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Gender Attitudes about Traditional and Renewable Energy Resources

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Abstract: We can find lots of differences if we examine the habits, attitudes, roles and values of men and women. In our research we aim to analyze the gender differences about energy sources, energy consumption, saving habits, openness, companies' social responsibility and environmental issues. We applied a face-to-face questionnaire with 2000 respondents which represents the Hungarian population by gender, age, education, region and the residence's type of settlement. We found that differences between men's and women's attitudes about energy issues exist. We also found that there are different groups of men based on energy issues. These groups differ based on consciousness, sympathy of alternative, traditional and renewable energy sources and the energy saving habits.

Keywords: gender differences, alternative energy sources, energy saving attitudes, men

1 Introduction and Objectives

Men and women are different, they have different attitudes, roles and values in their life. We suppose that they have differences in their attitudes and behaviour about energy sources, environmental issues and the social responsibility of companies. That is why we examine the gender differences about these topics. Few empirical studies take gender into account when analysing the attitudes about energy saving and energy sources, but studies about these issues mostly do not examine the gender differences.

In the recent study we aim to examine the differences of men's and women's attitudes and behaviour about the aforementioned topics.

2 Literature review

During our research we paid special attention on other researches which examine the attitudes of the population about energy resources, alternative energy resources, environmental issues, openness and the adoption of new technologies. We provide a short review of the articles.

Labay and Kinnear (1981) examined the attitudes of the population about solar energy. According to their results there are characteristic differences in the opinion of innovation adopters and non-adopters. They used multivariate nominal scale research in order to be able to make categories on the basis of the perception of solar power system and demographic variables. They identified three factors. These factors are important for the respondents in connection with the alternative energy sources and their usage. The factors are the following:

- characteristics in connection with the product,
- factors in connection with thrift,
- social factors.

These factors show the population's main behavioural patterns about solar energy.

Farhar's research (1999) says that the competition of electricity supplier companies is increasing. These companies spend more time on providing extra services in order to evolve a higher level of client's loyalty. Surveys confirmed that consumers prefer energy derived from renewable energy sources better than energy derived from traditional energy sources.

A few result of Farhar's research:

- consumers like energy which is derived from renewable energy sources, but do not know this energy that much,
- a large proportion of the respondents said that they would be willing to pay a little more for energy derived from renewable energy sources,
- the consumers would be very welcome and would be loyal to the company, if the company would provide energy derive from renewable energy sources.

The expression green energy is used on energy which derives from natural sources of energy. Gerpott et al. (2010) examine the current consumer population's green energy adoption. Their examination took place in Germany in 267 households with the method of telephone interview. The research also examined the satisfaction with the billing system of the current service provider and the annual current consumption. They found a connection: the consumer's opinion about environmental issues affects the willingness to adopt green energy. The social aspects of green energy usage is also an affecting factor.

There are environmental and economic threats of the usage of fossil fuels. Salim and Rafiq (2011) say that the countries should transform their dependence on fossil fuels to the increasing consumption of renewable energy sources. Salim and Rafiq examined six countries (Brazil, China, India, Indonesia, the Philippines and Turkey). They found that there are initiations to rebuild the system of energy consumption. They reach this aim by investing into the usage of renewable energy sources. Moreover, in their article they examine the determinants of renewable energy consumption on a panel of the aforementioned six countries. The authors of the article used panel data, but also time-series econometric technics.

Yuan et al. (2011) presented a quantitative approach which helps to examine the adoption of solar power consumption of the population. They made analysis in Shandong in China; the results show that there is a high consciousness about solar power water heater, moreover, the social acceptance of these equipments are high. On the other hand there is not a high acceptance and awareness of solar power in Shandong yet. The study of Yuan et al. can be a good guideline for the decesion makers.

3 Research method

We examined the attitudes and habits of Hungarian population about energy sources, alternative energy sources, energy saving activities, social responsibility of companies, environmental issues and openness. The research was a face-to-face questionnaire in Hungary involving 2000 respondents. The sample represented the Hungarian population by the following demographic characteristics: gender, age, education, region and the residence's type of settlement. We present univariate analysis: first, we demonstrate a comparable analysis of men's and women's attitudes about the aforementioned topics. Moreover, we apply multivariate analysis as well; we identified different groups of men by using factor and cluster analysis. During our examination and analysis we used SPSS 16.0.

956 men and 1044 women participated in the research. Table 1 shows the main demographic characteristics of men: 16.9% of men are from Budapest, 23.8% are from town with county rights, the proportion of men who live in other 10.000+ settlement is 22.4%. 20.8% of men are from settlements between 2000 and 10.000 habitants. All other men (16.0%) live in smaller settlements than 2000 habitants.

The proportion of 18-29 years old men is 26.4%. 20.1% of men are between their age of 30 and 39 years. The 40-49 years old men's proportion is 21.8%, 17.5 % are between 50 and 59. Largely men's highest level of education is secondary school (41.1%) and vocational school (32.9%). The proportion of married men is 45.2%. 27% are single and 16% are in a relationship.

Type of residence (n=956)	
Budapest	16.9%
town with county rights	23.8%
10.000+ settlement	22.4%
settlement with population between 2.000 and 10.000	20.8%
settlement with population less than 2.000	16.0%
sum	100.0%

Age (n=956)	
18-29 years	26.4%
30-39 years	20.1%
40-49 years	21.8%
50-59 years	17.4%
over 60 years	14.3%
sum	100.0%

Education (n=956)	
grade school	7.5%
vocational school	32.9%
secondary school	41.1%
college	10.8%
university	4.7%
did not respond	2.9%
sum	100.0%

Marital status (n=956)	
single	27.0%
in a relationship	16.0%
married	45.2%
divorced	4.8%
widow	2.5%
common-law marriage	4.5%
sum	100.0%

Table 1

The demographic characteristics of men (n=956)

4 Findings

In our comparable analysis we examined the differences in men's and women's attitudes about energy issues. These topics are expressed in the following subchapters.

4.1 Attitudes about energy resources and alternative energy resources

Firstly, we examined the awareness of the different energy sources. We found that the most known energy sources are: electricity, piped gas, wood, bottled gas, solar energy and wind power. We also found that higher proportion of men knows the energy sources than women do. The differences between men and women are larger in case of altenative energy sources (e.g. biogas, geothermal energy, biomass).

We also examined the sympathy of genders for energy sources. We found that the most sympathetic sources are solar power, wind power, hydropower and electricity. The less sympathetic energy sources are nuclear energy, biomass, bottled gas, heat pump, biogas and geothermal energy. Generally, men have a more positive attitude about these sources.

4.2 Modernization/renovation and energy saving activities

In our research we also examined the respondents' attitudes and behaviour about modernization/renovation and energy saving. The most important limiting factors of modernization/renovation are the financial barriers: 53.7% of men and 56.0% of women reported that this is the largest problem which hinders modernization/renovation. 15% of the respondents told that they are not concerned with this issue, and other 10% do not live in their own appartement, that is why they do not want to spend money on it. Generally, the proportion of women is higher among those who think to have barriers in applying a modernization/renovation.

We examined activities which are in connection with energy saving in the household (Figure 1.). We asked if the specific activity is usually done or not in the household in order to save energy. The most common activities are turning off the lights where there is noone in the room and the usage of energy saving bulb. Generally, more women do these saving activities than men do.

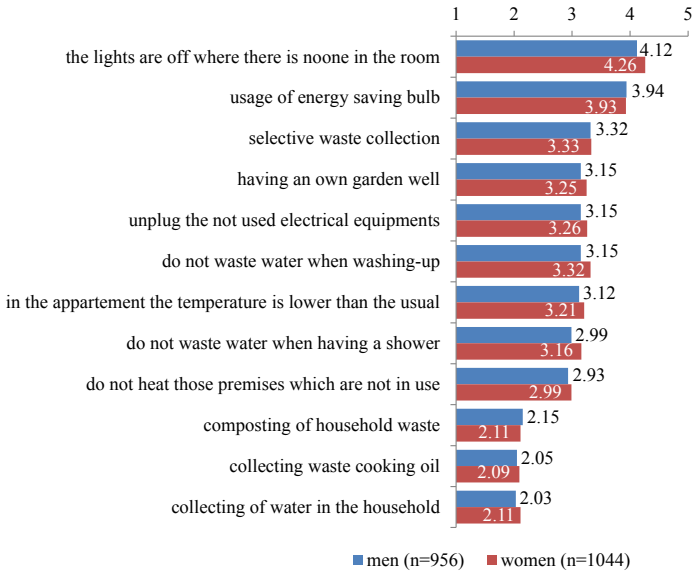

Figure 1

Energy saving activities in the household – Gender differences

4.3 Environmental issues

Women think themselves to be a bit closer to the nature than men do. On a 10-point scale the average of women's evaluation is 7.57 (n=1041), on the other hand, the average evaluation of men's is 7.49 (n=950).

We also asked the respondents about their reactions in case of a serious pollution. The most common reactions would be trying to persuade the neighborhood to submit a petition to the competent authorities (32% of men and 37.6% of women suppose this as a reaction), and trying to get in touch with influential environmental organization (28.8% of men and 35.5% of women would react this activity). It would not be a common reaction to move or to organize an indignation meeting against the polluter company. Generally, women are more active if a serious pollution happens.

4.4 Companies' social responsibility and consumers' influence on companies' activity

Social responsibility of companies and the action, activities of companies about social responsibility was also a topic of our research. Respondents are indifferent about the consumers' influence on the activities of companies. Women rather agree that consumers (with a cooperation) can influence the activities of companies: (on a 10-point scale) the average of women's evaluation is 5.82 (n=1006), and the average of men's evaluation is 5.35 (n=932). Respondents also think that the social responsibility of companies is important. Women agreed with this statement (on a 5-point scale) with a higher average evaluation (4.51; n=1015) than men did (4.42; n=929).

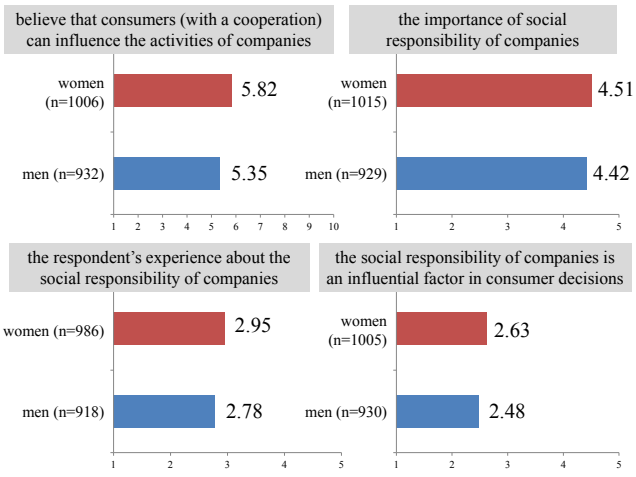

Figure 2

Gender differences – Attitudes about social responsibility

Respondents do not experience that much that companies apply social responsibility than they found it important: the average evaluations are lower in this case. They also think that the social responsibility of a company is not an influential factor when making a consumer decisions.

4.5 Adoption of new technologies and products – openness

70% of the respondents are opened or curious about new things but they wait until others start to use them, or they wait until the price decrease. The proportion of women who are very opened to new things is a little bit higher (6.6%) than the proportion of opened men (5%) – Figure 3.

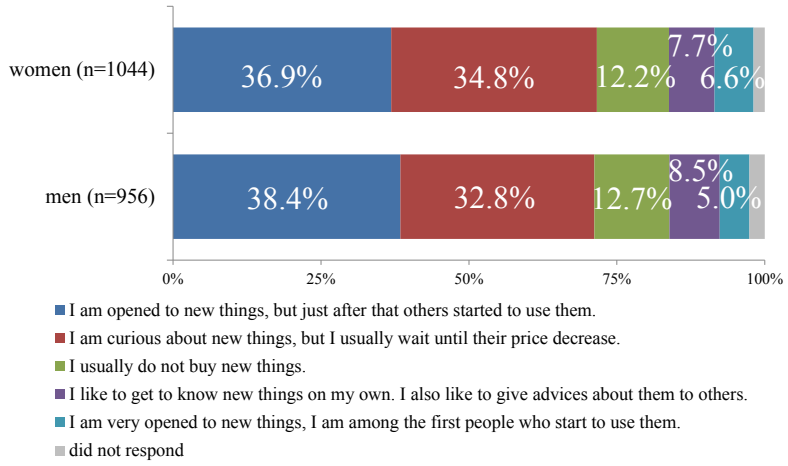

Figure 3
Openness - Gender differences

4.6 Groups of men – Factor and cluster analysis

Based on the attitudes of men about energy resources and their saving behaviour we aim to identify different groups. To reach this aim we use multivariate analysis method: first, we use factor analysis to identify the trends of this phenomenon. Then we apply k-means cluster analysis in order to differentiate the groups of men. As a result of factor analysis (Kaiser-Meyer-Olkin Measure=0.810) we got six factors which are the following: alternative energy sources, saving with less energy using, traditional energy sources, renewable energy sources, consciousness and electricity saving.

Cluster analysis resulted in five clusters, so we identify five different groups of men based on their behaviour and activities about energy sources. We name these groups based on their attitudes about the factors (Figure 4.) and their demographic characteristics (Figure 5.):

Cluster 1 – energy-sparing old men: they save with less energy using. In this cluster the proportion of men who are over 60 years is higher than the average. They mostly live in smaller settlements and they are low educated.

Cluster 2 – 40+ traditional men: for them every factor is important, especially traditional energy sources. They are mostly over 40, and they are not from Budapest, they have a middle level of education.

Cluster 3 – sparing, young workmen: renewable energy sources are important for this group. To save by using less energy is also important. They are mostly younger, from smaller settlements and they have a lower level of education than the average.

Cluster 4 – conscious men over 50 from the towns: the members of this group performed over the average in case of saving with less energy using and consciousness, but renewable energy sources are not that important for them. They are mostly over 50, and they are from Budapest or small settlements. They have a lower level of education than the Hungarian average.

Cluster 5 – sparing, conscious intellectual youth: the main activities of this segment is electricity saving and saving with less energy using, but renewable energy sources are also important for them. The members of this group are younger than the average, and they are mostly higher educated.

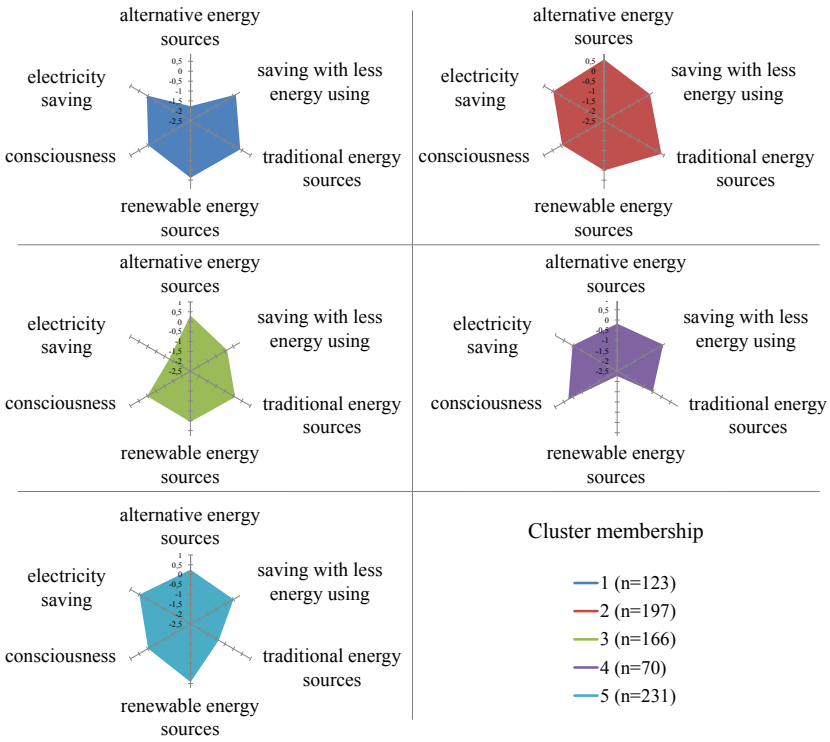

Figure 4

The result of k-means cluster analysis – Groups of men based on their attitudes about energy sources

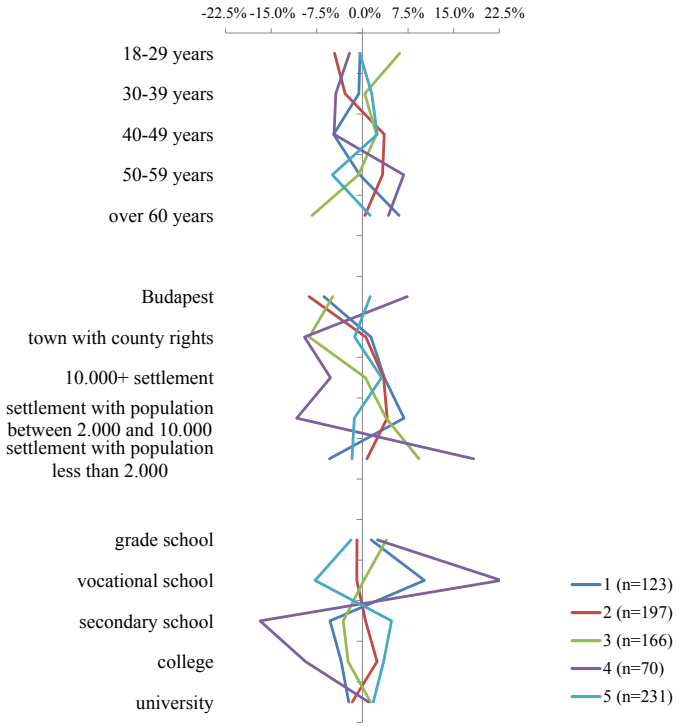

Figure 5
The demographic characteristics of clusters

Conclusions

Differences of men and women are characteristic in case of the attitudes and behavior about energy sources, energy saving, social responsibility of companies and environmental issues.

In general, higher proportion of men know the energy sources than women. Men have a more positive attitude about these sources. Mostly financial barriers hinder men and women to apply a modernization in their household. More women do activities which are in connection with energy saving in the household. Women feel a bit closer to nature, and generally they are more active if a serious pollution happens. Women are more optimistic: they rather agree that consumers (with a cooperation) can influence the activities of companies.

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