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# An Investigation on Key Factors Influencing Consumers' Green Purchase Behavior in Zhengzhou, China

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## Abstract

**Purpose:** This research identifies and analyzes the factors influencing consumers' green purchase behavior in Zhengzhou, China, focusing on elements like environmental concern, attitudes towards green products, and perceived behavioral control. **Research Design, Data, and Methodology:** Employing a quantitative research design, the study used a structured questionnaire to explore relationships among key constructs related to green purchase behavior. The population consisted of 450 residents from Zhengzhou's eight main districts, all with prior experience purchasing green products. Sampling techniques included judgmental, quota, convenience, and snowball sampling. Validity and reliability were assessed using the index of item objective congruence (IOC) and Cronbach's Alpha from a preliminary sample of 50 respondents. After data collection, confirmatory factor analysis (CFA) and structural equation modeling (SEM) validated the measurement model and relationships among constructs. **Results:** The analysis revealed significant positive correlations among the constructs, highlighting the importance of environmental concern and positive attitudes towards green products in shaping both green purchase intention and actual behavior. **Conclusions:** The study concludes that enhancing environmental awareness and education is vital for promoting green consumption in Zhengzhou. It suggests that policymakers and marketers should focus on these areas, while also recommending further research to explore these dynamics in different contexts to better understand consumer behavior toward green products.

**Keywords:** Environmental Concern, Subjective Norm, Perceived Behavioral Control, Green Purchase Intention, Green Purchase Behavior

**JEL Classification Code:** E44, F31, F37, G15

## 1. Introduction

Today, environmental ethics is an important issue for organizations and consumers. The incessant erosion of our natural environs has galvanized a resolute call to arms, advocating fervently for preserving and stewardship of our environment, thereby giving rise to the ethical construct of green consumerism (Moisander, 2007). At its essence, green purchasing epitomizes the conscious and deliberate procurement of eco-friendly goods and services (Atkinson, 2015), constituting a complex and multifaceted process intricately woven into the tapestry of consumer values, norms, and habitual behaviors (Peattie, 2010). It embodies a conscientious mode of consumption that empowers buyers to adopt discerning and responsible consumer behaviors, actively engaging in initiatives that champion environmental conservation and sustainability (Carrington et al., 2014; Sun et al., 2019).

China's economy and politics have developed rapidly with the reform and opening up. However, it must be admitted that an imbalance has arisen due to the previous focus on economic growth, neglecting the protection of resources and the environment. To a certain extent, this economic growth model is based on sacrificing the environment; on the other hand, consumption, as a driving force for economic growth, has further expanded the harm caused by ecological problems due to the unsound and irrational consumer attitudes that consumers have formed over a long period.

Studies have pointed out that human overconsumption is

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an important cause of environmental problems (Abeliotis et al., 2010; Hartmann & Ibáñez, 2006; Pinto et al., 2011). One way to mitigate environmental degradation is through changing individual consumption patterns, as individual and household-based consumption has caused about 30-40% of ecological damage (Grinstein & Nisan, 2009). As a result, changing consumer behavior is crucial for transforming the economic development model and solving environmental problems (Kyburz-Graber et al., 2006; Oskamp, 2000; Schmuck & Schultz, 2002; Steg et al., 2015).

Specifically, green consumption or products are actively promoted in the public's view. The public is aware of the serious consequences of inappropriate consumption and is increasingly concerned about its green attributes. Consumers retain a positive attitude towards green products, generating a strong sense of social responsibility and implementing green purchasing behavior on a subjective level (Jaiswal & Kant, 2018).

It can be seen that the market share of green products is far less than that of traditional non-green products; therefore, vigorously advocating for people to develop green consumption habits and guiding consumers to implement green purchasing behavior is the key to building a sustainable production and consumption system, at the same time, digging out the potential mechanisms affecting consumers' green purchasing behavior is still an important topic of scientific research nowadays. Presently, China stands at the precipice of a burgeoning movement in green product consumption, signifying a burgeoning appetite for environmentally conscious choices. Given these compelling trends and in pursuit of deeper insights, this study focuses on the residents of Zhengzhou, the capital of Henan Province, as the primary cohort for comprehensive examination and analysis. In this paper, we will explore the influencing mechanisms of consumers' green purchasing behavior, select the corresponding research variables, and explore the intrinsic mechanisms of consumers' purchasing behavior with a view to providing relevant theoretical and empirical evidence for relevant decision-making.

## 2. Literature Review

### 2.1 Environmental Concern

In essence, environmental concern encompasses individuals' awareness of environmental issues and their willingness to actively contribute to solving these problems (Kim & Choi, 2005; Prakash & Pathak, 2017; Roberts & Bacon, 1997; Straughan & Roberts, 1999; Van Liere & Dunlap, 1981). Furthermore, it reflects a sense of responsibility for environmental protection, imbued with emotional resonance at the individual level, manifested in their engagement with environmental preservation efforts (Dagher & Itani, 2014; Lee, 2008). Therefore, the measure of environmental concern seeks to address environmental issues at the individual level, in contrast to collective orientations.

In a bid to augment the explanatory capacity of the original TPB framework, numerous scholars have endeavored to expand it by incorporating new variables (Bamberg & Schmidt, 2003; Han & Hansen, 2012; Peters et al., 2011). Among these variables, several studies have accentuated the influence of environmental concern on subjective norms (Chen & Tung, 2014; Donald et al., 2014; Hartmann & Ibáñez, 2006). Environmental concern centers on the general populace's cognizance, capacity, and engagement with environmental matters (Lavuri, 2022). An environmentally conscious consumer averts products and practices that may contribute to environmental harm (Sun & Wang, 2020). Jekria and Daud (2016) documented the affirmative influence of environmental concern on individuals' subjective norms, subsequently affecting recycling intentions in Malaysia. Correspondingly, Khaola et al. (2014) reported similar findings in their study of green purchasing behavior in Lesotho. As McCarthy and Liu (2017) and Bhatti and Yumuşak (2017) expounded, heightened awareness of environmental concerns can cultivate people's subjective norms about reducing food waste.

In environmental behavior, perceived behavioral control is a crucial determinant of whether individuals translate their environmental concerns into actual pro-environmental actions (Bamberg & Schmidt, 2003). Previous studies have shown that individuals with higher levels of environmental concern may exhibit stronger motivation and commitment to protecting the environment (Schultz, 2001). The relationship between environmental concern and perceived behavioral control becomes even more compelling in environmental issues, as heightened environmental concern may boost one's motivation to overcome barriers and actively engage in eco-friendly behaviors (Bamberg & Möser, 2007). This aligns with findings by Kaiser and Gutscher (2003), who empirically verified that individuals with strong environmental concerns are more likely to perceive greater control over their eco-friendly behaviors. Therefore, we propose the following hypotheses:

**H1:** Environmental concern has a significant influence on subjective norm.

**H2:** Environmental concern has a significant influence on perceived behavioral control.

### 2.2 Attitude towards Green Products

The attitude phenomenon has consistently been a crucial determinant of behavioral intention and actual behavior within green consumer psychology studies. Attitude refers to

an individual's positive or negative assessment of the effectiveness of an action in particular (Ajzen & Fishbein, 1980). It is the product of two key components: behavioral beliefs (BB), representing an individual's beliefs about the outcomes of engaging in a specific behavior, and outcome evaluations (OE), indicating the corresponding favorable or unfavorable judgments regarding the potential consequences of that behavior (Ajzen, 1991).

This specific attitude is particularly pertinent within the environmental consumer research domain, where it is commonly conceptualized as an attitude toward green products or a green purchase attitude. This attitude encapsulates an individual's beliefs and emotions concerning purchasing environmentally friendly products and the consequential ecological implications of such behavior (Hines et al., 1987; Kaiser & Gutscher, 2003; Riethmuller & Buttriss, 2008).

Attitudes play a significant role in shaping consumer intentions. This is a commonly held belief among researchers, who argue that strong attitudes exert significant influence over most events (Chaubey et al., 2011). Numerous studies have highlighted that consumers' awareness of sustainable environments fosters eco-friendly attitudes and behaviors (Flamm, 2009). Hossain and Lim (2016) discovered that consumers with positive attitudes toward food safety exhibit corresponding positive intentions. Previous investigations into green products and environmentally related intentions have consistently supported the assertion that attitudes and green purchase intentions share a positive association (Aman et al., 2012; Barber et al., 2009; Mostafa, 2009; Straughan & Roberts, 1999; Yadav & Pathak, 2016). Recent studies in the Indian context argue that among all the TPB predictor constructs, attitude exerts the highest direct influence on consumers' green purchase intentions (Paul et al., 2015; Yadav & Pathak, 2016). Consequently, the literature suggests that consumers with more favorable attitudes toward general green products are more likely to be highly involved in the purchase intentions for such products (Chan & Chai, 2010; Joshi & Rahman, 2015; Lee, 2008). Therefore, the hypothesis is formulated as:

**H3:** Attitude toward green products has a significant influence on green purchase intention.

## 2.3 Perceived Environmental Knowledge

Environmental knowledge is an individual's comprehensive understanding of facts, concepts, and relationships between environmental conservation and the principal ecosystems (Kaufmann et al., 2012; Vicente-Molina et al., 2013). Environmental knowledge encompasses an individual's grasp of environmental aspects, critical interconnections, and an awareness of the capacities inherent within environmental systems (Kaufmann et al., 2012). Schahn and Holzer (1990) have categorized knowledge measures for evaluating environmental action into abstract and concrete knowledge. Abstract knowledge pertains to understanding environmental issues, including problems, causes, and potential solutions. Concrete knowledge, on the other hand, pertains to actionable knowledge that can be applied in practice.

Previous research has underscored the role of environmental knowledge in fostering environmentally friendly behavior (Indriani et al., 2019; Otto & Pensini, 2017). Several studies have indicated that understanding environmental matters and sustainable practices considerably influences individuals' eco-friendly attitudes (Choe et al., 2020). For instance, Ernst et al. (2017) reported that environmental knowledge is a robust predictor of responsible environmental attitudes and intentions. This relationship is evident among students, as enhanced environmental knowledge has been found to correlate positively with favorable environmental attitudes (Paço & Lavrador, 2017). Certain scholars have also explored the relationship between environmental attitudes and green purchasing behavior, yet definitive connections remain elusive. Maloney and Ward's (1973) findings about general environmental knowledge and attitudes revealed modest correlations between knowledge and affect. Synodinos (1990) concurred, discovering that knowledge and attitude exhibited no significant correlation, leading him to posit that knowledge exists independently of attitude. Arbuthnot and Lingg (1975) investigation into environmental behaviors, knowledge, and attitudes suggested that environmental knowledge is a mediating variable between environmental attitudes and behaviors. Similarly, Synodinos (1990) posited that "elevated knowledge about environmental issues may yield more positive attitudes".

Consumers with higher environmental knowledge tend to prioritize environmentally friendly products and services in their purchasing decisions. Consequently, environmental knowledge positively influences consumers' intentions to purchase green products, making them more inclined to undertake proactive measures to address environmental issues. Wang et al. (2014) ascertained that a deepening comprehension of environmental matters among consumers is conducive to fostering eco-friendly behavior and a heightened inclination to purchase green products. Numerous studies have delved into consumers' environmental knowledge, contending that it is bolstered by pro-environmental attitudes and intentions in the context of engaging in environmentally responsible actions (Azizan & Suki, 2014; Chiou, 1999; Mostafa, 2009). Building on the findings above, the following hypothesis is proposed:

**H4:** Perceived environmental knowledge has a significant influence on green purchase intention.

**H5:** Perceived environmental knowledge has a significant influence on attitudes towards green products.

## 2.4 Subjective Norm

Subjective norms, also called social norms, encompass the perceived social pressures that influence an individual's decision to engage in or refrain from a specific behavior (Thøgersen, 1999). Ajzen (1991) states that subjective norms are formed by two main factors: normative beliefs and incentive to comply. Normative compliance with beliefs refers to an individual's understanding of how significant individuals anticipate them to act in a specific scenario. At the same time, motivation to comply indicates the individual's tendency to conform to the viewpoints of those they deem essential. Furthermore, as elucidated by Moser (2015), personal norms revolve around the profound sense of moral obligation to adopt altruistic or environmentally friendly behaviors. These personal norms influence consumers' engagement in green consumption behaviors (Jackson, 2005; Peattie, 2010).

Building on numerous prior investigations, grounded in the Theory of Planned Behavior (TPB), we propose a hypothesis that could potentially have a significant impact on the field of consumer behavior, environmental psychology, and marketing. These investigations have consistently substantiated a positive correlation between subjective norms and the intention to engage in environmentally conscious purchasing (Nguyen et al., 2016). In a separate research inquiry, Choi and Johnson (2019) similarly identified a positive connection between subjective norms and green purchase intentions. Additionally, prior studies have consistently proposed subjective norms as the primary predictor of purchase intentions (Harland et al., 1999; Kaiser & Gutscher, 2003; Sparks & Shepherd, 1992). However, within the Indian context, contradictory findings have emerged, challenging our understanding. While some studies indicate the absence of a direct, significant relationship between subjective norms and green purchase intentions (Geetika et al., 2017; Paul et al., 2015), recent research suggests a substantial, direct association between these variables (Yadav & Pathak, 2016). Jansson et al. (2010) have posited that subjective norms exert an influence on Swedish consumers' inclination to adopt eco-friendly innovations. Our proposed hypothesis could potentially provide a deeper understanding of the complex relationship between subjective norms and environmentally conscious purchasing, thereby contributing to the advancement of our field.

**H6:** Subjective norm has a significant influence on green purchase intention.

## 2.5 Perceived Behavior Control

Ajzen (1991) delineates Perceived Behavioral Control (PBC) as the "perceived ease or difficulty of performing a behavior." PBC is further distinguished into Internal PBC and External PBC. Individuals with a high level of Internal PBC perceive greater control over internal personal resources, including requisite skills, confidence, planning, and ability necessary for executing a specific behavior (Armitage & Conner, 1999). Conversely, external PBC pertains to an individual's perception of their capacity to overcome external constraints essential for performing a behavior (Kidwell & Jewell, 2003). A study by Ajzen (1985) suggests that behavioral control can be used as an indicator of behavior, as individuals are more inclined to participate in behavior when they possess self-assurance in their capability to do so.

Recent research indicates that environmentally conscious consumers who refrain from purchasing green products often attribute their choice to the higher cost and limited availability of such products (Barbarossa & Pastore, 2015). Likewise, prior studies have identified control beliefs, such as time, cost, effort, and availability, as influential factors affecting consumers' purchase intentions (Tanner & Wölfing Kast, 2003). Consequently, engaging in green consumption demands that consumers surmount these barriers and inconveniences (Gleim et al., 2013; Kalafatis et al., 1999; Steg, 2008). The greater the perceived behavioral control over these hindrances, the stronger the consumers' intention to purchase green products (Ko & Jin, 2017; Tanner & Wölfing Kast, 2003). Indian studies focusing on environmentally friendly products have consistently revealed a significant relationship between perceived behavioral control and the intention to use green products (Geetika et al., 2017; Paul et al., 2015; Yadav & Pathak, 2016). Consequently, the following hypothesis emerges:

**H7:** Perceived behavioral control has a significant influence on green purchase intention.

## 2.6 Green Purchase Intention

Green purchase intention (GPI) is a fundamental concept within the realm of consumer behavior and environmental consciousness. It represents consumers' expressed willingness to engage in the purchase of environmentally friendly or "green" products with the primary aim of benefiting the environment (Akehurst et al., 2012; Chan, 2001; Dagher & Itani, 2014). In essence, GPI signifies that consumers not only consider the ecological attributes of a product but also take into account the environmental ramifications associated with their purchase decisions. It serves as an indicator of an individual's readiness to undertake a specific environmentally responsible behavior

and is commonly regarded as a direct precursor to actual behavior (Ajzen, 2002).

Prior research has revealed that the linkage from purchase intention to actual acquisition of ecological food products is statistically significant and positively oriented (Tarkiainen & Sundqvist, 2005). Nguyen et al. (2016) have observed that individuals with heightened green purchase intentions also exhibit elevated levels of green purchase behavior. Similarly, Jaiswal and Kant (2018) have uncovered a robust association between green purchase intentions and actual purchase behavior. This relationship has been corroborated in various domains of green products within the extant literature (Zhang et al., 2018).

Furthermore, the Theory of Planned Behavior posits a strong correlation between intention and concrete behavior. Additionally, Lai and Cheng (2016) have ascertained that consumers' expressed willingness is a more effective predictor than other behavioral factors in capturing consumers' inclination toward green purchases. Given this foundation, we propose the following hypothesis:

**H8:** Green purchase intention has a significant influence on green purchase behavior.

### 2.7 Green Purchase Behavior

Green purchase behavior refers to the actions and decisions of consumers who prioritize environmentally friendly products and services. Various factors, including environmental concerns, personal values, social norms, and perceived behavioral control, drive this behavior. Consumers who exhibit green purchase behavior often consider the ecological impact of their purchases, opting for sustainable, recyclable products or lower carbon footprints (Pérez & del Río, 2020).

Research indicates that environmental awareness is crucial in influencing green purchase behavior. Individuals with higher levels of environmental concern are more likely to engage in sustainable consumption practices as they recognize the importance of protecting natural resources and reducing pollution (Kumar & Ghodeswar, 2015). Additionally, peer pressure and community norms can significantly impact an individual's decision to purchase green products (Tobler et al., 2011).

Moreover, perceived behavioral control, which refers to an individual's belief in their ability to perform a behavior, also affects green purchasing decisions. Consumers who feel capable of making sustainable choices are more likely to follow through with those intentions (Ajzen, 1991). Understanding these factors is essential for marketers and policymakers aiming to promote sustainable consumption practices and address environmental challenges effectively.

## 3. Research Methods and Materials

### 3.1 Research Framework

The conceptual framework is developed from studying related theoretical frameworks. It is adapted from three theoretical models. First, the study of Jaiswal and Singh (2018) verified that green purchase knowledge (GPK) has a positive relationship with attitude towards green products (AGP) and green purchase intention (GPI). The study also underscores that Green Purchasing Behavior (GPB) is an outcome of Green Purchase Intention (GPI), which is, in turn, significantly and directly influenced by measures of Attitude towards Green Purchasing (AGP). Second, Sreen et al. (2018) examined the effects of subjective norms and perceived behavioral control on green purchase intention but also constructed a path from cultural values to green purchase intention, mediated by variables like attitude, subjective norms, and PBC. The third literature review was conducted by Zahedi et al. (2019). This study provides empirical support for enhancing the TPB framework by introducing a novel factor—environmental concern. Furthermore, a positive correlation was observed between environmental concern and attitude, subjective norms, and perceived behavioral control. The conceptual framework of this study is shown in Figure 1.

This study aims to examine the determinants of green purchase behavior (GPB) towards various variables, which are symbolic environmental concern (EC), attitude toward green products (AGP), perceived environmental knowledge (PEK), subjective norm (SN), perceived behavioral control (PBC), green purchase intention (GPI) among the residents in the central urban area of Zhengzhou, China. Furthermore, the research investigates the causal relationship between variables to reveal the impact of these factors on green purchase behavior.

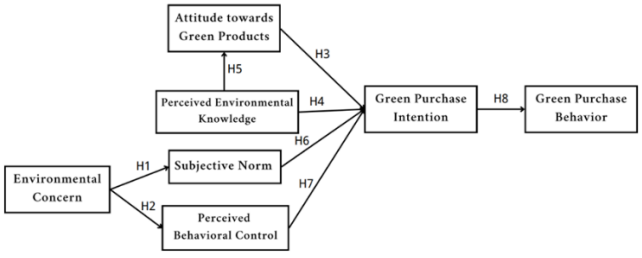


**Figure 1:** Conceptual Framework

**H1:** Environmental concern has a significant influence on subjective norm.

**H2**: Environmental concern has a significant influence on perceived behavioral control.

**H3**: Attitude toward green products has a significant influence on green purchase intention.
**H4:** Perceived environmental knowledge has a significant influence on green purchase intention.
**H5:** Perceived environmental knowledge has a significant influence on attitudes towards green products.
**H6:** Subjective norm has a significant influence on green purchase intention.
**H7:** Perceived behavioral control has a significant influence on green purchase intention.
**H8:** Green purchase intention has a significant influence on green purchase behavior.

### 3.2 Research Methodology

The study employed a quantitative research approach by using a questionnaire as a survey tool for data collection. Before data analysis, the questionnaire instrument underwent rigorous testing to ensure its reliability and validity. The content validity was assessed using Item Objective Congruence (IOC). A pilot test was conducted with 50 online respondents to refine the questionnaire. The questionnaires were emailed to the selected universities' student councils for primary data collection. The questionnaire comprises three sections. The first section is screening questions to narrow down and ensure the respondents have met the target. The second section measures baseline and independent variables using the Five-point Likert scale (5= strongly agreed, 4= Agreed, 3= neutral, 2= disagree, and 1= Strongly disagree). In the last section, demographic information of the target respondents is collected. Following data collection from the 450 respondents representing eight main districts in Zhengzhou, the measurement model was evaluated using Confirmatory Factor Analysis (CFA). At the same time, the Structural Equation Modeling (SEM) technique was adopted to analyze the structural model.

### 3.3 Population and Sample Size

In this research, the population under consideration comprises residents from eight main districts of Zhengzhou who possess prior experience in purchasing green products. This study calculates the sample size determinant by parameter values via the A-priori Sample Size Calculator for Structural Equation Models from Danielsoper's website (Soper, 2019). The parameter values conditioned for the sample size calculation are seven latent variables and 30 observed variables with a probability level 0.05. For this study, a recommended minimum sample size of 425 was considered. However, the researcher decided to collect 450 participants as it was deemed appropriate for the research objectives.

### 3.4 Sampling Technique

The study employed a multi-stage sampling of probability and non-probability sampling methods for this quantitative research method. In the first stage, judgmental sampling was used to select eight main districts in Zhengzhou. The selection criteria were to ensure that the sample was representative. Secondly, stratification was used to frame the population into eight application groups, as shown in Table 1. In the final stage, convenience sampling was used to reach the target respondents willing to answer the questionnaire. Participants were screened using screening questions to ensure that the target respondents were residents with experience purchasing green products.

**Table 1:** Sample Units and Sample Size

| Eight Main Subjects | Population Size | Proportional sample size |
|---|---|---|
| Zhongyuan District | 97 | 63 |
| Erqi District | 106 | 69 |
| Jinshui District | 162 | 106 |
| Guancheng District | 82 | 54 |
| Huiji District | 56 | 37 |
| Zhongdongxin District | 96 | 63 |
| Gaoxin District | 56 | 36 |
| Jinkai District | 34 | 22 |
| **Total** | **689** | **450** |

**Source:** Constructed by author

## 4. Results and Discussion

### 4.1 Demographic Information

Data was collected from 450 respondents; the analysis results are shown in Table 2. 42% (189) of respondents were male, and the remaining 58% (261) were female. In terms of age, the largest segment in this study, 38% (171) were 18-30 years old respondents; 35.1% (158) of respondents were 31-40 years old, 20.9% (94) were 41-50 years old, and 6 % (27) were over 50 years old. Finally, the educational degree of the respondents varied as follows: 13.8% (62) held a college degree or below, 59.1% (266) had obtained a Bachelor's degree, 25.1% (113) had achieved a Master's degree, and 2% (9) had earned a doctoral degree. Table 2 summarizes the results of respondents' demographic.

**Table 2:** Demographic Profile

| Demographic and General Data (N=450) | | Frequency | Percentage |
|---|---|---|---|
| **Gender** | Male | 189 | 42.0% |
| | Female | 261 | 58.0% |
| **Age** | 18-30 years old | 171 | 38.0% |
| | 31-40 years old | 158 | 35.1% |

| Demographic and General Data (N=450) | | Frequency | Percentage |
|---|---|---|---|
| | 41-50 years old | 94 | 20.9% |
| | 51 years of age or older | 27 | 6.0% |
| **Degree** | College degree or below | 62 | 13.8% |
| | Bachelor's degree | 266 | 59.1% |
| | Master's degree | 113 | 25.1% |
| | Doctor's degree | 9 | 2.0% |

## 4.2 Confirmatory Factor Analysis (CFA)

The measurement model was evaluated using confirmatory factor analysis to confirm model fitness. Convergent validity confirms the consistency of the relationship between variables regardless of the measure used (Churchill, 1979). To ensure convergent validity in this study, measures such as Cronbach's Alpha (CA) reliability, factor loading, construct reliability (CR), and average variance extracted (AVE) were used. From the results, all values of Cronbach's Alpha were greater than 0.8, and factor loadings of all individual items were greater than 0.50. Composite or construct reliability (CR) and Average variance extracted (AVE) are other measurements of scale items' reliability and consistency (Peterson & Kim, 2013). The results of CR and AVE in this study were all higher than the threshold.

**Table 3:** Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

| Variables | Source of Questionnaire (Measurement Indicator) | No. of Item | Cronbach's Alpha | Factors Loading | CR | AVE |
|---|---|---|---|---|---|---|
| Environmental Concern (EC) | Fujii (2006); Zhou et al. (2016) | 5 | 0.892 | 0.762-0.817 | 0.892 | 0.622 |
| Attitude towards Green Products (AGP) | McCarty and Shrum (1994); Han et al. (2010) | 3 | 0.841 | 0.757-0.834 | 0.842 | 0.640 |
| Perceived Environmental Knowledge (PEK) | Deepak and Rishi (2018) | 4 | 0.884 | 0.796-0.825 | 0.885 | 0.657 |
| Subjective Norm (SN) | Armitage and Conner (1999); Chan and Lau (2002) | 4 | 0.820 | 0.641-0.780 | 0.823 | 0.539 |
| Perceived Behavioral Control (PBC) | Armitage and Conner (1999); Kim and Han (2010) | 3 | 0.801 | 0.732-0.789 | 0.800 | 0.572 |
| Green Purchase Intention (GPI) | Armitage and Conner (1999); Kim et al. (2013) | 4 | 0.828 | 0.684-0.765 | 0.829 | 0.549 |
| Green Purchase Behavior (GPB) | Wan et al. (2012) | 4 | 0.796 | 0.627-0.77 | 0.796 | 0.495 |

The model's fit was thoroughly evaluated through various indices, specifically CMIN/DF, GFI, AGFI, NFI, CFI, TLI, and RMSEA. These indices comprehensively assess how well the model aligns with the observed data, indicating its overall validity. The results of this evaluation are detailed in Table 4, where each index offers insights into different aspects of model fit, helping to ensure the robustness and reliability of the findings.

**Table 4:** Goodness of Fit for Measurement Model

| Fit Index | Acceptable Criteria | Statistical Values |
|---|---|---|
| **CMIN/DF** | <5.00(Al-Mamary & Shamsuddin, 2015; Awang, 2012) | 3.213 |
| **GFI** | ≥ 0.85(Sica & Ghisi, 2007) | 0.861 |
| **AGFI** | ≥ 0.80(Sica & Ghisi, 2007) | 0.827 |
| **NFI** | ≥ 0.80(Wu & Wang, 2006) | 0.855 |
| **CFI** | ≥ 0.80(Bentler, 1990) | 0.895 |
| **TLI** | ≥ 0.80(Sharma et al., 2005) | 0.878 |
| **RMSEA** | < 0.08 (Pedroso et al., 2016) | 0.070 |
| **Model Summary** | | **Acceptable Model Fit** |

**Remark:** CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

Discriminant validity must be ensured before the research hypothesis testing (Hamid et al., 2017). According to Fornell and Larcker (1981), testing for discriminant validity was evaluated by computing the square root of each AVE. As shown in Table 5, the value of discriminant validity is larger than all inter-construct/factor correlations. Therefore; therefore, discriminant validity is supportive. The convergent and discriminant validity were proved. Thus, the structural model can be established.

**Table 5:** Discriminant Validity

| | EC | AGP | PEK | SN | PBC | GPI | GPB |
|---|---|---|---|---|---|---|---|
| **EC** | **0.789** | | | | | | |
| **AGP** | 0.348 | **0.800** | | | | | |
| **PEK** | 0.253 | 0.031 | **0.811** | | | | |

| | EC | AGP | PEK | SN | PBC | GPI | GPB |
|---|---|---|---|---|---|---|---|
| **SN** | 0.415 | 0.214 | 0.298 | **0.734** | | | |
| **PBC** | 0.597 | 0.208 | 0.292 | 0.335 | **0.756** | | |
| **GPI** | 0.383 | 0.269 | 0.113 | 0.469 | 0.342 | **0.741** | |
| **GPB** | 0.597 | 0.236 | 0.233 | 0.375 | 0.573 | 0.362 | **0.704** |

**Note:** The diagonally listed value is the AVE square roots of the variables
**Source:** Created by the author.

## 4.3 Structural Equation Model (SEM)

Structural Equation Modeling, or SEM, was employed to appraise the structural model fitness. The goodness of fit served as an indicator of the suitability of the structural model, and in cases where there is a conflict between the model and real-life data, amending the structural model is essential. The goodness of fit explains the degree of research model fit relative to the observed values from the structural equation model (Schermelleh-Engel et al., 2003). After the process in SEMs and adjusting the model by using SPSS AMOS version 26, all fit indices were above the acceptable threshold, which are CMIN/DF = 3.440 GFI = 0.853, AGFI = 0.823, NFI=0.840, CFI = 0.880 TLI = 0.865, and RMSEA = 0.074, according to the measurable criteria that mentioned in Table 6. Hence, the structural model fitness is affirmed.

**Table 6:** Goodness of Fit for Structural Model

| Fit Index | Acceptable Criteria | Statistical Values |
|---|---|---|
| **CMIN/DF** | <5.00(Al-Mamary & Shamsuddin, 2015; Awang, 2012) | 3.440 |
| **GFI** | ≥ 0.85(Sica & Ghisi, 2007) | 0.853 |
| **AGFI** | ≥ 0.80(Sica & Ghisi, 2007) | 0.823 |
| **NFI** | ≥ 0.80(Wu & Wang, 2006) | 0.840 |
| **CFI** | ≥ 0.80(Bentler, 1990) | 0.880 |
| **TLI** | ≥ 0.80(Sharma et al., 2005) | 0.865 |
| **RMSEA** | < 0.08 (Pedroso et al., 2016) | 0.074 |
| **Model Summary** | | **Acceptable Model Fit** |

**Remark:** CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI = normalized fit index, CFI = comparative fit index, TLI = Tucker Lewis index, and RMSEA = root mean square error of approximation

## 4.4 Research Hypothesis Testing Result

The significance of each variable in the research model is assessed through regression weights and $R^2$ variances. The hypothesis testing results indicated that all proposed hypotheses were supported at a significance level of $p = 0.05$, except for H4 and H5. Subjective norms strongly influenced green purchase intention, with a standardized regression coefficient (β) of 0.470. This was followed by perceived behavioral control (β = 0.316) and attitude toward green products (β = 0.153). Environmental concern emerged as the strongest predictor of perceived behavioral control (β = 0.692), demonstrating its significant impact on green purchase behavior.

The analysis revealed that environmental concern significantly influences subjective norms, while the relationship between perceived ecological knowledge and attitude toward green products was insignificant. Lastly, the relationship between green purchase intention and green purchase behavior was confirmed, with a β value of 0.540 and a t-value of 8.004, indicating a substantial influence. These causal relationships are detailed in Table 7, clearly illustrating the dynamics at play within the research model.

**Table 7:** Hypothesis Results of the Structural Equation Modeling

| Hypothesis | (β) | t-value | Result |
|---|---|---|---|
| H1: EC→SN | 0.503 | 8.386* | Supported |
| H2: EC→PBC | 0.692 | 11.641* | Supported |
| H3: AGP→GPI | 0.153 | 3.135* | Supported |
| H4: PEK→GPI | -0.066 | -1.421 | Not Supported |
| H5: PEK→AGP | 0.034 | 0.614 | Not Supported |
| H6: SN→GPI | 0.470 | 7.204* | Supported |
| H7: PBC→GPI | 0.316 | 5.49* | Supported |
| H8: GPI→GPB | 0.540 | 8.004* | Supported |

**Note:** * $p<0.05$
**Source:** Created by the author

The result from Table 7 can be refined to show that H1 approved that environmental concern significantly influences subjective norms, which implies that the more the individual is concerned about the environment, the higher the perceived social pressure and social expectations will be. This finding was consistent with the study of Chen and Tung (2014) and Hansla et al. (2008). Regarding H2, the strongest impact on perceived behavioral control is environmental concern. The path relationship between perceived behavioral control and ecological concern has a standardized path coefficient of 0.692. This supports the previous studies of Van der Werff et al. (2013).

H3 verified that a positive attitude toward green products strongly influences green purchase intention, which implies that individuals' attitudes play a key role in shaping their motivations for environmental purchasing behavior.

In terms of H4, Green purchase intention was not found to be impacted by perceived environmental knowledge. This finding was contradicted by previous studies by Mostafa (2009), Azizan and Suki (2014), and Wang et al. (2014). They claimed that a deepening comprehension of environmental matters among consumers is conducive to fostering a heightened inclination to purchase green products. However, the finding is aligned with the study of Zhao et al. (2014), and Kumar et al. (2017), that the above causal relationship was inconsistent, and increased environmental knowledge does not necessarily result in higher intention for green products in emerging economies.

H5 was argued as the results show no significant relationship between perceived environmental knowledge and attitude toward green products. This suggests that although people may perceive themselves as well-informed about the environment, this does not directly impact their attitudes toward green products (Kumar et al., 2017).

H6 proved the significance of the relationship between subjective norm and green purchase intention. This implies an important link between individuals' perceptions of others' expectations and their willingness to purchase environmentally friendly products, reinforcing the role of social factors in promoting environmentally friendly behavior (Harland et al., 1999; Kaiser & Gutscher, 2003).

H7 confirmed the significant influence between perceived behavioral control and green purchase intention. Likewise, prior studies have identified control beliefs, such as time, cost, effort, and availability, as influential factors affecting consumers' purchase intentions (Barbarossa & De Pelsmacker, 2016; Tanner & Wölfing Kast, 2003).

The results of this study can fulfill H8's support. It established the strong influence between green purchase intention and green purchase behavior. Nguyen et al. (2016) observed that individuals with heightened green purchase intentions also exhibit elevated levels of green purchase behavior.

## 5. Conclusion and Recommendation

### 5.1 Conclusion

This empirical study examines the factors influencing green purchase behavior among residents in the central urban area of Zhengzhou who have experience buying green products. To establish the conceptual framework for the research, an in-depth analysis of existing literature was conducted to gather pertinent theories and research findings related to the subject matter. The research questions were formulated to ensure the realization of the research objectives and the development of the conceptual framework of the study. The questionnaires were developed and given to the target sample of residents of the main eight districts in the urban area of Zhengzhou, China. Confirmatory Factor Analysis (CFA) was carried out to measure and test the validity and reliability of the conceptual model. Hence, the influential factors that impact innovative work behavior were analyzed using the Structural Equation Model (SEM).

The research described the findings as follows. Foremost among the revelations is the significant influence of environmental concern on subjective norms and perceived behavioral control, underscoring the pivotal role of individuals' ecological consciousness in shaping their attitudes and perceived efficacy in adopting green purchasing behaviors. This underscores the imperative for businesses and policymakers to cultivate and leverage environmental awareness initiatives as catalysts for sustainable consumer choices. Second, attitude toward green products strongly influences green purchase intention, which implies that individuals' attitudes play a key role in shaping their motivations for environmental purchasing behavior (Chaubey et al., 2011). Third, subjective norms have been proven to impact green purchase intention significantly. It underscores the potent influence of social norms, peer influence, and societal expectations in shaping individuals' intentions to embrace sustainable consumption behaviors. However, the unexpected non-support for the hypothesized direct impact of perceived environmental knowledge on attitudes toward green products highlights a crucial nuance. While knowledge alone may not suffice to shape consumer preferences, it likely operates in tandem with other cognitive and affective factors.

Next, the result of this study showed that perceived behavioral control significantly impacts green purchase intention. This highlights individuals' perceived ability to overcome barriers and constraints in facilitating their intention to engage in green purchasing behaviors (Barbarossa & De Pelsmacker, 2016; Tanner & Wölfing Kast, 2003).

Moreover, the robust confirmation of the predictive power of green purchase intention on actual behavior underscores the need for strategies that not only stimulate favorable attitudes but also cultivate strong intentions to translate into tangible eco-conscious actions (Jaiswal & Kant, 2018; Tarkiainen & Sundqvist, 2005). This underscores the importance of interventions that bolster consumers' sense of agency and perceived control over their green purchasing decisions (Zhang et al., 2018).

### 5.2 Recommendation

This study has shed light on the factors influencing green purchase behavior among consumers in Zhengzhou, revealing the significant impact of environmental concern, subjective norm, perceived behavioral control, attitude toward green products, and green purchase intention. These findings provide valuable insights for policymakers, businesses, and environmental advocates seeking to promote sustainable consumption practices in the region. Specific recommendations follow.

Policy Support and Market Incentives: Policymakers should consider implementing supportive policies and market incentives to promote green consumer behavior. This could include eco-labeling schemes, tax incentives for sustainable products, and subsidies for renewable energy sources. By creating a supportive policy environment and aligning market incentives with sustainability goals,

policymakers can encourage consumers and businesses to prioritize environmentally friendly choices.

Corporate Social Responsibility (CSR) Initiatives: Businesses play a crucial role in shaping consumer behavior through their products, marketing strategies, and corporate practices. Implementing CSR initiatives prioritizing environmental sustainability and social responsibility can enhance consumer trust and loyalty, driving demand for green products and services. Companies should invest in sustainable production processes, transparent supply chains, and eco-friendly product innovation while engaging in consumer education and awareness-raising initiatives.

Collaborative Partnerships and Stakeholder Engagement: Governments, businesses, civil society organizations, and consumers should collaborate to develop and implement holistic solutions that promote sustainable consumption and production patterns. Collaborative partnerships can accelerate progress toward a more sustainable future by fostering dialogue, sharing best practices, and leveraging collective expertise and resources.

In summary, adopting a multi-faceted approach that combines empirical research, practical interventions, policy support, and stakeholder collaboration is essential for promoting green consumer behavior and advancing sustainability goals. By implementing the above recommendations, stakeholders can create a more environmentally sustainable and socially responsible society for future generations.

### 5.3 Limitation and Further Study

The study's drawback lies in its limited sample size, which, although it accurately reflects the target population in Zhengzhou, needs to encompass various demographic groups comprehensively. As such, caution should be exercised when attempting to extrapolate the findings to a wider geographical or cultural context. This study's focus on Zhengzhou may partially capture the inherent diversity within China and variations in consumer behaviors across regions.

Secondly, the study's geographical scope is confined to Zhengzhou. Different regions within China may exhibit distinct environmental concerns, levels of awareness, and access to green products, all of which can influence consumer green purchase behavior. Thus, the findings should be interpreted within the context of Zhengzhou and considered a piece of the larger puzzle of consumer behavior in China.

A third limitation pertains to the study's temporal dimension. Consumer attitudes and behaviors, particularly those related to environmentally conscious choices, can evolve due to changing societal norms, economic conditions, and government policies. Therefore, the insights presented in this research pertain to a specific period and may not fully reflect the dynamics of consumer green purchase behavior in the future. Continuous monitoring and follow-up studies may be necessary to capture long-term trends accurately.

Lastly, the study relies on self-reported data collected through surveys, which introduces the possibility of response bias and inaccuracies in reporting actual green purchase behavior. Respondents may provide socially desirable responses or overestimate their engagement in environmentally friendly actions. While every effort has been made to minimize these biases, they are inherent to survey-based research and should be acknowledged when interpreting the results.

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