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**Article**

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# Electricity-Saving Behavioral Intention of Farmers

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**ABSTRACT**

The study applied the Theory of Planned Behavior - TPB (Ajzen, 1991) and the Norm Activation Model - NAM (Schwartz, 1977) to demonstrate the affecting factors on behavioral intention in energy saving of farmers in the Mekong Delta, Vietnam. Research data were collected from 204 farmer households using electricity in four provinces: Tien Giang, Dong Thap, An Giang, and Kien Giang. Applying the structural equation modeling (SEM), the study has pointed out the affecting factors mentioned above, including personal ethical standards, subjective norms, perceived behavioral control, perceived benefit, attitude, product quality, and energy policy. Besides, the study has shown that the intention to save electricity positively impacts the electricity-saving behavior of farmers.

**Keywords:** Theory of Planned Behavior, Norm Activation Model, Electricity-Saving Intention, Electricity-Saving Behavior, Farmer
**JEL Classifications:** E21, E70, Q47

## 1. INTRODUCTION

With the rapid development of the economy along with industrialization, modernization, and population growth, the demand for electricity in Vietnam is increasing (Hien and Chi, 2020). In the early years of the 21st century, Vietnam faces the risk of heavy air pollution due to industrialization and urbanization, especially in big cities (Ho et al., 2020; Nguyen et al., 2017). Vietnam is facing an energy shortage due to high oil prices and a decline in hydroelectricity due to unfavorable weather (Thanh Nguyen et al., 2021). Therefore, energy-saving issues become urgent for the energy industry in Vietnam.

The rapid increase in residential electricity consumption has led to the risk of depletion of energy resources (Saidur, 2009). According to Fu et al. (2015), increasing electricity consumption is becoming a matter of concern. Therefore, energy policies need to include effective changes in electricity consumption to reduce global warming and ensure energy security (Zhang et al., 2017). Using electricity economically may avoid the negative effects of climate change, and reduce the economic burden when energy sources become scarce and expensive (Dahlquist et al., 2012). As presented by Lopes et al. (2012), energy consumption behavior is relatively complex and depends on the individual, current context, and many other factors. It is related to many fields such as sociology, psychology, economics, and engineering. Household electricity-saving behavior is important to reduce greenhouse gas emissions (Zhang and Peng, 2016; Wang et al., 2018).

Recently, there are several studies on energy-saving behavior from different perspectives. Most studies have been conducted in developed countries while few studies have been conducted in developing countries in similar contexts such as Vietnam (Hien and Chi, 2020). In Vietnam, there are few studies on house hold electricity-saving behavior, especially in rural areas which account for 65.6% of the population, equivalent to 63 million people (GSO, 2020). Most of the studies on household electricity-saving behavior approach one of the following perspectives: Economic orientation, technology orientation, and behavior orientation. However, there are few studies on household electricity-saving behavior approaches from an aggregate point of view. Therefore, this study was conducted to demonstrate the factors affecting the electricity-saving behavior of farmers in Vietnam from an integrated point of view to explain the most clearly about those factors.

## 2. THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

In recent decades, the Theory of Planned Behavior - TPB (Ajzen, 1991) and the Norm Activation Model - NAM (Schwartz, 1977) have been widely applied in explaining household energy-saving behavior. Ajzen developed the Theory of Planned Behavior (TPB) in 1991 based on the Theory of Reasoned Action, adding a cognitive element of behavioral control to predict and explain human behavior in a research context. Meanwhile, The Norm Activation model - NAM (Schwartz, 1977) is also used to study pro-environmental behavior as a form of altruism. In NAM, personal ethics are considered core elements. Onwezen et al. (2013) stated that the NAM - TPB integrated model would be the best explanation for the behavior related to environmental protection.

### 2.1. Saving *Electricity Intention* and *Behavior*

According to Fishbein and Ajzen (1975), behavioral intention is a measurement of an individual's strength of intention to perform a specific behavior. The intention is a factor used to evaluate the ability to perform a behavior in the future (Engel et al., 1986). In a study in 1991, Ajzen argued that behavioral intention is considered a combination of motivational factors affecting an individual's behavior. It expresses the willingness and effort to perform a behavior. The intention is an individual's course of action to achieve future behavior (Mowen and Minor, 2001; Zhao and Othman, 2010).

According to Black et al. (1985), energy-saving behavior is the "cutting behavior" of energy use. Chen (2017) has stated that energy-saving behavior is the daily behavior and practice habit of households that focus on reducing energy use. According to Barr et al. (2005), energy-saving behavior is divided into two main groups: "Habitual" action and "daily" action. There are many types of energy-saving behaviors in a household, involving all energy-consuming activities such as lighting, heating, air conditioning, refrigeration, and entertainment (Leighty and Meier, 2011).

### 2.2. The Relationship between Personal Ethics and the Intention to Save Electricity

Bertoldo and Castro (2016) have indicated that personal ethics are ethical principles that individuals use to act based on their moral duties. According to Gao et al. (2017), personal ethics are considered the core factors for an individual to perform specific ethical behavior. Klöckner and Matthies (2004) confirmed that moral standards are identified as one of the direct predictors of an individual's behavior. Personal ethics are one of the predictors of household electricity-saving intention (Klöckner, 2013, Wang et al., 2018; Hien and Chi, 2020; Fu et al., 2021). Therefore, the research hypothesis H1 is proposed as follows: *Personal ethics positively affect the intention to save electricity of farmers.*

### 2.3. The Relationship between Subjective Norms and the Intention to Save Electricity

Subjective norms can be described as an individual's perception of social pressure to perform or not to perform a behavior (Fishbein and Ajzen, 1975; Ajzen, 1991). Subjective norm is the best predictor of a person's behavior (La Barbera and Ajzen, 2020). Several studies have demonstrated a positive relationship between subjective norms and household energy-saving intention (Chen et al., 2017; Ding et al., 2019). Research by Hien and Chi (2020) has pointed out the positive influence of subjective norms on the intention to save electricity for households. Hence, the study suggests hypothesis H2 as follows: *Subjective norm positively impacts the intention to save electricity of farmers.*

### 2.4. The Relationship between Perceived Behavioral Control and the Intention to Save Electricity

According to Ajzen (1991), perceived behavioral control is an individual's perception of how easy or difficult it is to perform a behavior. Ajzen (2019) has shown that perceived behavioral control acts as a proxy for actual control and predicts an individual's behavior. Perceived behavioral control is an essential factor in predicting an individual's future behavior (Klöckner, 2013; La Barbera and Ajzen, 2020). According to Bosnjak et al. (2020), the greater the perceived behavioral control, the stronger the intention to perform the behavior. The perceived behavioral control positively affects the intention to save electricity in households (Zhang et al., 2014; Wang et al., 2018; Fu et al., 2021; Ahmad et al., 2022). Thus, the study proposes hypothesis H3 as follows: *Perceived behavioral control positively influences the intention to save electricity of farmers.*

### 2.5. The Relationship between Perceived Benefits and the Intention to Save Electricity

According to Tsujikawa et al. (2016), perceived benefit is a type of emotional perception that positively influences an individual's behavior. Wang et al. (2011) have argued that economic benefits from saving electricity have a positive impact on the intention to save electricity for households. According to Zhang et al. (2014), environmental benefits and organizational benefits positively influence behavioral intention to save electricity. Studies have shown that perceived benefits have a positive impact on individual intention to save electricity (Wang et al., 2011; Zhang et al., 2014; Zhou and Yang, 2016; Hien and Chi, 2020; Fu et al., 2021; Ahmad et al., 2022). Therefore, the research hypothesis H4 is as follows: *Perceived benefits positively affect the intention to save electricity of farmers*.

### 2.6. The Relationship between Attitude and the Intention to Save Electricity

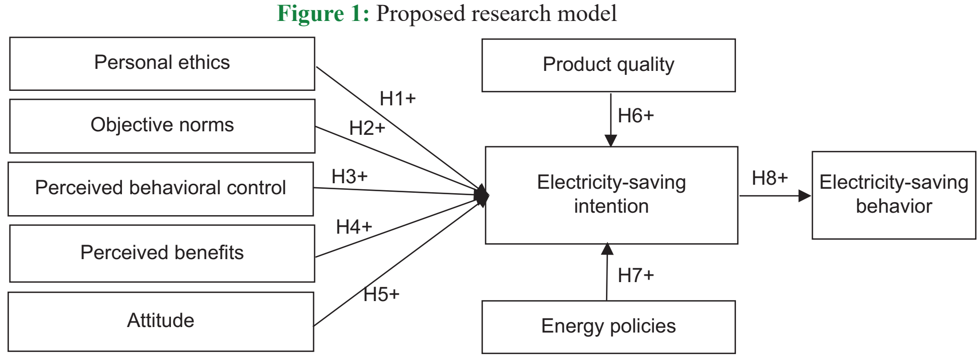
According to Ajzen (1985), attitude is one of the factors affecting human behavior. Attitude is a factor significantly related to the intention to perform individual behavior (Bosnjak et al., 2020). According to Verplanken and Orbell (2003), attitude is the strongest influence on a person's behavioral intentions. Attitude is an essential factor affecting household energy-saving behavior

**Table 1: Measuring scales in the research model**

| Factor | Observable variable | Scale | Reference resources |
|---|---|---|---|
| Personal ethics | PE1: Energy-saving lifestyle to protect the environment. | Likert 1-5 | Zhang et al. (2018); Hien and Chi (2020) |
| | PE2: Saving electricity is the duty of every citizen. | Likert 1-5 | |
| | PE3: Using electricity without saving is wasteful. | Likert 1-5 | |
| | PE4: I always save electricity. | Likert 1-5 | |
| Subjective norms | SN1: I save electricity because my neighbors do the same. | Likert 1-5 | Tan et al. (2017); Wang et al. (2018) |
| | SN2: My family members encourage me to save electricity. | Likert 1-5 | |
| | SN3: My friends encourage me to save electricity. | Likert 1-5 | |
| | SN4: My family members encourage me to use energy-efficient appliances. | Likert 1-5 | |
| Perceived behavioral control | PBC1: I know what I should do to save electricity. | Likert 1-5 | Abrahamse and Steg (2009); Wang et al. (2018) |
| | PBC2: I think it is not too difficult to reduce electricity usage. | Likert 1-5 | |
| | PBC3: I know how to use electricity efficiently. | Likert 1-5 | |
| | PBC4: I can save electricity easily. | Likert 1-5 | |
| Perceived benefits | PB1: Saving electricity helps protect the ecological environment. | Likert 1-5 | Zhang et al. (2014); Hien and Chi (2020) |
| | PB2: Saving electricity helps reduce costs for the household. | Likert 1-5 | |
| | PB3: Saving electricity is beneficial for the household. | Likert 1-5 | |
| | PB4: Saving electricity makes family life better. | Likert 1-5 | |
| Attitude | ATT1: Saving home electricity is important to reduce CO2 emissions. | Likert 1-5 | Abrahamse and Steg (2009); Wang et al. (2018) |
| | ATT2: Saving home electricity helps improve the air environment. | Likert 1-5 | |
| | ATT3: Saving electricity at home is necessary. | Likert 1-5 | |
| | ATT4: The quality of family life is still guaranteed when saving electricity. | Likert 1-5 | |
| Product quality | PQ1: Prioritize buying products with energy-saving labels. | Likert 1-5 | Zhang et al. (2018), Thanh Nguyen et al. (2021) |
| | PQ2: I am interested in energy-saving products. | Likert 1-5 | |
| | PQ3: Customer feedback on energy-saving features is an important factor in purchasing decisions. | Likert 1-5 | |
| | PQ4: Energy-saving products bring efficiency and high-quality life. | Likert 1-5 | |
| Energy policies | EP1: I save electricity because of policies and regulations related to electricity saving. | Likert 1-5 | Zhang et al. (2018); Thanh Nguyen et al. (2021) |
| | EP2: Policies and regulations play essential roles in promoting and encouraging me to save electricity. | Likert 1-5 | |
| | EP3: I save electricity because I am affected by electricity usage policies and regulations. | Likert 1-5 | |
| | EP4: I save electricity because I was guided on how to use electricity efficiently. | Likert 1-5 | |
| Electricity saving intention | ESI1: I intend to save home electricity in the future. | Likert 1-5 | Wang et al. (2018); Hien and Chi (2020) |
| | ESI2: I will make a plan to save electricity in my house in the future. | Likert 1-5 | |
| | ESI3: I will try to save electricity in my house in the future. | Likert 1-5 | |
| | ESI4: I will use energy-efficient appliances to save electricity in the future. | Likert 1-5 | |
| Electricity saving behavior | ESB1: I always turn off electrical appliances when leaving the room. | Likert 1-5 | Wang et al. (2018); Hien and Chi (2020) |
| | ESB2: I always turn off electrical appliances completely instead of leaving them on standby. | Likert 1-5 | |
| | ESB3: Recently, I purchased electrical appliances with energy-saving functions. | Likert 1-5 | |
| | ESB4: Recently, I replaced old appliances with energy-efficient ones. | Likert 1-5 | |

Source: Authors, 2023

**Figure 1:** Proposed research model




Source: Authors, 2023

(Chen et al., 2017; Ding et al., 2019). Attitude has a positive influence on the intention to save electricity in households (Zhang et al., 2014; Wang et al., 2018; Hien and Chi, 2020). Thus, the research hypothesis H5 is proposed as follows: *Attitude positively affects the intention to save electricity of farmers.*

## 2.7. Relationship between Product Quality and Intention to Save Electricity

Yue et al. (2013) have presented that the two main determinants which affect energy-saving behavioral intention are "purchasing behavior" and "habitual behavior." The purchasing behavior of energy-saving products is one of the most important behaviors in reducing energy consumption (Ha and Janda, 2012). According to Nguyen et al. (2017), classification stamps for energy-saving products have promoted consumers' purchasing behaviors. The quality of energy-saving products positively impacts household energy-saving behavioral intentions (Yue et al., 2013; Zhang et al., 2018; Thanh Nguyen et al., 2021). Therefore, the study proposes hypothesis H6 as follows: *Product quality positively affects the intention to save electricity of farmers.*

### 2.8. The Relationship between Energy Policies and the Intention to Save Electricity

According to Considine (1994), the policy is the action that employs governmental authority to commit resources in support of a preferred value. Yuan et al. (2009) have shown that energy policy is effective in reducing the intensity of energy use. According to Wang et al. (2011), social policies put an impact on the formation and change of intention to save energy. Dos Santos et al. (2013) pointed out that the energy policy is an important tool to improve energy efficiency. Energy policy has an impact on household electricity-saving behavioral intentions (Zhang et al., 2020; Hien and Chi, 2020; Yue et al., 2020; Thanh Nguyen et al., 2021; Fu et al., 2021). Thus, the research hypothesis H7 is as follows: *Energy policies positively impact the intention to save electricity.*

### 2.9. The Relationship between Energy-saving Intention and Energy-saving Behavior

An intention is a sign that a person is willing to try and makes an effort to perform a behavior, or it is a state of readiness to perform a certain behavior and is considered a precondition before performing a behavior (Ajzen, 1991; Armitage and Conner, 2001; Conner and Sparks, 2005). According to Bosnjak et al. (2020), the intention is an antecedent of behavior, an important factor that leads to behavior. Several studies have demonstrated that the intention to save electricity is a positive and main predictor of electricity-saving behavior (Mi et al., 2016; Wang et al., 2018; Hien and Chi, 2020; Ahmad et al., 2022). Hence, the study suggests hypothesis H8 as follows: *The intention to save electricity positively affects the electricity-saving behavior of farmers.*

Based on the literature review and research hypotheses, the study applies the group discussion method (qualitative research) with 9 farming households using electricity in An Giang Province (5 families) and Dong Thap Province (4 families) in the Mekong Delta region. The discussion result helps identify the appropriate scales for the research model. The proposed research model is as follows in Figure 1.

## 3. RESEARCH METHODOLOGY

### 3.1. Research Scale

The scales used in the study are referenced from relevant studies and adjusted to fit the research context. The "personal ethics" scale was updated from studies by Zhang et al. (2018) and Hien and Chi (2020) with four observed variables. The "subjective norms" scale was updated from studies by Tan et al. (2017) and Wang et al. (2018) with four observed variables. The "perceived behavioral control" scale was from Abrahamse and Steg (2009) and Wang et al. (2018) with four observed variables. The "perceived benefits" scale was updated from studies by Zhang et al. (2014) and Hien and Chi (2020) with four observed variables (Table 1). The "attitude scale" was from Abrahamse and Steg (2009) and Wang et al. (2018) with four observed variables. The "product quality" scale was from Zhang et al. (2018) and Thanh Nguyen et al. (2021) with four observed variables. The "energy policy" scale was updated from studies by Zhang et al. (2018) and Thanh Nguyen et al. (2021) with four observed variables. The scale of "electricity saving intention" was updated from studies by Wang et al. (2018) and Hien and Chi (2020) with four observed variables. Finally, the scale of "electricity saving behavior" behavior was updated from studies by Wang et al. (2018) and Hien and Chi (2020) with four observed variables. All scales in the research model are 5-point Likert scales ranging from strongly disagree (1) to Strongly agree (5).

### 3.2. Analytical Method

To test the research hypotheses, quantitative analyses are used in a logical sequence, including (1) Testing the reliability of the scale by Cronbach's Alpha coefficient to remove low-reliability variables (Nguyen, 2011; 2014); (2) Exploratory factor analysis (EFA) is used to evaluate the convergent and discriminant validity of the scale (Hair et al., 2010); (3) Confirmatory factor analysis (CFA) is used to test the structural reliability of the measurement model (Anderson and Gerbing, 1988); and (4) Covariance-based structural equation modeling (CB-SEM) is used to test the research hypotheses and the validity of the research model (Baumgartner and Homburg, 1996; Hair et al., 2006; Kline, 2011).

### 3.3. Data Collection Method

To ensure the reliability of the SEM test, the sample size needs to be large because it is based on the theory of sample distribution (Raykov and Widaman, 1995). For SEM analysis, the appropriate sample size is determined based on the number of research factors (Hair et al., 2010). The minimum sample size should be 150 when the number of factors is 7 or less, each factor should have more than 3 observed variables with communalities values in EFA from 0.5 or more (Hair et al., 2010). To ensure reliability in testing the suitability of the SEM model, a sample size from 100 to 200 is satisfactory (Hoyle, 1995). Reasonable sample size should achieve a minimum of 200 observations for the SEM model (Hoelter, 1983; Kline, 2011), so this study aims to collect at least 200 observations.

A pilot survey was conducted in March 2022 to examine the structure and content of the questionnaire. The subjects selected for the trial survey are farmers using electricity in An Giang Province (15 farmers) and Dong Thap Province (15 farmers). These are the two localities with the highest number of farmers in the region. Respondents were asked to answer all questions, then provide comments on the overall structure and clarity of each question. The result of the pilot survey shows that most of the questions are clearly understood and answered. Respondents agreed with the research scales.

An official survey was carried out from March 2022 to April 2022 in 4 provinces (Dong Thap, An Giang, Kien Giang, and Tien Giang) in the Mekong Delta. These areas have the largest scale of farmers. The study uses quota sampling to collect data. The selected criteria include household size and residential area. Direct interviews are applied to collect detailed information. The number of questionnaires reaches 210. After removing the inappropriate questionnaires (incomplete answers, unreliable answers), a total of 204 valid questionnaires are suitable for the tests.

The demographic characteristics of the study sample are shown in Table 2. The proportion of males and females in the sample structure are almost similar (50.98% for males and 49.02% for females). The age of the respondents ranges from 20 to 65 years old, of which the "36-50 years old" group accounts for the highest proportion. Most survey respondents are the head of the household who is the family's main source of labor. In terms of educational background, most respondents are in secondary and high school levels. The most common family structure is the two-generation family. In terms of income, respondents with an income of between 5 and 10 million VND account for the highest percentage. Demographic factors such as education level, income, and age have insignificant influences on behavioral intention to save electricity (Curtis et al., 1984; Wang et al., 2014). Therefore, this study does not focus on analyzing the influence of demographic factors on the electricity-saving intention and behavior of farmers.

## 4. RESEARCH RESULTS AND DISCUSSION

### 4.1. Evaluate the Reliability of Scales

To evaluate the reliability of the research scale, Cronbach's Alpha coefficient is applied. According to Table 3, the research scales all have Cronbach's Alpha values from 0.841 to 0.908. All observed variables have item-total correlation values greater than 0.3 (Nunnally and Bernstein, 1994). Therefore, all research scales have met the reliability requirements (Nunnally, 1978; Peterson, 1994; Slater, 1995) and are used for the next analyses.

Based on the exploratory factor analysis (EFA), the statistical values are guaranteed: Testing the appropriateness of the model with KMO=0.906 (Hair et al., 1998; Kline, 2011); Bartlett's test on the correlation of observed variables meets the requirements with the Sig.=0.000 (Hair et al., 1998; Kline, 2011); The reliability of variables is satisfactory, with the Factor loading >0.5 (Hair et al., 1998). The cumulative variance test=73.92% higher than 50% (Anderson and Gerbing, 1988). This shows that variables included in the model have high explanatory power. According to the final test results, 9 factors were created from 36 observed variables, ensuring convergent and discriminant validity.

Based on the results of CFA and SEM in Table 4, statistical indicators are guaranteed: $\chi^2/df \leq 2$; P-value index = 0.000 ≤ 0.05; TLI, CFI ≥0.9; RMSEA ≤0.08 (Anderson and Gerbing, 1988; MacCallum et al., 1996; Hair et al., 2014). This proves the research data is consistent with market data.

The results of composite reliability (Pc) and average variance extracted (Pvc) all meet the requirement with the minimum value of Pc reaching 0.80 and Pvc reaching 0.50 (Fornell and Larcker, 1981). According to the test result, all factors in the model meet the requirements of value and reliability, so they are suitable for the SEM analysis.

### 4.2. Test the Research Hypotheses

Structural equation modeling (SEM) is used to test the research hypotheses. The analytical result is shown in Table 5.

Based on Table 5, all research hypotheses are accepted with a 95% significance level. The relationship among factors is explained in detail below.

Hypothesis H1: Personal ethics positively affect farmers' intention to save electricity. Table 5 points out that personal ethics and intention to save electricity have a positive relationship, with a standardized estimated value of 0.176 and reaching a statistical significance of P=0.023. This shows that personal ethics motivates individuals to engage in positive behaviors for the environment. If a person has high personal moral standards, it promotes the intention to save electricity for the family. The research result similar with studies proposed by Klöckner (2013), Wang et al. (2018), Hien and Chi (2020), Fu et al. (2021).

Hypothesis H2: Subjective norms positively impact farmers' intention to save electricity. This hypothesis is accepted with the standardized estimated value of 0.157 and the statistical significance level of P=0.021. This demonstrates a positive relationship between subjective norms and the intention to save electricity. This means that family members, friends, and neighbors are important factors, positively affecting the intention to save electricity of farmers. The discovery is consistent with studies proposed by Chen et al. (2017), Ding et al. (2019), and Hien and Chi (2020).

Hypothesis H3: Perceived behavioral control beneficially affects the intention to save electricity of farmers. According to Table 5,

**Table 2: Structure of the research sample (n=204)**

| | Frequency | Percentage | | Frequency | Percentage |
|---|---|---|---|---|---|
| Gender | | | Education background | | |
| Male | 104 | 50.98 | Primary school | 12 | 5.88 |
| Female | 100 | 49.02 | Junior high school | 87 | 42.65 |
| Age | | | High school | 71 | 34.80 |
| 20-35 | 45 | 22.06 | Intermediate | 6 | 2.95 |
| 36-50 | 99 | 48.53 | College | 13 | 6.37 |
| 51-65 | 60 | 29.41 | University | 15 | 7.35 |
| Family structure | | | Monthly income (VND) | | |
| Single | 16 | 7.84 | Under 5 million | 55 | 26.96 |
| 1 generation | 52 | 25.49 | 5-10 million | 92 | 45.10 |
| 2 generations | 98 | 48.04 | 10-15 million | 38 | 18.63 |
| 3 generations | 38 | 18.63 | Over 15 million | 19 | 9.31 |

**Table 3: Scale reliability test**

| Observed variable | Mean | Standard deviation | Factor loading | Cronbach's alpha |
|---|---|---|---|---|
| Personal ethics (PE) | | | | 0.885 |
| PE1 | 3.617 | 0.997 | 0.806 | |
| PE2 | 3.705 | 1.003 | 0.840 | |
| PE3 | 3.632 | 1.081 | 0.814 | |
| PE4 | 3.622 | 0.982 | 0.679 | |
| Subjective norms (SN) | | | | 0.886 |
| SN1 | 3.382 | 0.997 | 0.805 | |
| SN2 | 3.387 | 0.988 | 0.781 | |
| SN3 | 3.446 | 0.978 | 0.772 | |
| SN4 | 3.303 | 0.965 | 0.858 | |
| Perceived behavioral control (PBC) | | | | 0.899 |
| PBC1 | 3.583 | 0.971 | 0.799 | |
| PBC2 | 3.509 | 0.901 | 0.866 | |
| PBC3 | 3.504 | 0.949 | 0.785 | |
| PBC4 | 3.534 | 0.906 | 0.831 | |
| Perceived benefits (PB) | | | | 0.879 |
| PB1 | 3.617 | 1.031 | 0.696 | |
| PB2 | 3.720 | 1.029 | 0.888 | |
| PB3 | 3.701 | 1.047 | 0.777 | |
| PB4 | 3.602 | 1.019 | 0.755 | |
| Attitude (TD) | | | | 0.908 |
| ATT1 | 3.230 | 0.967 | 0.938 | |
| ATT2 | 3.181 | 0.947 | 0.756 | |
| ATT3 | 3.004 | 0.906 | 0.801 | |
| ATT4 | 3.284 | 0.886 | 0.826 | |
| Product quality (PQ) | | | | 0.844 |
| PQ1 | 3.617 | 1.036 | 0.757 | |
| PQ2 | 3.656 | 1.021 | 0.676 | |
| PQ3 | 3.686 | 1.045 | 0.747 | |
| PQ4 | 3.715 | 1.072 | 0.774 | |
| Energy policies (EP) | | | | 0.852 |
| EP1 | 3.632 | 0.786 | 0.724 | |
| EP2 | 3.593 | 0.851 | 0.769 | |
| EP3 | 3.656 | 0.859 | 0.776 | |
| EP4 | 3.558 | 0.813 | 0.807 | |
| Energy-saving intention (ESI) | | | | 0.857 |
| ESI1 | 3.553 | 1.079 | 0.688 | |
| ESI2 | 3.485 | 1.048 | 0.722 | |
| ESI3 | 3.485 | 1,024 | 0.770 | |
| ESI4 | 3.500 | 1.103 | 0.644 | |
| Energy-saving behavior (ESB) | | | | 0.841 |
| ESB | 3.642 | 0.969 | 0.724 | |
| ESB | 3.485 | 0.979 | 0.837 | |
| ESB | 3.632 | 0.950 | 0.668 | |
| ESB | 3.607 | 0.963 | 0.703 | |

**Table 4: CFA and SEM analysis results**

| Indicator | CFA | SEM | Comparative value | Reference resources |
|---|---|---|---|---|
| $\chi^2$ | 617.752 | 658.225 | | Anderson and Gerbing (1988), Hair et al. (2014) |
| *Df* | 558 | 565 | | |
| $\chi^2/df$ | 1.107 | 1.165 | ≤2 | |
| P-value | 0.040 | 0.00 4 | <0.05 | |
| TLI | 0.984 | 0.976 | ≥0.9 | |
| CFI | 0.986 | 0.978 | ≥0.9 | |
| RMSEA | 0.023 | 0.029 | ≤0.08 | |

there is a positive relationship between perceived behavioral control and intention to save electricity with a standardized estimated value reaching 0.164 and a statistical significance level of P=0.022. The research result confirms that a clear and thorough understanding of electricity saving positively affects the intention to save electricity of farmers. The research result is similar to studies proposed by Zhang et al. (2014), Wang et al. (2018), Fu et al. (2021), and Ahmad et al. (2022).

Hypothesis H4: Perceived benefits positively affect farmers' intention to save electricity. Based on the estimation result in Table 5, perceived benefits positively influence the intention to save electricity of farmers with a standardized estimation value of 0.179 and statistical significance of P=0.036. If farmers are aware of the economic, environmental, and social benefits that saving electricity brings, they may intend to save their home electricity. The result is consistent with studies proposed by Wang et al. (2011), Zhang et al. (2014), Zhou and Yang (2016), Hien and Chi (2020), Fu et al. (2021), Ahmad et al. (2022).

Hypothesis H5: Attitude positively affects farmers' intention to save electricity. The hypothesis has a standardized estimated

**Table 5: Research hypothesis test result**

| Relationship | Unstandardized | | | Standardized estimated value | Significance | Hypothesis |
|---|---|---|---|---|---|---|
| | Estimated value | Standard error S.E | Critical ratio C.R | | | |
| ESI <-- PE | 0.159 | 0.070 | 2.278 | 0.176 | 0.023 | H1: accepted |
| ESI <-- SN | 0.152 | 0.066 | 2.304 | 0.157 | 0.021 | H2: accepted |
| ESI <-- PBC | 0.166 | 0.072 | 2.298 | 0.164 | 0.022 | H3: accepted |
| ESI <-- PB | 0.156 | 0.074 | 2,092 | 0.179 | 0.036 | H4: accepted |
| ESI <-- ATT | 0.135 | 0.059 | 2.277 | 0.160 | 0.023 | H5: accepted |
| ESI <-- PQ | 0.174 | 0.071 | 2.441 | 0.183 | 0.015 | H6: accepted |
| ESI <-- EP | 0.204 | 0.079 | 2.576 | 0.168 | 0.010 | H7: accepted |
| ESB <-- ESI | 0.615 | 0.090 | 6.855 | 0.568 | 0.000 | H8: accepted |

value of 0.160 and a statistical significance of P=0.023. Research result demonstrates a positive relationship between attitude and intention to save electricity. This result supports the statement that attitude is the strongest influencing factor on behavioral intention (Verplanken and Orbell, 2003). Attitude is one of the factors that positively affect farmers' intention to save electricity. The research result is similar to studies proposed by Zhang et al. (2014), Wang et al. (2018), and Hien and Chi (2020).

Hypothesis H6: Product quality positively impacts the intention to save electricity. The analytical result shows that product quality and intention to save electricity have a positive relationship, with a standardized estimated value of 0.183 and statistical significance of P=0.015. The result has proved that the more popular and accessible electricity-saving products are, the higher the intention to save electricity of farmers. The research result is consistent with studies proposed by Yue et al. (2013), Nguyen et al. (2017), Zhang (2018), and Thanh Nguyen et al. (2021).

Hypothesis H7: Energy policies positively affect the intention to save electricity. This hypothesis is accepted with a standardized estimated value of 0.168 and a statistical significance level of P=0.010. This demonstrates a positive relationship between energy policies and the intention to save electricity. It indicates that energy policies play an important role in promoting the intention to save electricity for households. The research result is consistent with studies proposed by Zhang et al. (2020), Hien and Chi (2020), Yue et al. (2020), Thanh Nguyen et al. (2021), and Fu et al. (2021).

Hypothesis H8: The intention to save electricity positively affects the electricity-saving behavior of farmers. Based on Table 5, there is a positive relationship between electricity-saving intention and behavior, with the standardized estimated value of 0.568 and the statistical significance level P=0.000. Research result confirms that intention is an antecedent of behavior, an important factor that leads to behavior (Bosnjak et al., 2020). Intention to save electricity is a positive factor for household electricity-saving behavior (Mi et al., 2016; Wang et al., 2018; Hien and Chi, 2020; Ahmad et al., 2022).

## 5. CONCLUSION

The study has proved that factors that positively affect the intention to save electricity of farmers in the Mekong Delta include personal ethics, subjective norms, perceived behavioral control, perceived benefits, attitude, product quality, and energy policies. In addition to this, the study has shown that the intention to save electricity is a positive and important factor in the electricity-saving behavior of farmers. This study helps provide a scientific basis to build policy implications to promote the energy-saving intention for farmers in Vietnam, especially in the Mekong Delta region.

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