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# FACTORS DECREASING HOUSEHOLD ELECTRICITY DEMAND – A QUALITATIVE APPROACH

Case Study

**Keywords**
*Electricity consumer behavior,*
*Qualitative research,*
*Reducing household energy demand,*
*Israel*

**Abstract**

*Reducing energy consumption through changes in individual consumers' behaviors is one of the most important challenges of the present society and near future. Our qualitative study, based on semi-structured interviews, deals with the investigation of household consumer behavior, in order to explore ways for reducing the electricity demand, in the particular cultural context of a country with high levels of energy consumption in both summer and winter times – Israel. Various approaches, coming from economics, sociology, psychology or education were tested, for limiting the use of a particular, invisible and intangible merchandise - electricity. The main objective of the present study was to determine consumers' perceptions about the various approaches that could be used to decrease the domestic demand and consumption of electricity. A secondary objective was to identify, based on consumers' perceptions, the factors of influence that could be used in future quantitative researches and governance strategies. We found out that investigated families have a high level of education in the field of electricity consumption and marketing campaigns, which would make the classic energy educational approach less efficient. Household electricity consumers in Israel have awareness and willingness not to waste or consume electricity beyond what is necessary, but the necessary level is positioned quite high. The social comparison approach appears to be ineffective, as well, even if it proved its efficiency in other cultures. The psychological and the economic approach could be partially efficient, if certain influence factors are widely used. These factors include mainly the magnitude of the savings, the perceived behavioral control, the personal thermal comfort and the pro-environmental attitude. The most important managerial implication concerns the strategies that could be conceived by electricity companies and national authorities – based on un-intrusive messaging, respect of privacy, valorization of green, pro-environmental beliefs and consumer empowering instruments.*

## INTRODUCTION – CONTEXT AND OBJECTIVES

Our world is confronted with significant problems that seriously hinder its sustainable development - pollution, resources scarcity, lack of environmental protection, not enough green production and consumption, energy crises, waste and overconsumption, climate change due to gas and carbon emissions, etc.. Many of these issues have a common point – energy consumption – for which supplementary concerns are raised, related to reduced nations' independence and potential conflicts. It's not a surprise that specialists from various fields try to conceive strategies and identify influence factors for reducing industrial and individual consumers' consumption of electricity. Changing people's behavior in relation to energy consumption might be one of the most important challenges in the near future. Our study deals with the investigation of individual consumer behavior, in order to explore ways for reducing the household electricity demand.

Various theories, coming from economics, sociology, psychology or education were used to explain consumer behavior in general and that of electricity consumption, in particular (Attari et al., 2010; Delmas et al., 2013; Asensio & Delmas, 2015; Burger et al., 2015; Elbaz & Zait, 2016). Economic theories focus on the role of prices, financial information, different forms of incentives and penalties; psychological approaches focus on individuals' experiences and perceptions; sociological explanations analyze habits and social norms' influences; finally, educational approaches emphasize the role of consumer knowledge, level of awareness and learning processes. Energy consumers were thoroughly investigated in order to come up with appropriate segmentation strategies for future energy consumption reduction (Sutterlin et al, 2011). Usually a mixture of approaches gives the best results in this complex and complicate endeavor of limiting the use of invisible and intangible merchandise, taken as bare necessity, normal and inexhaustible, with no immediate obvious consequences of an excess use. Moreover, many strategies conceived for decreasing electricity consumption, including energy efficiency competitions, for example (Vinea & Jones, 2016) do not lead to the expected magnitude of results, or can actually bring opposite impact, due to curtailment behaviors, among other explanations (Testa et al, 2016). These are the reasons for which it is really important to know as many details as possible about electricity consumers' perceptions towards this issue, their motivations for increasing or decreasing electricity consumption. The main objective of the present study was to find out, as open and honest as possible, consumers' perceptions about the various approaches that could be used to decrease the domestic demand and consumption of electricity. A secondary objective was to identify, based on consumers' perceptions, the factors of influence that could be used in a future quantitative research.

## METHODOLOGY

In light of our research objective, the most appropriate method for such an exploratory quest isa qualitative research, followed by qualitative analysis. Many researchers define the qualitative approach as being "descriptive", deriving its data from the natural layout, when the researcher is the main research tool (Sabar Ben-Yehoshua, 1990), in the natural place of the investigated phenomenon, while trying to find the phenomenon's meaning in terms used by humans (Denzin & Lincoln, 2005; Kapoulas & Mitic, 2012). Some researchers define the qualitative approach by opposing it to the quantitative approach, referring in it to each research that presents findings not by statistic processes or other quantitative means (Corbin & Strauss, 1990). On the opposite side, Sabar ben Yehoshoua (1990) adds that the qualitative research completes the quantitative approach by trying to understand the character of the behavior of subjects and the way they interpret their life style – which goes beyond a simple description, allowing significant understanding. Three elements could offer clarifying and comprehensive definition for a qualitative research, distinguishing it from quantitative research and other human creations: 1. A qualitative research exists in word language, the natural language of humans and in the natural life surroundings. 2. A qualitative research is based on people's intuitive search for information and drives for proximity to the studied phenomena, for involvement with them and for empathy towards the subjects. 3. A qualitative research is based on people's natural, innate research abilities, while creating, at the same time, distance, reflection and control over the research process.In the qualitative approach research, one is able to examine the unique characteristics of electricity consumption,as "invisible" product that the consumer cannot evaluate through usual cognitive tools, differentiated from physical products, which can be seen when running out or consumed in some other manner. Electricity is simply something that reaches the house and causes things to work, without people thinking too much about the whole process and consequences (Watson et al, 2002; Darby, 2006; Lutzenhiser et al., 2010).

The tools appropriate for carrying out our qualitative research are semi-structured interviews. The semi-structured interviews enable getting a

comprehensive picture about interviewees' beliefs and concepts about the research subject (Smith, 1995) so that a wide picture of the phenomenon is received, and furthermore allows to discover things that could not be directly observed (Patton, 1990). Using this research tool helps creating a relationship and reciprocal trust between the interviewees and the interviewer. Furthermore, using semi-structured interviews enable the interviewer and the interviewees' flexibility concerning the interview's form and discourse manner. In this constellation, the interviewer can ask general questions that reflect the various subjects that the research touches.

**Design of the interview**

The questionnaire's structure was conceived on six issues – information about the family, types of electricity consumption, perceptions about the educational approach, perceptions about the economic approach, perceptions about the psychological approach and perceptions about the sociological approach for reducing electricity consumption. Foe each issue there were a few questions meant to help the respondents, as it follows: a. Tell me a few things about your house and family. How many people live there? What characterizes the family life- for example – do small kids or adolescents live here, and what is the nature of the relationship with them? b. Tell me about the electricity consumption in the house. What is the scope of the consumption? What are the main consumption causes/instruments? Are there periods with higher consumption? Do you and your family members undertake any actions to reduce electricity consumption? If you undertake any actions to reduce electricity consumption, do you succeed? c. The educational approach- What is your opinion about the campaigns for electricity savings that are seen on television? Do you consider that they bring or renew anything for you? Do they help you reduce electricity consumption? Do you think that they cause a significant change and for the long term in your household conduct? d. The dynamic information approach (economic) - It is known that the household consumption could be greatly influenced by electricity prices. Do you know what electricity costs are today? Do you know how muchyour electricity bill is? How does it change across the day or the year? Would you be interested in receiving alerts about electricity prices during peak and low hours in order to take advantage and plan the household consumption in a better way? Would you consider installing a smart monitoring system in the house? Do you think that these means would cause a reduction of household electricity consumption? e. The feedback approach- Do you know how much electricity you consume along the day, week, and year? Would you be interested in receiving alerts about electricity consumption (for example an application, e-mail)? Do you believe that these alerts would help you in reducing household electricity consumption? f. The social comparison approach- Do you think that your household electricity consumption is different from that of your neighbors or people living in this neighborhood? Do you think that knowing about the differences in electricity consumption between you and other households in the neighborhood would influence you, and if yes, in what manner? Would you reduce electricity consumption knowing that you consume more than your neighbors? Do you think you could keep the change on long term?

**Participants**

The research population consisted of 16 electricity consumers picked randomly from the data base of the electricity provider company. The interviews were carried out at the participants' homes, after getting their agreement, in advance, for conducting the interviews. On one hand, the choice of this framework helped making the data gathering more efficient, as it was found that a meeting in the interviewees' homes was quicker for the investigator and for the interviewees themselves; on the other hand, this approach helped to minimize possible interview diversions as a result of the interview's location and the context in which it could have been carried out. The choice of the interviewees' homes in this context helped create a research environment with less stress for the interviewees, it enabled the research in the natural respondents'environment that is the place where the electricity consumption exists in reality. The data collection was carried on by the main author of the study, employee of the electricity company, at the same time. Besides advantages, there was a small inconvenient, as well - it appears that the consumers raised a suspicion concerning the research's motives, when the researcher presented himself as an engineer working in the Israeli electricity company and stated that the research deals with reducing their electricity consumption. Household consumers perceived the research as somehow contradictory, considering that the economic motivations of the Israeli electricity company should be to actually increase consumption, determiningclients to consume as much electricity as possible, and so to maximize company profits.

## RESULTS AND DISCUSSIONS

The 16 persons interviewed from each selected family (husband or wife) had ages between 25 and 54 (whole distribution: 25, 32, 35, 35, 35, 36, 36, 42, 42, 43, 44, 45, 50, 52, 53, 54) and belonged to families havingfrom 1 to 5 children, most of them

with 3 kids (5 families), only 2 families without children.Half of the families had teenagers living at home. 3 of the families were living in private houses, one in a rented house, 6 in apartments with 5 rooms, 3 in apartments of 4 rooms, 2 in apartments with 3 rooms and one in an apartment with two rooms.

Interviews were conducted in Hebrew and data was thus collected in the natural language of the consumers. Interviews were translated into English and content analysis was used to interpret the results. There were two coders for the English translations, one emic, from inside the investigated population's culture, and one etic, from outside the culture. A calibration discussion took place between the two coders, and then each of the investigators coded the data using a mixed procedure, partially a-priori (based on the four approaches investigated) and partially emergent coding (based on the raw results from the interviews).

According to Shkedi (2003; 2011), the data analysis in a qualitative research is a process of arranging and building data gathered for interpreting and understanding its meanings. At the first level of the content analysis, the researcher analyses the contents exposed without any interpretations and only in the second phase the researcher deals with gathered interpretations and contents. In the present research, the interviews were first read and encoded by sentences or a combination of sentences. Following this, the answers were divided into categories. The themes found touched the attitude of electricity consumers towards the household electricity bill and the efficiency of the four approaches potentially influencing the households' consumption patterns.

The most prominent finding from the interviews was the great similarity in the way that the interviewees presented their attitude towards their electricity bill and household electricity consumption. In this framework, electricity consumption was presented, as in previous studies, as a basic aspect of the household, evolving according to the changing needs of seasons:

*"We use electricity according to our needs. In summer, we switch on many air conditioners for cooling, while in winter we use them for heating. In winter, we also have the boiler and dryer. On top of this are the usual things such as the washing machine, the dishwasher, lights, television."*

Electricity consumption was presented by all interviewees as a basic need, essential for living a comfortable life across the year, a constant consumption for cooling, heating, lightening of the house and operating of the electronic devices. In accordance, most of the interviewees note that they try not to waste electricity, they are fully aware about needless operation of electricity devices, especially those with high consumption:

*"We try to operate what is needed only when it is needed. The children too know that on leaving the room one should turn off the light and the air conditioner. This does not say that one sometimes does not pay attention or forget and then we [the parents] get angry"*

*"I try to be aware to the issue of electricity consumption and try to reduce the hours of operating the air conditioner, sometimes even trying to manage without it, but on returning from work or when it disturbs my sleep or people come and all are hot we turn it on".*

Similarly, one can notice the households' awareness to save electricity consumption whenever possible, when this aspect is mostly expressed in house lightening and operating hours of the washing and drying machines:

*"At the first opportunity we changed the bulbs in the house to economy ones. Furthermore, we try to operate the washing and drying machines during hours that are not peak hours"*

In fact, the interviewees' words reflect a concept that expresses a very limited operating space for households in the context of electricity consumption:

*"I do not have too great a possibility of influencing this (electricity consumption) without hurting my life quality. On the one hand, we do what we cannot to waste, but on the other hand, you cannot feel bad every day and count kilowatts. We do what is possible according to what is needed"*

Not all consumers expressed willingness to reduce electricity consumption out of economic considerations of saving electricity, there were consumers who expressed readiness to reduce electricity consumption because of environment considerations and concern for pollution caused to the environment by power stations.

*"When consuming electricity one has to think about the damage made to the environment by burning fuel, in Hadera one can sometimes see the yellow line of air pollution above the sea".*

The lack of elasticity demand for electricity was expressed in household consumers' consumption patterns, in their attitude towards costs deriving from these patterns:

*"We use electricity according to need ... we know that during winter and summer months there are larger bills and smaller ones in the spring and autumn. There is not much we can do with this"*

Apart from seasonality that influences the electricity bills the interviewees pointed at the price as a central element influencing their consumption just until a certain point:

*"The electricity bill's height is the government or electricity authority or the electricity company's decision, or something like this. They decide what the tariff will be according to all sorts of considerations and this influences us. When it is too high, we really start to make all kinds of*

*calculations. For example, there was one winter that instead of switching on the air conditioner I covered myself with blankets and saw television. However, one has to be fair, because when the price is very low it does not cause significant changes in the electricity consumption. At the maximum it gives a breathing space in the bank account"*.

Surprisingly, none of the interviewees could say exactly what the electricity tariff was. Most knew how to express the electricity bill's height in order of magnitude as expressed in the monthly bill, but did not know the tariff:

*"I have no clue what the tariff is. I only know that I have to pay 800 to 1300 shekel in my visa"* .

The efficiency of external means in influencing household's consumption patterns is small. On the background of lack of flexibility shown by households in consuming electricity, most expressed a doubtful approach for the ability of means not connected to price to influence their consumption:

*"I do not see how I knowing when to turn on the boiler would help me change anything. One has to take a shower, doesn't one? I might look at it once or twice and that is it. It does not really change life here". "Well, say I'll know how much others waste on electricity. I don't see how it would change what I do daily. They are what they are and I am what I am. "*

*"See the electricity bill with its columns, what does it help if I am lower or higher compared to the previous month or year? What would this help me for the next year? Is there a chance that I would remember this then?"*

A similar picture comes up from the references to public educational campaigns that target consumers for changing consumption patterns:

*"Look at all the advertising they make. Therefore, there are economic bulbs, but this is a small issue. It is not like the air conditioner that thankfully works a lot in Israel. How much can one save with these?"*

Households with adolescents are particular in this context, due to generational gap conflicts. As comes up in the issue of managing household electricity consumption, the savings, and/or waste embodied there is a wide basis for confrontations with youngsters:

*"How many fights there are here nearly every day? Shut off the lights when you leave. Shut off the air conditioner. No one cares. They do not care, as it is we [the parents] who pay. I hope that following all the shouting they will finally internalize it and we will save a little, and when they are adults they will behave properly"*

There was great willingness amongst these households to consider installing a smart system that would help monitoring and managing electricity consumption at home*:*

*"It would have been wonderful if it had been possible to install some smart system that would help me and them. This might really be the solution"*

To summarize, the qualitative analysis shows that household electricity consumers in Israel have awareness and willingness not to waste or consume electricity beyond what is necessary. Electricity consumers hold stances that electricity saving is a good thing as it eventually leads to a monitory saving or to reducing air pollution caused from the process of producing electricity. Therefore, they take actions of saving household electricity consumption, mostly expressed in changing bulbs to more economic ones and shutting off lights when leaving the room. These qualitative research findings strengthen the findings of a survey performed by the Central Bureau of Statistics that found that about 95% of household electricity consumers turn off the light when leaving the room and about 88% turn off the air conditioner or heating when leaving the room (Central Bureau of Statistics, 2015). It seems as if household electricity consumers in Israel tend to consume electricity "automatically" as a behavior stemming from habit while expecting to receive electricity service in routine actions. Furthermore, electricity consumers describe confrontations with children because of needlessly leaving electricity working, such as: leaving lights on or an air conditioner working when leaving the room. Nevertheless, from the households' point of view their action space in reducing consumption is very limited and derives from the very fact that they grasp electricity as a basic product whose consumption cannot be significantly reduced (similar to Tabori, 2012). The household electricity consumption mostly serves for cooling homes in summer days and heating them in the cold winter days in Israel and consumers are not willing to give up their comfort or life quality entailed in electricity savings or giving up electricity consumption even if the cost of this choice could be seen as being relatively high. This finding is in line with Marujelos and Young's findings, that households do not tend to change their consumption habits according to electricity prices and this finding implies that electricity consumers prefer to keep a comfortable temperature at home even if it is on the expense of electricity increased consumption (Marujelos and Young, 2011). Electricity consumers in the Israel sample investigated strengthen the widespread concept that household consumers' electricity demand is rigid, meaning that a change in price would not significantly change the demanded quantity of electricity. This concept also leads to doubtfulness in the context of the ability of external means to influence the reduction of household electricity consumption through receiving information in each of the approaches mentioned

above. Most consumers in this research reported that advertising or campaigns on the issue of electricity do not influence their behavior pattern. Therefore, they strengthen the Central Bureau of Statistics survey results that reported that only 18% of household electricity consumers believe that advertising detailed information of households' energy consumption would cause a reduction in household electricity consumption (Central Bureau of Statistics, 2015). Furthermore, most consumers whowere interviewed in the research believe that receiving information that compares electricity consumption to that of their neighbors would not cause them to reduce their electricity consumption and in fact, it would be better that everyone would deal with his own home's electricity consumption and not look at what his neighbor was doing and certainly not how much electricity he was consuming. This finding contradicts Alcott's research findings, which showed that comparative information brought households to reduce average demand for electricity in a great way (Allcott, 2011), although on top of comparative information, the reports supplied to consumers in this research included also regular information about required steps for reducing households' demand for electricity (Allcott&Mullainathan, 2010). Most of the consumers in this research showed doubtfulness concerning the influence of a feedback about reducing households' demand for electricity. Most of them reported that giving more information about households' electricity consumption that includes processed information about electricity consumption in a given period and comparing it to another consumption period, or any other processed information given through the electricity bill, that reaches at a frequency of once every two months, would not cause them to change their electricity consumption patterns. Consumers look at the data information in their electricity bill in a general manner and do not really plunge deeply into it. They believe that their influence ability in reducing electricity consumption is small, as the information does not help them in making decisions, for example, receiving information about electricity consumption at different periods does not help reducing electricity consumption in a future period - contrary to studies that showed that feedback has positive influence on reducing household electricity consumption (for example, Fischer, 2008; Darby, 2006).

General information about dynamic pricing that presents consumers a high tariff in peak hours and a discounted one in hours of low electricity consumption could cause consumers to change their household electricity consumption patterns, in a way in which they would consider operating electricity devices such as a washing and drying machine during the night when electricity price is low. This finding strengthens studies showing that using different dynamic pricing tools causes household consumers to manage electricity consumption in an economical worthwhile manner - for example, King & Chatterjee (2003), Fan & Hyndman (2011). Nevertheless, many consumers stressed that at the extent they would feel that dynamic pricing influenced their life quality and their comfort at home this would cause them not to change their electricity consumption pattern and therefore, here too one can deduce that households do not tend to change consumption habits according to electricity prices (Marujelos and Young, 2011). Exceptional in the context of information supplied to consumers through the different approaches mentioned above is the positive concept that consumers have about using a smart system for managing the household consumption which would enable them to receive online information through a home monitor or through a mobile phone and an ability to carry out actions of remote control on household electricity instruments, for example; turning the hot water boiler off or on, turning lights on or off and more.

With these synthesized results of the interviews we accomplished the main objective of the study and we moved forward to the secondary one – identify potential factors of influence for the decreasing of electricity household consumption. In order to do this we extracted the groups of words in favor of reducing, the groups of words against reducing electricity consumption and the frequency for both categories.The first category – words in favor of reducing electricity consumption – was rather small and included: education (8 occurrences), high electricity price (2 occurrences), possible savings (2 occurrences), low revenue, environment concerns, pollution, each appearing once. The second category – factors against reducing electricity consumption – was richer: personal comfort (14), habits (10), lack of control (5), stress due to alerts (2), quality of life (2), privacy invasion (2), lack of time for reading the received information, amount of spam messages on cell phones, lack of adds novelty, getting used to the alerts and ignoring them after a while, lack of important savings comparing to the effort, feeling of indulgence/spoiling after work. As we can see, there are much more arguments in favor of a high level of electricity consumption, perceived as entirely necessary for comfort and life satisfaction, in general, doubled by the idea that the efforts for changing the present behavior would not be worth doing, in terms of savings, control, stress and intrusion. So, the strategy should be based not necessarily on increasing the positive factors, but rather on decreasing the negative ones (decrease perceived importance of factors from the negative category).

For the conceptualization and measurement of the identified factors of influence, scales from the

extant literature could be adapted, following an extraction procedure similar to that previously used by Zait (2016). In order to explain the personal comfort heavy weight, scales developed by Richins (1987) or Richins and Dawson (1992) could be used. The Richins' materialism scale contains six components: *It is important to me to have really nice things; I would like to be rich enough to buy anything I want; I'd be happier if I could afford to buy more things; It sometimes bothers me quite a bit that I can't afford to buy all the things I want; People place too much emphasis on material things; It is really true that money can buy happiness*. Inglehart post-materialism scale (1981) would be also useful for a future quantitative research. Post-materialists are more concerned about the quality of life, the environment, democracy, and human rights – the first two issues having a great importance for the interviewed families.

Our findings are similar to those of Hille (2016), who has interesting facts about the energy user's dilemma, showing that given that the potential costs derived from changing heating and warm water consumption behavior are relatively low compared to the overall available budget, financial considerations triggered by different billing types are assumed to be quite limited when deciding whether to sacrifice comfort in order to reduce energy consumption. People realize they are in social dilemma situations, and do not always act in their own interest, due to many nonfinancial reasons. (Hille, 2016) His scale could be used for measuring electricity consumers' perceived self-efficacy (*I know the areas of my household with the highest energy saving potential and, accordingly, I can/could optimize my consumption without any problems*), personal efficacy (*The small efforts I make to conserve energy add up, too, and can make a difference with regard to general energy consumption*), personal norms (*I feel personally obliged to avoid unnecessary energy consumption wherever possible; I have a bad conscience when energy is consumed unnecessarily in the household, e.g., leave lights on in unused rooms)*, basic convictions about energy consumption (*Energy conservation is important to me; I intend to reduce/to further reduce my energy consumption; Energy conservation goes without saying since I was brought up accordingly; I pay attention to energy consumption because I care for the future of my next generation*), and loss of comfort (*To me, energy-saving behavior in the housing domain entails losses of comfort that are too high*).

Thermal comfort could be measured similar to Chena et al (2017) scale, which included two constructs- need for coolness and need for warmness, since these were important issues for the investigated families in our study. Need for coolness can be measured by items such as *"I find I cannot relax or work well unless the house is air-conditioned in the summer," "I have trouble falling asleep at night without an air-conditioner on," and "while others might turn off their air conditioners in the summer, my own need for being cool is high."* Need for warmness can be measured by statements as *"It is just too uncomfortable to have my indoor temperature less than X degrees in winter months," and "while others might tolerate lowering their thermostat settings in the winter, my own need for being warm is high."* – same used in Chena et al study (2017).

Finally, environmental concern could be measured using Andersson and Nassen scale (2016): four items, with a response scale from 1 to 7, querying about the respondents' self rated level of interest in environmental issues, level of personal worry about the future effects of climate change, preference for an "environmentally friendly" society even if it would mean a low or zero economic growth rate, and attitude towards a proposed increase in the country's carbon tax.

## CONCLUSIONS

The main objectives of the present study were to investigate consumers' perceptions towards the most common approaches used to change behavioral patterns and reduce household consumption of electricity, and to identify potential factors of influence in this respect, factors which could be used in strategies conceived at companies and national level. Using a qualitative approach, based on semi-structured interviews with a representative (husband or wife) of a sample of families in Israel, we identified consumers' opinions about such strategic instruments as cost and dynamic pricing of electricity, social comparison, psychological impact of information and educational campaigns (mainly through advertising campaigns at national level).

We found out that investigated families have a high level of education in the field of electricity consumption and marketing campaigns, which would make the educational approach less efficient. The social comparison approach appears to be ineffective, as well, even if it proved its efficiency in other cultures. The psychological and the economic approach could be partially efficient, if certain influence factors are wisely used. These factors include mainly the magnitude of the savings, the perceived behavioral control, the personal thermal comfort and the pro-environmental attitude.

Important variables can be conceptualized from the qualitative interviews, to be used in further quantitative researches: magnitude of savings perceived importance, privacy respect, attitude towards media news/specific adds, perceived

behavioral control, personal/thermal comfort, materialism/post-materialism, innovativeness, value-norm belief, pro-environmental behavior. Some of these variables were previously analyzed (Yeboah&Kaplony, 2016; Cho &Krasser, 2011; Steg&Vlek, 2009; Midden et al, 2007; Dunlap et al, 2000; Schwartz, 1992; Richins, 1987). Measurement of these variables' influence would help improving energy conservation through a better understanding of consumers' motivations and concerns – otherwise changing and predicting energy consumption behavior will remain challenging and inefficient.

The most important managerial implications concern the strategies that could be conceived by the electricity company and national authorities – based on unintrusive messaging, respect of privacy, valorization of green, pro-environmental beliefs and consumer empowering instruments.

From the interviews we discovered that there are much more arguments in favor of a high level of electricity consumption, perceived as entirely necessary for comfort and life satisfaction, in general, doubled by the idea that the efforts for changing the present behavior would not be worth doing, in terms of savings, control, stress and intrusion. So, the strategy should be based not necessarily on increasing the positive factors, but rather on decreasing the negative ones -decrease perceived importance of factors from the negative category, through social campaigns. Such strategies would follow the pattern followed in social causes, in order to initiate and maintain change in consumers' thoughts and behavior that could lead to short and long-term reductions in energy use: engagement (develop attention and involve the target audience); education (communicate information on what, why and how behavior should change); enabling (enhance desire to change behavior, make things easier for the consumer), and empowering (increase perception and reality of self-efficacy, offer concrete behavior alternatives).

Certain limits exist for our study, an exploratory one, limits related to the non-generalizable nature of the qualitative research in itself and to the translation processes that could affect the quality of the coded data. Cohen K coefficients were not computed, due to the fact that the analysis took place on different texts – Hebrew and English – and at distinct moments in time. Future research is needed, on a larger sample and at a quantitative level, in order to test and adjust the strategies for reducing household electricity consumption in Israel.

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