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Impact of Demographic, Psychological Attributes and Financial Consciousness of Households on their Energy Conservation Behavior: Testing the Mediating Role of Behavioral Intention

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Abstract *The implementation of energy sustainable practices is acknowledged to be a vital step towards resolving the problem of energy shortage. However, the energy conservation behavior of households in developing countries has not gained much attention. Therefore, this research aims to examine the effect of psychological attributes and financial consciousness on the energy conservation behavior of residential individual in the presence of behavioral intentions. For the purpose of this study, we performed a regression analysis on the data set collected through a questionnaire survey of 310 residential individuals in Lahore, Pakistan. Results reveal that the psychological attributes and financial consciousness of the households have a significant effect on their energy conservation behavior. Further, the findings of the study establish a significant mediating role of households' behavioral intentions towards energy conservation. The findings of this study suggest that media campaigns and energy conservation seminars should emphasize the adoption of energy-saving technologies.*

Key Words: Demographic and Psychological Attributes, Financial Consciousness, Behavior Intentions and Energy Conservation

Introduction

In the modern era of technology, consumption of electric energy has increased due to a rapid increase in the human population accompanied by an increase in the use of technology (He & Greenberg, 2008: Vlek & Steg, 2007). An increase in global energy consumption has led to a serious concern about the depletion of natural resources and a number of environmental issues (Liu, Wang, Wei, Chi, Ma & Jian, 2020, Dumciuviene, Cibinskiene & Andrijauskiene, 2019). Global warming, depletion of natural resources, water and air pollution have got the attention of academics and policymakers due to their hazardous effect on the quality of life on the planet (Rasool, Zuberi, Siddiqui & Madni, 2019). Among the various sources of energy, electrical energy is the most widely used source of energy. All technologies are based on electrical energy, which has raised its demand all over the world (Birol, 2006). Existing literature on energy has proposed numerous measures for its conservation and consumption. For example, Hong, She, Wang and Dora (2019) suggested that government subsidies have a significant positive impact on the energy consumption behavior of households. But it is not feasible for developing countries to extend subsidies for a longer period, particularly those with a deficit budget and high debt burden. Ascione (2017) and later, Chel and Kaushik (2018) recommended the use of renewable energy technologies for sustainable energy consumption behavior. However, due to a lack of funds in developing countries, it is a big challenge to adopt renewable energy technology. Moreover, additional production of energy is very costly due to the continuous rising prices of imported oil. On the other hand, if dams and power plants would be built in developing countries, it would drive them into further debt (Ahuja & Tatsutani, 2009).

Recently, behavioral and social scientist highlighted the importance of demographic and psychological attributes of individuals in their energy conservation behavior. For example, Yue et

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al. (2019), Abrahamse and Steg (2009), Dumciuviene et al. (2019), Sardianou (2007), Wang et al. (2011), Rasool et al. (2019) emphasized the role households psychological and socio-demographic attributes in the consumption and conservation of energy in the developing countries. The theory of planned behavior (TPB) proposed by Ajzen (1991) claims that behavioral intension mediates the relation between different psychological, socio-demographic variables and energy conservation behavior. Earlier studies reveal that individuals' intention to adopt energy conservation practices is strongly influenced by their psychological attributes (Abrahamse & Steg, 2009). In addition to psychological variables, demographic factors also significantly impact energy conservation behavior (Liu et al., 2020). Mills and Schleich (2010) reported that the level of education and income of household have a significant effect on their intension to adopt energy-efficient measures. Financial consciousness is useful to encourage the consumers to change their behavior towards energy conservation behavior (Breukers, Mourik & DuneWorks, 2013). In addition to demographic and psychological attributes of households, their financial consciousness may affect the energy conservation behavior, but it lacks empirical evidence.

Most of the earlier studies on energy conservation behavior have been conducted in developed countries. For example, Abrahamse and Steg (2009) investigated the energy conservation in Netherland, Allen and Marquart-Pyatt (2018) in the USA; Mori and Tasaki (2018) conducted their study in Japan; Dumciuviene et al. (2019) in Greece; Hong et al. (2019) in China, and Liu et al. (2020) conducted their study in Northwest China. Further, most of the research work on energy conservation has been conducted in western countries, and their environmental conditions, customs, traditions and inhabitants' psychological attributes are different from the non-western countries. Consequently, soliciting the findings of these studies in developing countries is not free from reservations (Rasool & Ogunbode, 2015).

Energy consumption in developing countries has become double during the last decade and is expected to grow further in future with the same rate (Ahuja & Tatsutani, 2009). Pakistan is a power-intensive developing country (Nasir, Tariq & Arif, 2008); statistical data of past 10 years indicate that the demand for electrical energy has been growing at a rate of 4.95% per annum, whereas the growth rate of the population is 2.26 % (Rasool et al., 2019; Bhutto & Yasin, 2010). Pakistan is facing energy crises for decades (Alahdad, 2012; Valasai et al., 2017). The current gap between energy supply and demand is 7,000 MW which results in long hours' load shedding. Pakistan energy conservation authority NEECA (National Energy Efficiency and Conservation Authority) is ready to take action to promote energy conservation all across Pakistan. A strategic plan for 2020-2025 is issued by the NEECA in 2020, which states its goals to save energy up to 10-15% by 2025, but still, progress is not seen in this regard. According to the Hydrocarbon Development Institute Ministry of Energy, Pakistan (2019) report, residential individuals are the major consumers of electrical energy, which accounts for 48% of the total annual energy consumption in Pakistan. Pakistan is a power-intensive developing country (Nasir, Tariq & Arif, 2008); statistical data of past ten years indicate that the demand for electrical energy has been growing at a rate of 4.95% per annum, whereas the growth rate of the population is 2.26 % (Bhutto & Yasin, 2010). Moreover, Pakistan does not have an ample supply of electricity (Rasool et al., 2019) and also being the world's 6th most populous country. Therefore, due to the importance of energy conservation behavior of the inhabitants in lower-middle-income countries, this study aims to find the impact of financial consciousness along with psychological and demographic attributes of households on their energy conservation behavior in Pakistan. Further, we test the relevance of the theory of planned behavior by examining the direct and mediating role of behavioral intensions of households on their conservation behavior in developing countries like Pakistan. Results of regression analysis support the TPB and suggest that the energy conservation behavior of households can be improved by giving due consideration to the demographic and psychological attributes of households. In addition, the results would be beneficial for policymakers in order to promote energy conservation behavior and in the prevention of energy overuse in the residential sector. Further, the findings of the study suggest that policymakers should consider the psychological and demographic characteristics of households while designing and implementing the energy conservation policies. Moreover, there is a need to increase the financial consciousness of households by reminding the financial savings or benefits of energy conservation. Thus the findings of this study would be helpful for the government and industry to formulate green and sustainable energy policies.

After describing the motivation for this study in the introduction, the rest of the paper is organized as follows: Theoretical foundation for hypotheses is discussed in the second section. Participants, sampling, measures of constructs and estimation technique are illustrated in the third section. Results are reported in the fourth section. Discussion of results, conclusion and implications of the study presented in the fifth section.

Literature Review and Hypotheses Development

Due to the growing population, the protection of natural and energy resources is extremely important for sustainable growth (Nguyen et al., 2016). Various conceptual models were hypothesized and assessed to study the influence of different predictors of energy conservation behavior of human being (Frederiks, Stenner & Hobman, 2015; Wang et al., 2011; Yue et al., 2019; Karlin, 2014). In most of the energy conservation behavior (ECB) research, psychological attributes and contextual factors are emphasized (Yue et al., 2019). Literature suggests energy conservation behavior is referred to as ongoing day to day activities for minimizing energy consumption (i.e. switching-off lights, lower the thermostat, minimizing the use of heating/ cooling). It also implies the adoption of energy-efficient aplianwhich means one's action toward energy conservation (i.e. investing in energy-efficient appliances (Frederiks, Stenner & Hobmen, 2015; Enshassi et al., 2017; Gardner & Stern., 2002; Hong et al., 2019; Rasool et al., 2019). In order to investigate the effect of demographic, psychological attributes and financial consciousness of households on their energy conservation behavior following hypotheses are developed.

Demographic Attributes and Energy Conservation Behavior of Households

Residents' consumption of energy is influenced by their demographic characteristics (Biesiot & Noorman, 1999; Grantham, 2011). Previous studies such as Vlek and Steg (2007); Grantham (2011); Frederiks, Stenner and Hobman (2015); Hong et al. (2019); Yue et al. (2019) provide empirical evidence on the significant association between energy conservation behavior and demographic characteristics of households. Studies have shown that education has a major impact of household energy conservation behavior. Researchers such as Hong et al. (2019); Yue et al. (2019) established that educated people could understand the advantages of energy conservation more effectively than less educated people. Households with a high education level have a tendency to show more energy conservation and pro-environmental behaviors as compared to those with a lower education background (Nair at el., 2010; Hong et al., 2019). Yue, Long and Chen (2013) added to the above notion concluded that educated people are more willing to modify their behavior to save more energy. Highly educated people are more willing to invest in the energy-efficient appliance (Latic, Damigos & Gubina, 2021).

In addition to the level of education, the income of households is also considered an important determinant of their energy conservation behavior (Frederiks, Stenner & Hobman, 2015). Households with more income incline to consume more energy than low-income households. Thus the income of households has a direct effect on their energy conservation behavior (Brandon and Lewis, 1999). On the contrary, Yue, Long, and Chen (2013) argue that residential individuals with less income are more willing to modify their behavior to save energy. While high-income people are more capable to adopt energy-efficient measure and willing to modify their houses with energy-efficient appliances. Some studies found that people with higher income level consume more energy because they can bear the financial cost of their energy consumption (Wan et al., 2018; Liu et al., 2020). Based on the above arguments following hypotheses are developed.

H_1: The education level of households positively influences their energy conservation behavior.
H_2: The income level of households has a significant effect on their energy conservation behavior

Psychological Attributes and Energy Conservation Behavior of Households

Different studies have justified that residential energy conservation behaviour is influenced by their psychological attributes. Household energy usage is mostly associated with their psychological attributes such as their knowledge and awareness about energy usage, their control over their energy consumption, perceived responsibility, social and personal norms (Frederiks, Stenner & Hobman, 2015; Hong, 2019). Liu et al. (2020) revealed that psychological attributes, specifically perceived behavioral control, has significant impact on the energy conservation intensions. Social scientists summarize some common predictors of psychological attributes which measure the energy conservation behavior of individuals. These include knowledge about energy conservation, values and beliefs, attitude, perceived responsibility, perceived behavioral control, subjective norms, social norms, awareness (Vlek & Steg, 2007; Dumciuviene et al., 2019; Yue et al., 2019)

Knowledge about energy conservation reflects one's degree of knowledge and understanding related to energy crisis and benefits of adopting energy conservation measures and behavior (Dumciuviene et al., 2019). Steg, Perlaviciute & van der Werff (2015), Han & Cudjoe (2020) also concluded that knowledge is an important dimension that influence human behavior to adopt energy sustainable behavior. Greater understanding and knowledge about environmental issues and energy crisis is positively associated with a person's energy conservation behavior (Frederiks, Stenner & Hobman, 2015; Steg, Perlaviciute & Van der Werff, 2015). Karatasou et al. (2014) stated that people

attitude towards energy behavior is highly influenced by their knowledge. Contrary to this, Suraya, Zakaria and Hilijjah (2020) reveal that knowledge and awareness of households have the least impact on their energy conservation behavior. Perceived behavioral control refers to the ability of a person to take control or perform certain behavioral action or face difficulty in performing certain behavior (Karatasou et al., 2014; Abrahamse and Steg, 2009). Existing literature shows that perceived behavioral control is related to a person's intentions to engage in pro-environmental behavior (Abrahamse and Steg, 2009; Frederiks, Stenner, & Hobman, 2015; Liu et al., 2020). Liu et al., (2020) reveals that perceived behavior control have significant impact on individual's energy conservation behavior. Similarly, Han & Cudjoe (2020) also reveals that perceived behavioral control significantly impact the household's energy conservation behavior. Personal norms indicate a person's inner feelings and how independently he/she behave other than social expectations (Karatasou et al., 2014). Abrahamse and Steg (2009) suggested that residential consumers with high personal norms are more likely to save energy because they feel their energy consumption will negatively impact the environment. Literature have mixed evidence on the impact of personal norms on the energy conservation behavior of residential individuals. Shi et al. (2019) found that personal norms do not affect energy conservation behavior. However, studies give consistent findings and support the positive impact of personal norms on consumer's energy conservation behavior (Frederiks, Stenner & Hobman, 2015). Personal norms have a significant impact on household energy conservation behavior as well as their intention to invest in energy-efficient appliances. Further, people with high level of personal norms show more concern towards climate change (Niamir, Ivanova, Filatova, Voinov & Bressers, 2020). People are driven by government, industry and other external entities towards the energy conservation behavior (Frederiks, Stenner, & Hobman, 2015). Abrahamse and Steg (2009) and Dumciuviene et al. (2019) also proposed that a high level of perceived responsibility is positively related to energy conservation behavior. The above discussion leads to the following hypothesis.

H_3: Psychological behavior positively influence energy conservation behavior

Financial Consciousness of Households and their Energy Conservation Behavior

Human behavior towards the environment depends on several motivations, which include a desire to save the environment, protects one's own resources, i.e. financial savings (Liu et al., 2020). Wang et al. (2011) Stated that residential willingness to adopt energy conservation measures have a significant relation with economic benefits (e.g. financial savings). The dominant financial rationale behind reducing energy consumption between domestic people is to reduce bill (Soetanto, Zou, Yang, 2014). Studies suggested the positive impact of households' motivation for saving money on their energy conservation behavior (Vasseur & Marique, 2019). Financial consciousness and motivation is an important and crucial factor that push household behavior towards energy-saving practices (Liu et al., 2020). Abrahamse and steg (2009) also observed in their study that monetary incentives have a significant effect on their energy conservation behaviour. Therefore, this study hypothesizes that financial consciousness positively influences household energy conservation behavior.

H_4: Financial consciousness positively influence energy conservation behavior

Moderating Effect of Household Intension to Save Energy

Psychologist is focusing on factors that mediate human behavior toward any biological or environmental issues (Ajzen, 1991). The theory of planned behavior (TPB) proposed by Ajzen (1991) emphasizes that behavioral intension mediate the relationship of psychological, socio-demographic variables with energy conservation behavior. Human acts are followed by their behavior, intent and willingness for a specific action (Liu et al., 2020). Psychological variables solely are not responsible for human behavior, person's environmental surroundings also impact individual behavior toward energy conservation (Yue et al., 2019). Consistent with the about notion Sardianou (2007) and Abrahamse & Steg (2009) also agreed that behavioral intentions are positively associated with energy conservation behavior. By looking at the above discussion following hypothesis is proposed.

H_5: Behavioral intension mediates the impact of income level on energy conservation behavior.
H_6: Behavioral intension mediates the impact of education level on energy conservation behavior.
H_7: Behavioral intension mediates the impact of psychological attributes on energy conservation behavior.
H_8: Behavioral intension mediates the impact of financial consciousness on energy conservation behavior.

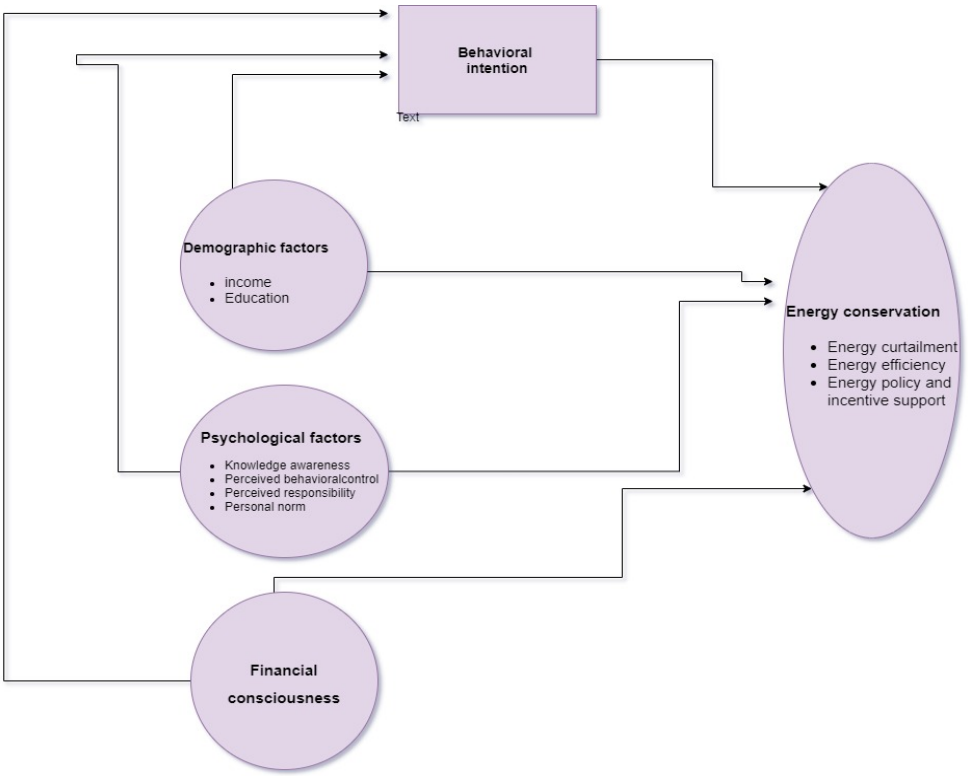

Figure 1: Conceptual Framework

Method

A self-administered questionnaire was used to gather the data from residential individuals in Lahore, Pakistan. Respondents were sampled through convenient sampling. Total 500 questionnaires were sent to the respondents through online modes, a total of 325 questionnaires were returned, of which 15 questionnaires were found unable to use. The final sample of 310 questionnaires was used for the analysis purpose. For examining the sample distribution, we performed frequency distribution analysis of respondents and results are reported in Table 1. Demographic analysis showed that 40% and 60% were female respondents. By looking at the age statistics, it showed that respondents who are 30 or below are 6.8%, respondents between "31-40" were 13.9%, 41-50 were 77.6%, 51-60 were 1%, and above 60 were 0.6%. The educational data of respondents showed that 1.9% were lower secondary education, 10% have intermediate education level, Bachelors 53.5%, Masters 33.5% and PHD 1%. About 6.5 % of the respondents reported a monthly income was below PKR 50,000, 26.1% have a monthly income between "PKR 50,000 to PKR 99,000. 17.1% respondents earned between PKR 100,000 to PKR 149,999, about 41.1 respondents earned between PKR 150,000 to PKR 199,999. Lastly, 3.2% of respondents earned 200,000 and above. The next demographic variable marital status results showed that 19.7% of respondents were unmarried, and 80.3% of respondents were married. About 79.4% of respondents have their own house, and 20.6% lives in a rented house.

Table 1: Demographic Profile

	Frequency (Percent)		Frequency (Percent)
Gender		Age	
Male	126 (40.3)	30 or below	21 (6.8)
Female	184 (59.7)	31-40	43 (13.9)
Marital Status		40-50	241(77.6)
Married	61 (19.7)	51-60	3 (1.0)

	Frequency (Percent)		Frequency (Percent)
Unmarried	249 (80.3)	Above 60	2 (0.6)
Education Level		Monthly Income	
Lower secondary	6 (1.9)	Below 50,000	20 (6.5)
Intermediate	31 (10.0)	50,000-99,999	81 (26.1)
Bachelors	166 (53.5)	100,000-149,999	53 (17.1)
Masters	104 (33.5)	150,000-199,999	146 (47.1)
PhD	3 (1.0)	200,000 or above	10 (3.2)
House Ownership			
Own house	246 (79.4)		
Own house	64 (20.6)		

To measure the variable of interest, a questionnaire was adapted from different studies. The psychological attribute of households was measured by 16 questions,; all were adapted from Dumciuviene et al. (2019). To measure the financial consciousness, 4 questions were adapted from Karlin (2014) and Wang et al. (2011), to behavioral intension was measure by the three questions which were drawn from Allen and Marquart-Pyatt (2018). Finally, energy conservation behavior was measured by 14 questions which were taken from Karlin (2014), Rasool et al. (2019) and Allen and Marquart-Pyatt (2018). To measure all the variables 5 Likert scale was used where 1 is considered as strongly disagree, 2 is equivalent to disagree, 3 is equal to neutral, 4 is equivalent to agree, and 5 is equal to strongly agree. SPSS software was used to test the hypotheses as well as to conduct a different statistical test. To check the reliability of the instrument reliability test was conducted. Correlation analysis was used to know the strong relationship between the variables of the study. To test the hypotheses and identify the relation between the exogenous variables and energy conservation behavior, regression analysis was used. Regression analysis in SPSS was used to measure the effect of exogenous variables on energy conservation (Sarstedt & Mooi, 2014)

Results of Analysis

Descriptive statistics provide a detailed analysis of the sample size and the responses gathered for the study. Table 2 provides details about sample size, minimum and maximum value, mean and standard deviation, skewness and kurtosis value. A total of 310 households participated in the survey (N = 310). The results show that the values of the mean for psychological factors is 3.59, financial consciousness is 3.57, behavioral intention is 3.51, and energy conservation is 3.77. The mean value of 3.59 for psychological factors, the mean value of financial consciousness is 3.57. Lastly, the energy conservation mean value is 3.77. Psychological factors have a standard deviation of 0.51, financial consciousness has 0.85 as a standard deviation value, behavioral intention has a standard deviation value of 0.93, and energy conservation has a standard deviation score of 0.35, respectively. The descriptive statistics of skewness is in between +1.5 and -1.5 for all variables and kurtosis is closer to 3 for all variables. It implies all variables are normally distributed. Lastly, the minimum and maximum values of all variables are 1.00 and 5.00 respectively.

Table 1. Descriptive statistics

	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
Psychological factors	1.00	5.00	3.594	0.511	-0.586	2.681
Financial consciousness	1.00	5.00	3.569	0.857	-1.245	3.088
Behavioral intention	1.00	5.00	3.515	0.939	-1.053	-3.278
Energy conservation	1.00	5.00	3.778	0.350	-1.461	3.234

Correlation analysis is a statistical method used to evaluate the strength of the relationship between two quantitative variables. Table 3 exhibits the correlation analysis. The correlation between income level and energy conservation behavior is insignificant with the r-value of -0.77, and the p value is 0.174. The results indicate that there is no relationship between energy conservation behavior and income of the residential individuals at the 0.05 level of significance. The correlation between educational level and energy conservation behavior is also insignificant with the r-value of 0.002, and the p-value is 0.975. The correlation between psychological factors and energy conservation behavior is highly significant with the r value is. -0.156, and the p-value is 0.006, which shows a negative relation between psychological behavior and energy conservation behavior of residential individuals.

Table 3. Correlation Analysis

S. No		1	2	3	4	5	6
1.	Monthly income	1.000					
2.	Education level	0.151**	1.000				
3.	Psychological factors	0.032	0.074	1.000			
4.	Financial consciousness	-0.168**	-0.090	-0.106	1.000		
5.	Energy conservation behavior	-0.077	0.002	-0.156**	0.150**	1.000	
6.	Behavioral intension	0.125*	-0.101	-0.114**	0.835**	0.158**	1.000

*N = 310, *p < 0.05, **p < 0.01, ***p < 0.001*

While financial consciousness correlate against energy conservation the r value highly significant i.e. .150** with the significance value of .008 which shows that people who have awareness about financial savings and conscious towards their expenditures are more tend towards energy conservation behavior. Correlation between energy conservation and energy conservation behavioral intension is also significant with the p vale .005 and r value .158** which depicts that households who intentionally want to save energy have desire to conserve also have positive attitude towards energy conservation.

Table 4. Reliability Statistics

Construct	Number of Items	Cronbach's Alpha
Psychological factors	16	.814
Knowledge awareness	4	.727
Perceived behavioral control	3	.630
Perceived responsibility	4	.936
Personal norm	5	.738
Financial consciousness	4	.935
Behavioral intention	3	.918
Energy conservation	14	0.738
Energy curtailment	6	0.696
Energy efficiency	3	0.841
Energy policy and incentive support	5	0.602
Overall (Total)	37	0.755

Table 4 shows the reliability statistics. In this case, alpha is above **0.755** and is certainly in the region indicated by Kline (1986), so this shows good reliability of the developed instrument. The reliability analysis for individual constructs is shown in Table 4. The Cronbach's alpha value of psychological factors is 0.814, financial consciousness is 0.935, behavioral intention is 0.918, and energy conservation is 0.738.

Table 5 shows the regression analysis results. The findings show that adjusted R^2 is .003 with the ρ value of 0.174>0.05; when monthly income regressed against energy conservation behavior the beta coefficient turned out to be -0.077.

Table 5. Regression Estimates

Variables	R	R^2	F	β	P
Monthly income	0.006	0.003	1.859	-0.077	0.174
Educational level	0.000	0.003	.001	0.002	0.975
Psychological attributes	0.024	0.021	7.692	-0.156	.006
Financial consciousness	0.022	0.020	7.059	0.150	.008

Table 6. Summary of Hypotheses

Hypothesis		Decision
H_1	Income positively influence the energy conservation behavior.	Not accepted
H_2	Education positively influence the energy conservation behavior	Not accepted
H_3	Psychological behavior positively influence the energy conservation behavior	Accepted

H_4	Financial consciousness positively influence the energy curtailment behavior	Accepted

On the other hand, while regressing education level against energy conservation behavior the adjusted R^2 -.0003 with the ρ>0.05 and value 0.975 and the value of beta coefficient is 0.002.

Mediation Analysis

The mediating impact of behavioral intention between income level and energy conservation behavior is examined and the results reveals that adjusted R^2 value is 0.42 which is quite large and shows that energy conservation behavior of residential individuals in Pakistan changes 42% due to 42% change in energy conservation behavioral intention and income level. The p value of income level is insignificant that is 0.302. The mediating analysis of behavioral intension on educational level and energy conservation behavior results depicts that adjusted R^2 value is 0.025 and the p-value of income level remains insignificant that is with the p-value of .752 and the Annova value is 0.000. While regressing psychological behavior and behavioral intension against energy conservation behavior the adjusted R^2 value is 0.38, the Anova value is significant as a p-value of behavioral intension is 0.00, and the p-value of psychological behavior remains significant

Table 7. Regression Estimates

Variables	R^2	Adj. R^2	β	ρ
1. Income level	0.028	0.022	0.059	0.302
Behavioral Intension			0.83	0.012
2. Educational level	0.025	0.019	0.018	0.752
Behavioral Intention			0.160	0.019
3.Psychological Attributes	0.044	0.038	-0.140	0.013
Behavioral Intention			0.142	0.012
4.Financial consciousness			0.058	0.572
Behavioral Intention	0.030	0.026	0.069	0.000

The mediating impact of behavioral intension on financial consciousness and energy curtailment behavior the adjusted R^2 value is 0.26. It implies that by adding the mediating variable behavioral intension the p value of financial consciousness behavior insignificant that is 0.572.

Table 8. Summary of Mediating Hypothesis

Hypothesis		Decision
H_5	Behavioral intension mediates the impact of income level on energy conservation behavior.	Accepted
H_6	Behavioral intension mediates the impact of education level on energy conservation behavior.	Accepted
H_7	Behavioral intension mediates the impact of psychological attributes on energy conservation behavior.	Accepted
H_8	Behavioral intension mediates the impact of financial consciousness on energy conservation behavior.	Accepted

Discussion and Conclusion

This study shows and broadens the prior studies related to consumer energy conservation behavior with its constraints and provide guidance for further research work as well as recommend policy implications. Results of this study illustrated energy conservation behavior predictors of residential consumers and also evaluated the importance of determinants of energy conservation. The results indicated that there is an insignificant impact of income level on energy curtailment behavior of residential in Pakistan as the p-value is above 0.05 (p=.174>0.05). Thus, H_1 is not accepted. The results indicate that the level of income of residential individuals does not affect the household energy conservation behavior in Pakistan. This is contradictory to the findings of earlier studies which include Grantham (2011), Frederiks, Stenner and Hobman (2015) and hong et al. (2019) etc. They argue that income level is an important predictor of energy conservation behavior of households and have a significant positive impact on their conservation, but our findings are similar to the Rasool et al. (2019) and Soltani et al. (2020). They argue that income level has no association with energy conservation behavior. The next demographic independent variable used is educational level. The results indicate an insignificant impact of income level on the energy curtailment behavior

of residential individuals as the p value is above .05 (p= .975>0.05). So H_2 is not accepted. The results indicate that the educational level of Pakistani residential individuals does not affect one's energy conservation behavior. The findings are similar to the studies conducted in different countries such as Verhage (1980); Kollmuss and Agyeman (2002); Gatersleben et al., (2002); Rasool et al., (2019), and Soltani et al. (2020), who proposed that there is no association between educational level and energy conservation behavior. This may be due to the absence of material on energy conservation in the curriculum of various degree programs.

Results indicate a significant negative impact of psychological variable as p-value is .006, which is below the thumb rule, i.e. 0.05, H_3 is accepted as a psychological variable that have a negative impact on residential individual energy conservation behavior. The results show that different psychological variable i.e. knowledge about energy conservation, perceived behavioral control, perceived responsibility and personal norms, have a negative impact of person's behavior toward energy conservation. The finding contradicts the prior researches. They established the positive impact of psychological attributes on energy conservation behavior (Abrahamse & Steg 2009; Hong, 2019; Dumciuviene et al., 2019). Financial consciousness is found to have a significant and positive effect on the energy conservation behavior of households. H_4 is accepted as $p < 0.05$ that is 0.008. The findings are similar to prior researches such as Karlin (2014) and Liu et al., (2020) research. People with a high level of financial consciousness inclined more toward energy conservation. People who receive and pay their bill form their pocket are more aware and worried about their energy expenses and try more to control their expenses.

Mediation analysis shows that both income level and education level have a significant impact on energy conservation behavior through behavioral intension. Thus, H_5 and H_6 are accepted. The findings are similar to the study of Liu et al. (2020), who proposed that income have a significant impact on energy conservation intensions. This is because if people with high-income level tends more toward energy-efficient products to save energy, and people with a lower income level are more motivated towards saving energy to gain monetary benefits. The mediating impact of behavioral intension on the relationship between psychological factors and energy conservation behavior reveals that behavioral intension partially mediates the relation of psychological variables and energy conservation behavior of residential individuals. So, H_7 is accepted. Finally, financial consciousness is jointly regressed with behavioral intension, our findings reveal that behavioral intension positively and fully mediates the effect of financial consciousness on energy conservation behavior

Energy plays a key role in the economic growth of any country (Azam et al., 2020). In today's world, energy shortage is one of the major challenges faced by developing countries. The findings of this study not only provide the information for future research studies but also beneficial to the government energy regulatory authorities in achieving their goals regarding the conservation of energy and natural resources. As the results reveal that psychological variables, which include knowledge about energy saving, personal norms, perceived behavioral control and perceived responsibility, have an impact on energy sustainable behavior. People are willing to adopt energy-efficient appliance at their homes and also willing to support energy policies and incentive programs. This information is helpful for both businesses and government authorities to take energy sustainable action. Awareness programs, campaigns on a national level is helpful in creating awareness among people about energy conservation. Therefore, financial literacy seminars and awareness programs should be conducted to educate people about the savings from energy conservation. Media campaigns can be an important medium for creating awareness about energy efficiency and energy policies programs. Future studies are proposed to consider house size, the number of rooms, self-efficiency, need for personal comfort and egoistic values, which will help to understand the energy conservation behavior of residential individuals in a broader aspect. This study can also be replicated in business organizations as well as in government organizations for the energy conservation behavior of individuals at the workplace. Further, qualitative studies based on well-constructed and in-depth interviews can help to understand the residential energy conservation behavior in more detail.

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