vezetéstudomány*, 35, 6, pp. 30–37.

Hetesi E. – Révész B. 2004b: A közüzemi szolgáltatók marketingkommunikációjának sajátosságai. In Dinya L. – Farkas F. – Hetesi E. – Veres Z. (eds.): *Nonbusiness marketing és menedzsment*, KJK-KERSZÖV Jogi és Üzleti Kiadó, Budapest, pp. 333–350.

Jorgensen, B. – Graymore, M. – O'Toole, K. 2009: Household water use behavior: An integrated model. *Journal of Environmental Management*, 91, 1, pp. 227–236. DOI:10.1016/j.jenvman.2009.08.009.

Kayaga, S. – Calvert, J. – Sansom, K. 2003: Paying for water services: effects of household characteristics. Utilities Policy, 11, 3, 123–132. DOI:10.1016/S0957-1787(03)00034-1

Kovács P. – Petres T. – Tóth L. 2006: *Válogatott fejezetek Statisztikából, többváltozós statisztikai módszerek.* JATEPress, Szeged.

Malhotra, N. K. 2008: *Marketingkutatás*. Akadémiai Kiadó, Budapest.

Náray-Szabó G. 1999: Fenntartható fejlődés – fenntartható fogyasztás. *Természet világa: természettudományi közlöny*, 130, 12, pp. 531–534.

Nemcsicsné Zs. Á. 2007: A fenntartható fogyasztás egyik alapfeltétele: a környezettudatos egyéni magatartás. In Vadovics E. – Gulyás E. (eds.): *Fenntartható Fogyasztás Magyarországon – tudományos konferencia Konferenciakötet*. pp. 41–60. http://www.tve.hu/attachment/file/31/Fenntarthato_fogyasztas_konferenciakotet.pdf

Papp M. – Dávidné D. M. – Bódi G. – Solti D. – Solymosi E. – Havas A. 2007: *Távlati vízigények elemzése*. Hungarian Water Utility Assosication. Retreived from http://www.kvvm.hu/cimg/documents/3_tanulmany

Payne, A. – Frow, F. (1997): Relationship Marketing: Key Issues for the Utilities Sector. *Journal of Marketing Management*, 13, 5, pp. 463–477. DOI:10.2166/wp.2011.042

Petres, T. – Tóth, L. (2004): *Statisztika.* Központi Statisztikai Hivatal, Budapest.

Révész B. 2002: Marketingkommunikáció a közüzemi szolgáltatóknál. In Hetesi E. (ed.): *A közszolgáltatások marketingje és menedzsmentje.* SZTE Gazdaságtudományi Kar Közleményei. JATEPress, Szeged, pp. 219–231.

Sajtos L. – Mitev A. 2007: *SPSS kutatási és adatelemzési kézikönyv*. Alinea Kiadó, Budapest.

Salmana, A. – Al-Karablieh, E. – Haddadin, M. (2008): Limits of pricing policy in curtailing household water consumption under scarcity conditions. *Water Policy*, 10, 3, pp. 295–304. DOI:10.2166/wp.2008.040

Székelyi, M. – Barna, I. (2005): *Túlélőkészlet az SPSS-hez.* Typotex, Budapest.

Tóth M. – Málovics Gy. – Tóth I. J. 2009: Fenntarthatóság – fenntartható fogyasztás – egyetemi hallgatók fogyasztásának vizsgálata alapján. *Vezetéstudomány*, 40, 9, pp. 41–53.

Vágási M. 2000: A fenntartható fogyasztás és a környezettudatos fogyasztói magatartás. *Marketing & Menedzsment*, 31, 6, pp. 39–44.