

Green consumption and sustainable development: The effects of perceived values and motivation types on green purchase intention

Peggy M.L. Ng ^{a *} (peggy.ng@cpce-polyu.edu.hk)
Cherry T.Y. Cheung ^a (tinyancherry.cheung@speed-polyu.edu.hk)
Kam Kong Lit ^a (kk.lit@speed-polyu.edu.hk)
Calvin Wan ^b (calvin.wan@ntu.ac.uk)
Ellesmere T.K. Choi ^c (mr.choytk@gmail.com)

^a School of Professional Education and Executive Development, The Hong Kong Polytechnic University, Hong Kong

^b Nottingham Business School, Nottingham Trent University, United Kingdom

^c University of Newcastle, Australia

* corresponding author

Acknowledgement

The work described in this paper was fully supported by a grant from the Research Grants Council, The Hong Kong Special Administrative Region, China (UGC/FDS24/H08/20).

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Abstract

Daily green products have gained growing awareness in recent years. Perceived values of consumers are crucial for companies to promote the formation of holistic value of green products to consumers. In addition, understanding different motivation types of consumers to adopt green purchase behavior is critical. To answer the research call to better conceptualize green purchase intention, this study aims to investigate how consumers' perceived values influence different motivation types, and in turn affect their green purchase behavioral intention. An extended research model by integrating customer value theory (CVT) and self-determination theory (SDT) is developed to explain green purchase behavioral intention.

305 participants were recruited and the findings were analyzed using partial least square structural equation modelling (PLS-SEM). Results suggested that the three perceived values (i.e. emotional value, functional value, and relational value) significantly predict perceived green product value, while perceived green product value predicts four types of regulations (i.e. external regulation, introjected regulation, identified regulation and integrated regulation). Results also showed that autonomous motivation (i.e. identified regulation and integrated regulation) significantly predicts green purchase intention. These findings provide theoretical implications to self-determination theory and customer value theory in the field of green business strategy management and practical implications to green businesses and governments.

Keywords: green purchase intention; self-determination theory; motivation regulations; perceived values; PLS-SEM; green business strategy

1 INTRODUCTION

As environmental issues, such as climate change, global warming, and pollution have gained global attention, consumers have begun to focus on sustainable lifestyles and purchasing environmental-friendly products (Sharma et al., 2022). According to the Sustainable Development Goals (SDGs) adopted by the United Nations, Global Goal 12 indicates that the world should have responsible consumption and reproduction while minimizing toxic waste by 2030. Meanwhile, only 20 % of the world's energy comes from renewable resources (United Nations, 2022). Thus, purchasing green products rather than their conventional alternatives can help in energy conservation and limit the usage of harmful products and production of waste (Usrey et al., 2020; Yan et al., 2021). Green purchase behavior is an impactful pro-environmental behavior in which consumers adopt eco-friendly/ green products, reduce negative environment impacts and achieve sustainable living (Alzubaidi et al., 2021; Sharma et al., 2020). To meet the increasing customers' demand for environmental-friendly products, companies should gain comprehensive understanding the consumers' perceived values towards green purchase (Cheung & To, 2019; Roh et al., 2022).

Consumers' perceived value has gained much attention in psychology and marketing research (Sweeney & Soutar, 2001; Kim et al., 2011; Carlson et al., 2019). Perceived value is defined as a consumer's evaluation of a product's utility based on his/her perception of what is

received and what is given (Zeithaml, 1988). Extant literature has widely discussed that green purchases are influenced by individuals' values and conditions, such as demographic characteristics, personality and lifestyle (Dangelico et al., 2021; Li et al., 2022). Values drive motivation and the influence of values on motivation is stronger than the influence of attitudes on motivation (Rokeach, 1973; Roh et al., 2023). Business managers strive to formulate and implement business/ marketing strategies to promote the development of holistic value (e.g. functional value, emotional value, relational value, green product value) of green products to consumers; these strategies can effectively motivate purchase of green products (Amatulli et al., 2021; Roh et al., 2022). Understanding individuals' value dimensions is therefore crucial for gaining insights of the consumers' decision-making process regarding green products adoption and green purchase intention (Amin & Tarun, 2020). However, it is equally important to examine how these values motivate consumers' green purchase behavior through various motivation types. Norton et al. (2015) found that motivation is a key mechanism for linking individuals' values and their pro-environmental behaviors in the context of organizational behaviors, there is still a significant knowledge gap in understanding green purchase decisions. Thus, this study aims to bridge this gap by empirically testing a proposed model that examines the relationship between perceived values, motivation types, and green purchase behaviors.

In the context of green purchases, previous research predominantly focused on extrinsic motivation, such as rewards, incentives, or bonuses while overlooking the different motivation types (e.g. external regulation, introjected regulation, identification regulation, and integrated regulation) derived from self-determination theory (SDT) (Deci & Ryan, 2000; Ryan & Deci, 2000; Groening et al., 2018; Sharma et al., 2022). Green purchase can be motivated by different types of motivation, such as rewards (external), guilt avoidance (introjected), personal brief (identification) and congruence (integrated), therefore SDT provides a solid theoretical foundation to gain a deeper understanding of different motivation types and sheds light on the determination of green purchase behavior (Song et al., 2022; Prior, 2016). In addition, Rahman et al. (2023) have emphasized the importance of future research in understanding the influence of the different consumption values on the different motivational factors in the context of green products. To date limited studies have been conducted in examining how consumers' perceived values influence different types of motivation in adopting green purchase behavior, thus a research gap exists.

The Self-Determination Theory (SDT) developed by Deci and Ryan (2000) provides a unique perspective on understanding customers' motivation. It classifies the reasons behind one's behavior based on the level of self-determination, this allows a comprehensive categorization of motivational factors. Previous studies examined that perceived value has an impact on motivation and motivation in turn affects purchase intention (Gilal et al., 2019; Rahman et al., 2023). Li et al. (2015) argued that value congruence of individuals was associated with controlled motivation and autonomous motivation when engaging in a behavior through the lens of SDT. Extant literature further emphasized that perceived product/ service quality strengthens the motivational forces in different contexts (Rahi et al., 2019; Inan et al., 2023; Bazi et al., 2020). Following this line of logic, we argue that consumers' perceived values predict the overall perception of green product value that impacts on the consumer's controlled and autonomous motivation, in turn affecting the consumer's green purchase intention. Therefore, to answer the calls for further investigation and fill the research gap, this study examines the relationship between perceived values (i.e. functional, relational, emotional, and green product value), and motivation types (i.e.

external regulation, introjected regulation, identification regulation, and integrated regulation), by integrating customer value theory (CVT) (Sweeney & Soutar, 2001) and self-determination theory (Deci & Ryan, 2000) to predict green purchase intention. By integrating these frameworks, the study endeavors to provide a comprehensive understanding of the consumers' green purchase decision-making processes. Accordingly, the following research questions guided our study:

RQ1. What are the underlying mechanisms between perceived values, self-determination spectrum, and green purchase intention?

RQ2. How does perceived green product value influence different types of motivation in the self-determination spectrum?

RQ3. How do different types of motivation enhance green purchase intention?

Considering the gaps in the current literature, this study offers significant contributions to green purchase literature. First, this study proposed an integrated framework of green purchase behavioral intention, employing CVT and SDT. Second, this study extends previous research by combining perceived values and different motivation types, which was not previously used in green purchase context with CVT. By incorporating SDT, this study explicitly examines the effect of external regulation, introjected regulation, identification regulation, and integrated regulation on green purchase intention. Third, this study explains the role of green product value in affecting consumers' motivation types in adopting green purchases, highlighting the significance of perceived values. Finally, the findings of this study provide practical implications for green businesses.

2. THEORETICAL BACKGROUND

2.1 Customer Value Theory

As Zhang and Zhang (2022) argued, value perception under customer value theory is the significant antecedent that predicts the customer's attitude towards purchasing (Sweeney & Soutar, 2001). Numerous researchers have measure values to predict green behavior (Sharma et al., 2022; Roh et al., 2022). Values will effectively contribute to motivational and generate practical implications for various stakeholders on how to promote green purchasing in the business field (Rahman et al., 2023). Slack et al. (2020) contended that customer value is a crucial success factor in the marketing industry. Marketers should increase customer value to entice customers to make purchases and sustain a long-term relationship with the vendor. While Itani et al. (2019) had similar ideas on the strong relationship between customers and the general evaluation of a service's usefulness is determined by mutual give and received.

Perceived values consist of two major dimensions: cognitive and affective, including economic, function, relational and emotional values. Emotional value is based on the idea that consumptions are a pleasant and exciting alternative to standard product offers. Functional value means that the customer obtains functional utility based on logical purchase behavior (Roh et al., 2022). Also, relational value refers to how individuals perceive the benefits of social relations and social well-being. It can be seen as the improvement of one's self-concept brought about by consumption (Foroudi et al., 2020). In addition, emotional value is an illustration of the benefits obtained from multimodal elements of purchasing experience, which have internal feelings or affective states.

2.1.1 Functional value

Functional value plays a significant role for consumers to make purchase decisions formed by practical benefits (Roh et al., 2022). Applying customer value-based connections, whether the functional value is experience-based, it is possible to increase conversion rates, decrease risk, and improve relationships with brands, products, or services. For instance, to encourage people to develop a sense of green product value, Moise et al. (2020) contended that people are sensitive to the amount of money they spend and have effects of utilitarian value on revisit or repurchase intentions. Indeed, the functional value of individuals mainly contributes to perceived convenience with physical benefits. The significant contribution explores the factors that influence decision-making concerning various customer orientations, attitudes, cognitive ideas, and experiences, focusing on shopping opinions. These components of functional value (helpful, useful, and functional) suggest a correlation exists with the product quality value. Functional value of customers can be considered as an initial factor that is associated with product quality value (Kim et al., 2012; Watanabe et al., 2020). As a result, the following hypothesis is suggested:

H1: Consumers' functional value is positively related to green product value.

2.1.2 Relational value

Relational value is the connections among consumers, interactions with companies and peers (Cheung et al., 2022). Engel et al. (2020) advocated that when individuals participate in environmental-friendly actions, they must develop stable relationships and strong connections with peers who share similar interests. The perceived ideas or opinions influenced by important peers create healthy social surroundings. Drawing from Theory of Planned Behavior (TPB), Ajzen (1991) suggested that individuals' behavior can be influenced by subjective norms, such as family, friends, colleagues, etc. When individuals perceive that people in their social networks perform green purchase behavior, they may be more likely to engage in similar behavior associated with their social norms; thus, establishing a high level of relational value (Ruangkanjanases et al., 2020). Consumers' relational value is argued to be linked to the product quality value (Fakfare et al., 2020). This relationship can be enhanced by real-time information sharing with peers who have common green consumption habits, such as exchange of updated green product information, green purchase experiences and green consumption patterns (Ng & Cheung, 2022). The relational value of the customers would be strengthened when they perceive good quality value of green products would deliver a sustainable lifestyle (Ruangkanjanases et al., 2020) that impacts on consumers' green purchase behavior. Therefore, this study conceptualizes relational value as an important factor predicting green product value. Thus, the following hypothesis is suggested:

H2: Consumers' relational value is positively related to green product value.

2.1.3 Emotional value

Emotional value denotes the employment, pleasure and fulfilment people receive when using products or services (Kim et al., 2012). It is the perceived value obtained from a different capacity

to elicit sentiments or emotional states. Participation in social welfare provides emotional fulfilment to customers; their emotional reactions impact their purchasing decisions. However, little research has found an association between emotional value and customer preference for green products (Joshi et al., 2021). According to Tandon et al. (2020), green customers are more focused on individual emotional enjoyment than environmental impacts. Previous studies suggested that when customers experience pleasure and excitement in consumption, they are more likely to perceive that the products are of high quality (Amatulli et al., 2020; Asshidin et al., 2016). This suggested that emotional value would predict product quality in green purchases. Thus, the following hypothesis is suggested:

H3: Consumer's emotional value is positively related to green product value.

2.2 Perceived green product value

Perceived quality represents consumers' overall assessment on the superiority of a product (Zeithaml, 1988). Green product value is the characteristics of product properties, product package, and product design related to conserving energy, minimizing pollution, recycling of waste, and performing environmental behavior (Gelderman et al., 2021). The features of green products are eco-labeling, non-polluting elements, recycling capacity, high energy efficiency, and a general guarantee of minimal ecological damage (Negi et al., 2023). Previous research suggested that consumer perception of green product value influences green purchasing, attitude, and loyalty intentions (Huo et al., 2022; Dangelico et al., 2021). However, few research has examined the effect of green product value on consumers' motivation to make purchases in green consumption context (Ek Styvén & Mariani, 2020). Previous research examined that perceived product/ service quality strengthens the motivational forces in the context of mobile banking, Rahi et al. (2019) and Inan et al. (2023) demonstrated that when individuals perceived higher product or service quality, it enhances the motivational forces driving their engagement and adoption of the services. Gilal et al. (2019) conducted a review study that marketing efforts, such as products, messages, play a crucial role in influencing customers' motivation to act. Similarly Bazi et al. (2020) demonstrated how perceived brand quality play its role in motivating customers to engage with luxury brands on social media.

Overall these studies suggested that customers who believe products or services are of high product value or quality are more motivated and subsequently to take purchase or other behaviors, such as acting on their environmental agendas and make green purchase intention (Ahmad & Zhang, 2020). Yet, the link between green product value and types of motivations (i.e. external, introjected, identified and integrated regulations) are not clearly identified in green purchase context. To response the research call from Rahman et al., (2023) regarding examining the link between value and different motivation types, we assume that green product value is positively related to the types of regulation in self-determination theory (SDT), such as external regulation, introjected regulation, identified regulation and integrated regulation. The following hypotheses are suggested:

H4: Green product value is positively related to external regulation.

H5: Green product value is positively related to introjected regulation.

H6: Green product value is positively related to identified regulation.

H7: Green product value is positively related to integrated regulation.

2.3 Self-determination Theory

Multiple motivation regulations are identified in SDT (Deci & Ryan, 2000; Howard et al., 2020), each with distinct perceptions and complexities. On a self-determination continuum, these types of regulations can also be instructed consistently (see Fig. 1; Richards et al., 2021), ranging from most self-determined (i.e., intrinsic motivation) to partially self-determined (e.g., introjection) to an absence of self-determination (i.e., amotivation). Research also identified these four types of regulations into two types of motivation: (1) autonomous motivation (integrated regulation and identified regulation) and (2) controlled motivation (introjected regulation and external regulation) (Yates & Patall, 2021) (Figure 1). The categorization of the types of regulations allows researchers to recognize the types of motivation behind human intention and understand the factors that impact behaviors. Given that multiple types of motivation all distribute into a degree of self-determination, questions have been raised about the value of evaluating different types of motivation regulation (i.e., a multidimensional approach) versus a single-dimensional approach that quantifies the overall degree of skilled self-determination (MCCoy et al., 2022). Previous studies discuss motivation regulations in SDT in the context of education (i.e. students' motivation, students' meaning in life), business (i.e. consumption practice, effective strategies, business decision, marketing) (Zhang et al., 2022). The impact of motivation regulations on green purchases is unknown. Thus, this study examined the influence of four types of regulations on green purchase intention derived from perceived values.

A consumer is more motivated to purchase green products			
<i>Controlled Motivation</i>		<i>Autonomous Motivation</i>	
External Regulation	Introjected Regulation	Identified regulation	Integrated regulation
because his/her beloved one wants him/her to purchase green products	because he/she experiences shame and remorse about not purchase green goods	because he/she comprehends the significance of purchasing green items	because of his/her innate interest in the consumption of green products

FIGURE 1 Illustration of motivation regulations

2.3.1 External regulation

External regulation is the psychological condition that occurs when people seek out externally imposed incentives and/or avoid externally applied penalties. Although SDT shows that external regulation might influence short-term behavior, it also depicts external regulation as a low-quality kind of motivation that frequently undermines more self-determined goals (Howard et al., 2021). However, some systems incorporate external assessments and incentives to encourage learning, such as high stakes testing regulations that are predicted to create increased student accomplishment. According to Chen et al. (2019), external motivation develops when an individual desires to get a reward or avoid punishment from outside forces. Kumar et al. (2021a) showed that external regulation has a significant influence on brand love among male buyers in this situation. Based on these findings, we anticipate discovering a link between external incentives and intention to green purchase. Therefore, the following hypothesis is suggested:

H8: External regulation is positively related to green purchase intention.

2.3.2 Introjected regulation

Introjected regulation is another intrinsically motivated but extrinsically oriented type of motivation described in SDT. This is a condition characterized by internal self-esteem dynamics such as guilt and shame avoidance, and pride seeking. Introjected regulation is distinguished by ego involvement (Howard et al., 2021) since the objective is to acquire and retain acceptance from oneself and others. Achievement goal theories, stability of self-esteem views and theories centered on contingent self-esteem have all included introjection and ego involvement in academic contexts. Consumers may be driven to carry out behaviors to avoid emotions of disgrace. In the context of branding. Introjected motivation had a considerable beneficial influence on young consumers' brand enthusiasm. Gilal et al. (2019) on the other hand, demonstrated that introjected incentive had only a little impact on consumer loyalty in the category of service. These disparate findings should be reviewed to confirm a relationship between introjected motivation and green consumer behavior. Therefore, the following hypothesis is proposed:

H9: Introjected regulation is positively related to green purchase intention.

2.3.3 Identified regulation

Identified regulation is a condition in which individuals engage in actions based on their considered personal worth and purpose, regardless of whether such acts are fundamentally pleasurable (Chen & Lin, 2019). Hence, identified regulation is regarded as a largely self-determined kind of motivation in SDT, and it is projected to produce good learning attitudes and results. Similarly, such personal valuing of conduct is a positive motivational force in student accomplishment in expectancy-value theories. According to Lahindah et al. (2018), people prefer to acquire a product when they understand the benefits of acquiring the product or service. Pham et al. (2020) also mentioned that customer brand passion is substantially impacted by justifications, this research forecasts that identified motivation should be connected to green behavior. Similarly, Farrukh et al. (2023) conducted an empirical study that related identified motivation to service loyalty. Thus, the following hypothesis is suggested:

H10: Identified regulation is positively related to green purchase intention.

2.3.4 Integrated regulation

Integrated regulation is a highly self-determined type of extrinsic incentive. Individuals incorporate the execution of a behavior into their sense of self when prompted by integrated regulation, whereby the conduct becomes a completely congruent piece of their identification. As previously stated, a variety of factors impact consumer behavior. Prior research has found mixed findings about the influence of different motivator types on consumer behavior. A recent study by Tandon et al. (2020) found that integrated regulation of motivation had a favorable impact on consumers' brand love. Furthermore, Dewnarain et al. (2019) found that integrated drive had a strong beneficial impact on client commitment in marketing management study. However, research has shown that integrated motivation has a detrimental impact on customer brand

commitment (Sun et al., 2021). Raimondo et al. (2022) discovered a negative relationship between integrated drive and consumer attitudes for high-end brands. In accordance with these findings, we propose the following hypothesis:

H11: Integrated regulation is positively related to green purchase intention.

2.4 The interrelationship between CVT and SDT

Customer value theory and self-determination theory are two distinct but interrelated concepts that are important in understanding customer behavior and preferences (Nazir et al., 2021). Customer value theory explains the value that customers perceive in products and services, while self-determination theory focuses on the motivational forces that influence motivation and behavior, establishing value-motivation-behavior (Rahman et al., 2023). Green purchase intention may be influenced by customer's perceived values as well as motivational forces. For example, individuals buy green products so as to receive rewards or avoid punishments (i.e. external regulation) (Tandon et al., 2020). They would also buy green products because of out of guilt (i.e. introjected regulation) or they comprehend the significance of the green products purchased (i.e. identified regulation) (Yang et al., 2021). Individuals buy green products because they have developed innate interests in consumption of green products (i.e. integrated regulation) (Chen et al., 2016). Therefore, this study integrates CVT and SDT to provide a novel theoretical framework in shaping green purchase intention. Other than enriching the theoretical framework in green business research, understanding values that customers perceive in green products and motivational factors that influence their green purchase intention can help companies create or promote green products that meet the needs and motivations of their customers.

2.5 Green Purchase Intention

Green purchase intention is defined as the ability and desire of a consumer concerned in the environment and conscious issues can choose an environmentally friendly product more than a conventional product (Kumar et al., 2021b), considering that most of the production process still has a significant negative impact on the environment. Using green products in daily life benefits the environment by reducing pollution (Khan et al., 2020), which could directly improve our health. Previous studies employed different theoretical frameworks to study green purchase intention, including the Theory of Planned Behavior, Theory of Reasoned Action, Value Orientation Model, Norm Activation Theory, Value-Belief Norm Theory, Cognition-Affect-Behavior, Self-determination Theory, etc. (Sharma et al., 2022). In green purchase context, there are multidimensional factors that can influence an individual's intention to engage in green purchasing behavior, such as social norms, personal values, perceived values, motivation levels, environmental knowledge, trust, environmental attitudes (Khalek & Chakraborty, 2023; Dangelico et al., 2021). To response the research call from Roh et al. (2022), different perceived values and different types of motivational factors should be investigated to explain purchase intention in green product context. Therefore, in this study, we proposed that green purchase intention will be influenced by different types of consumption values and different types of motivation. Based on previous literature and our arguments, we proposed a research model to investigate factors motivating consumers' green purchase behavioral intention (Figure 2).

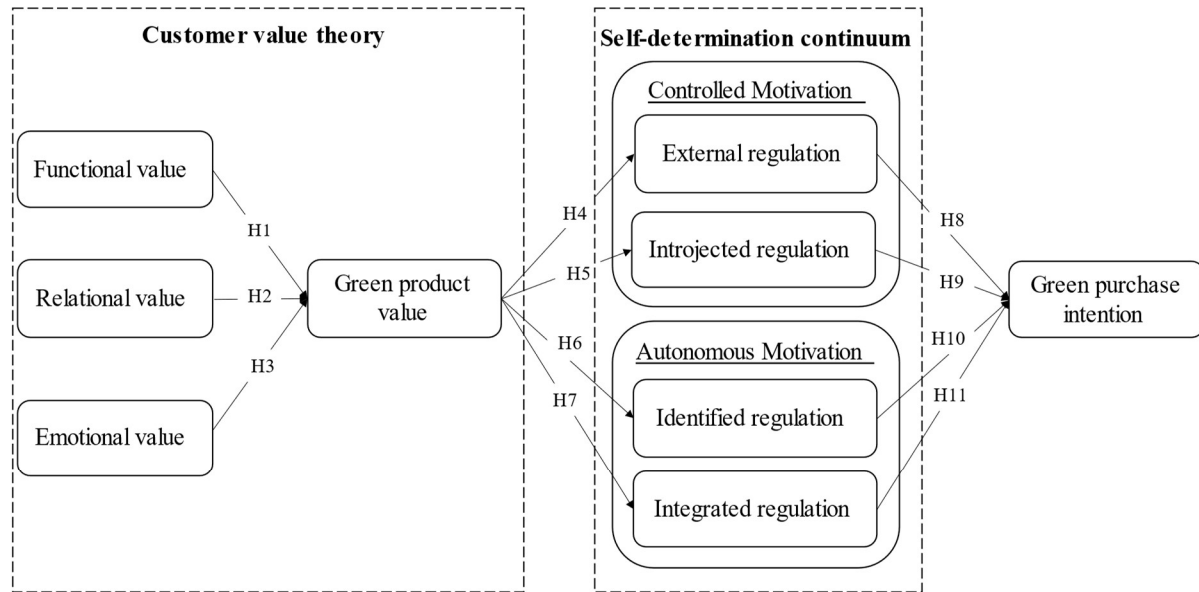


FIGURE 2 Proposed research model

3 METHODOLOGY

3.1 Sample and data collection

To answer the research questions, a cross-sectional survey among Chinese consumers was conducted. Respondents from China were recruited using a judgmental sampling method via an online platform based on one inclusion criterion to test the hypotheses. For the inclusion criterion, participants were asked whether they had purchased green products (e.g., recycled toilet paper, recycled plastic toothbrushes, reusable shopping bags, and any other green products) in the previous three months to ensure that respondents had recent experience in purchasing green products. Participants who met the selected criteria were invited to complete an online survey. In contrast, individuals who did not meet the selected criteria had to remove from the study. Data collection began in February 2022 and ended in May 2022. A brief sample description of respondents is provided in Table 1.

TABLE 1 A brief sample description of respondents

	Research sample	
	<i>N</i>	%
Sex		
Female	140	45.3%
Male	169	54.7%
Age		
Under 25	94	30.4%
25-34	132	42.7%
35-44	45	14.6%
45-55	30	9.7%
Over 55	8	2.6%
Monthly income (US dollars)		
Below 1500	33	10.7%
1501 ~ 4000	149	48.2%
4001~7000	74	23.9%
7001~12,000	34	11%
12,001~19,000	14	4.5%
Above 19,000	5	1.6%
Education level		
Secondary school student	52	16.8%
Sub-degree	20	6.5%
Bachelor's degree holder	189	61.2%
Master's degree holder	27	8.7%
Doctorate degree holder	21	6.8%

3.2 Instruments and measures

A final questionnaire was developed after pre-test and back-translation procedure. To ensure better comprehension, the survey items were translated into Chinese by two independent researchers who are competent for two languages. Then a pre-test was conducted to know if there were any difficulties in understanding the questions in the survey (Gürbüz, 2017). A sample of 12 consumers was used in the pre-test and small changes were made to improve the clarity of the questionnaire. After that, the Chinese version of the questionnaire was translated into English and back-translated into Chinese, achieving conceptual equivalence and accuracy in the final questionnaire (Berry, 1980). The survey was divided into two sections. Section one collected demographic information on the respondents' gender, age, monthly income, and level of education, which were employed as controlled variables. Section two collected the measurement items, including customer perceived values (functional, relational, emotional), perceived green product value, self-determination continuum (external, introjected, identified, and integrated regulation)

and green purchase intention. For perceived values, three-item green product functional value (e.g., "I think purchasing green products is helpful for me"), three-item green product relational value (e.g., "purchasing green products helps me build a better relationship with peers"), three-item green product emotional value (e.g., "I think purchasing green products is fun"), and four-item green product value (e.g., "I think green products are the best eco-friendly products") were adapted from Pahlevi & Suhartanto (2020) and Dangelico et al. (2021). For self-determination continuum, four-item external regulation (e.g., "other people will be upset if I don't buy green product"), two-item introjected regulation (e.g., "I would feel guilty if I didn't purchase green product"), three-item identified regulation (e.g., "green purchase is a sensible thing to do"), and integrated regulation (e.g., "green purchase is an integral part of my life.") were adapted from Chen et al. (2016). Lastly, three-item green purchase intention (e.g., "In future, I plan to switch to a green version of a product") were adapted from Joshi et al. (2021). All the items were rated in seven-point Likert scales from "strongly disagree" to "strongly agree".

3.3 Data analysis

The model was analyzed in this study using SmartPLS 4.0 and Partial Least Square Structural Equation Modeling (PLS-SEM). The SEM method performed better than the alternatives such as regression analysis. SEM can run all model variables simultaneously rather than singly, yielding a more accurate evaluation (Ringle et al., 2015). For the following reasons, PLS-SEM also used covariance-based approaches. First and foremost, normal distribution was unnecessary. Second, PLS-SEM was capable of handling complex models with a large variety of indicators. Third, as recommended by Hair et al. (2016), the required sample size in the proposed model was 10 times the maximum amount of internal or external connections of all latent variables. There was a total of 9 connections in the conceptual model. As a result, 305 respondents in this study were sufficient.

The proposed model was analyzed in two steps using PLS-SEM (Hair et al., 2016). The first step was to examine the model and test the constructs' validity and reliability. The second step involved evaluating the hypothesized relations between constructs. Bootstrapping with 5,000 samples was used to assess the direct effects.

4 RESULTS

4.1 Measurement model

According to Hair et al. (2016), the measurement model was examined in three steps. Firstly, we investigated the proposed model's composite reliability (i.e. internal consistency). The threshold level for composite reliability should be greater than 0.7. Table 2 shows that all the latent variables remained in the acceptable range of 0.70 or higher. Secondly, we evaluated convergent validity, which is the extent to which a question item is associated to other question items from the same construct, as tested by the average variances extracted (AVE) value of latent variable. Hair et al. (2016) recommended that an AVE level of 0.5 or higher is acceptable, and the results of this study disclosed that the AVE values of all latent variables are within this range. Thirdly, Fornell & Larcker (1981) suggested that no inter-construct correlation was found higher than the square root of the AVE value of the construct. Henseler et al. (2015) suggested that a Heterotrait-monotrait (HTMT) ratio less than 0.9 is used to verify one construct's measure is not linked to other

constructs. The results revealed that Fornell & Larcker's (1981) criterion is met, and all the HTMT values less than 0.90 which met the threshold level (see Table 3).

In addition, the variance inflation factor (VIF) among constructs was conducted to check the issue of multicollinearity. Suggested by Hair et al. (2021), the VIF value should be less than five. In this study, all the values of VIF are less than five; thus, there are no collinearity issues exist among the constructs (Table 4).

Furthermore, when using cross-sectional design and self-reported measures, common method variance (CMV) can be a potential threat to the validity of our research findings (Tehseen et al., 2017). In PLS-SEM context, CMV may occur due to common method bias (CMB) and social desirability bias. To check the common method bias, this study employed Harman's single factor test and correlation matrix process. The total variance explained by single is 42.33%, which is less than 50% (Podsakoff et al., 2003), confirming the absence of CMB. Regarding social desirability bias, the respondents were guaranteed anonymity in filling the online survey and the respondents was not asked to provide any personal identity information (e.g. ID card number, mobile phone number) in their participation. Thus, the respondents should not feel pressure to answer the question items in the survey; thus, social desirability bias can be minimized.

4.2 Structural model

The PLS bootstrap method was used to calculate the path coefficients and t-values (Figure 3). As shown in Table 5, green product value was positively associated by functional value ($\beta = 0.38$, $p < .05$), relational value ($\beta = 0.21$, $p < .05$), and emotional value ($\beta = 0.29$, $p < .05$). H1-H3 were supported. Green product value was positively associated with external regulation ($\beta = 0.52$, $p < .05$), introjected regulation ($\beta = 0.63$, $p < .05$), identified regulation ($\beta = 0.62$, $p < .001$) and integrated regulation ($\beta = 0.74$, $p < .001$). Hence, H4-H7 were supported. Lastly, green purchase intention was positively associated by autonomous motivation, which were identified regulation ($\beta = 0.34$, $p < .001$), integrated regulation ($\beta = 0.50$, $p < .001$) but not associated by controlled motivation, which were external regulation ($\beta = -0.072$, n.s.) and introjected regulation ($\beta = 0.031$, n.s.). Thus, H8 and H9 were not supported while H10 and H11 were supported. The control variables (gender, age, monthly income, and education level) are found to have no significant impact (age: ($\beta = .xxx$, $t = 0.xxx$); gender: [$\beta = .xxx$, $t = 0.xx$]; month income: ($\beta = .xxx$, $t = 0.xxx$); and income: ($\beta = .xxx$, $t = 0.xxx$)).

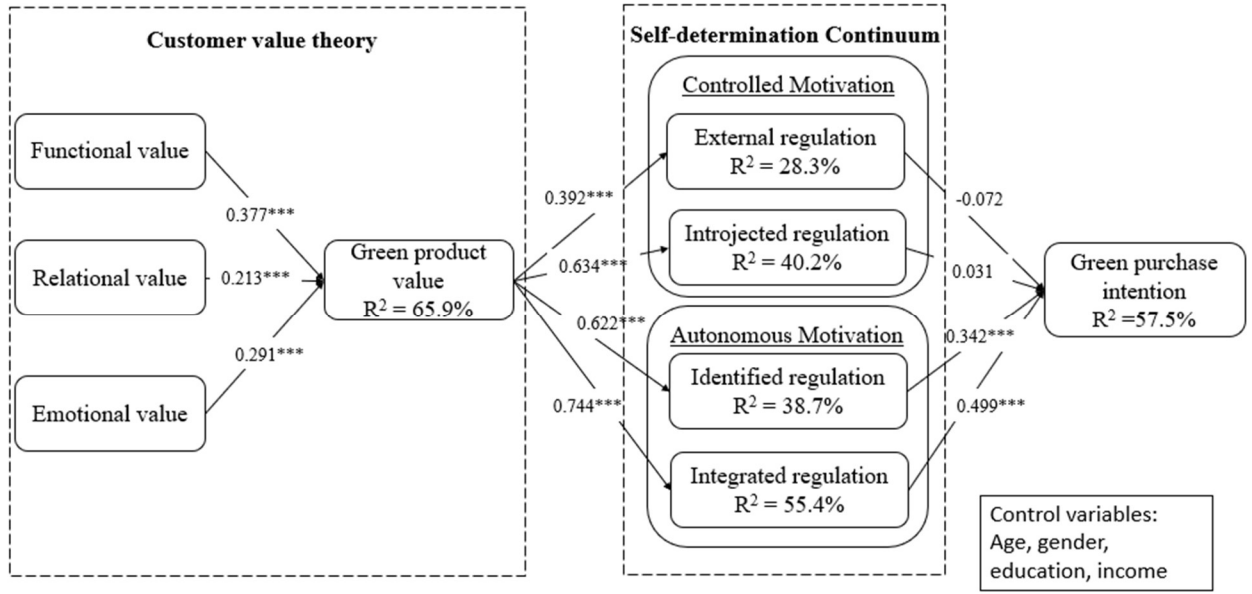


FIGURE 3 PLS results of the structural model

TABLE 2 Reliability and validity

Scale & items	Loadings	Composite reliability	AVE
Functional value (Mean = xxx; SD = xxx)		0.937	0.833
FV1 I think purchasing green products is helpful for me.	0.910		
FV2 I believe purchasing green products is useful for me.	0.907		
FV3 I think purchasing green products is functional for me.	0.921		
Relational value (Mean = xxx; SD = xxx)		0.961	0.891
RV1 Purchasing green products help me build a better relationship with my peers.	0.937		
RV2 Purchasing green products could enable me to build a greater connection with my peers.	0.949		
RV3 Purchasing green products could help me maintain a long term relationship with my peers.	0.945		
Emotional value (Mean = xxx; SD = xxx)		0.928	0.810
EV1 I think purchasing green product is fun.	0.893		
EV2 I believe purchasing green products is exciting.	0.922		
EV3 I think purchasing green products is entertaining.	0.885		
Green product value (Mean = xxx; SD = xxx)		0.885	0.661
GPQ1 I think green products are the best eco-friendly products.	0.844		
GPQ2 I think green products are having a good image of the environment.	0.879		
GPQ3 I believe green products are good products for the price.	0.829		
GPQ4 I think green products are able to help preserve the environment.	0.885		
External regulation (Mean = xxx; SD = xxx)		0.936	0.784
ER1 Other people will be upset if I don't buy green product.	0.892		
ER2 My friends insist that I purchase green product.	0.886		
ER3 I purchase green product for the recognition from others.	0.886		
ER4 I purchase green product to avoid being criticized about not doing it.	0.878		
Introjected regulation (Mean = xxx; SD = xxx)		0.958	0.919
Intro1 I would feel guilty if I didn't purchase green products.	0.957		
Intro2 I would feel bad if I didn't purchase green products.	0.960		
Identified regulation (Mean = xxx; SD = xxx)		0.907	0.765
Iden1 Green purchase is a sensible thing to do.	0.899		
Iden2 Green purchase is a reasonable thing to do.	0.847		
Iden3 Green purchase is a good idea to do.	0.877		
Integrated regulation (Mean = xxx; SD = xxx)		0.940	0.839
Int1 Green purchase is an integral part of my life.	0.936		
Int2 Green purchase has become a fundamental part of who I am.	0.891		
Int3 Green purchase is part of the way I've chosen to live my life.	0.920		
Green purchase intention (Mean = xxx; SD = xxx)		0.892	0.734
GPI1 Purchasing green products makes me feel good.	0.916		
GPI2 Purchasing green products makes me feel satisfied.	0.746		
GPI3 Purchasing green products makes me feel reliable.	0.899		

TABLE 3 Discriminant validity

Fornell-Larcker Criterion									
Construct	Green product value	Emotional value	External regulation	Functional value	Green purchase intention	Identified regulation	Integrated regulation	Introjected regulation	Relational value
Green product value									
Emotional value	0.883								
External regulation	0.577	0.632							
Functional value	0.874	0.896	0.593						
Green purchase intention	0.870	0.803	0.392	0.816					
Identified regulation	0.757	0.722	0.301	0.795	0.802				
Integrated regulation	0.849	0.730	0.654	0.707	0.802	0.738			
Introjected regulation	0.720	0.714	0.669	0.674	0.596	0.559	0.797		
Relational value	0.793	0.867	0.757	0.764	0.663	0.527	0.865	0.729	
HTMT ratio									
Construct	Green product value	Emotional value	External regulation	Functional value	Green purchase intention	Identified regulation	Integrated regulation	Introjected regulation	Relational value
Green product value									
Emotional value	0.883								
External regulation	0.577	0.632							
Functional value	0.874	0.896	0.593						
Green purchase intention	0.870	0.803	0.392	0.816					
Identified regulation	0.757	0.722	0.301	0.795	0.802				
Integrated regulation	0.849	0.730	0.654	0.707	0.802	0.738			
Introjected regulation	0.720	0.714	0.669	0.674	0.596	0.559	0.797		
Relational value	0.793	0.867	0.757	0.764	0.663	0.527	0.865	0.729	

TABLE 4 Outer VIF values

Constructs	VIF
Functional value	2.365
Relational value	2.749
Emotional value	2.555
Green product value	2.365
External regulation	1.858
Introjected regulation	2.394
Identified regulation	1.931
Integrated regulation	3.239
Green purchase intention	2.092

TABLE 5 Summary of PLS-SEM path analysis

Path	Hypothesis	path coefficients	t-statistics	p-values	Conclusion
Functional value → Green product value	H1	0.377	6.023	0.033*	Supported
Relational value → Green product value	H2	0.213	4.030	0.000***	Supported
Emotional value → Green product value	H3	0.291	4.595	0.000***	Supported
Green product value → external regulation	H4	0.520	12.924	0.000***	Supported
Green product value → introjected regulation	H5	0.634	18.015	0.000***	Supported
Green product value → identified regulation	H6	0.646	19.800	0.000***	Supported
Green product value → integrated regulation	H7	0.744	24.578	0.000***	Supported
External regulation → green purchase intention	H8	-0.069	1.328	0.167	Not supported
Introjected regulation → green purchase intention	H9	0.030	0.425	0.656	Not supported
Identified regulation → green purchase intention	H10	0.383	5.629	0.000***	Supported
Integrated regulation → green purchase intention	H11	0.475	5.633	0.000***	Supported

*p < 0.05; ***p < 0.001

5 DISCUSSION

To examine how consumers' perceived values influence different types of motivation in adopting green purchase behavior, three research questions are developed in the context of green purchases. First, what are the underlying mechanisms between perceived values, self-determination spectrum and green purchase intention? Drawing from CVT, results show that functional, relational, and emotional values perceived by consumers could predict green product value, supporting H1, H2, and H3. The findings are consistent with previous studies (Kim et al., 2012; Fakfare et al., 2020; Amatulli et al., 2020) that consumers' functional value, relational value and emotional value towards green product are associated with green product value. When consumers believe that a green product is useful, and when they would share with their peers regarding the green product information with enjoyment and excitement, they are more likely to perceive that the green products are with good quality standard that can help preserve the environment. Therefore, perceived green product value in purchasing green products is influenced by functional, relational and emotional value in this study.

Second, how does green product value influence different types of regulations in self-determination continuum? Green product value has an impact on consumers' controlled motivation (i.e. external and introjected regulation) and autonomous motivation (i.e. identified and integrated regulation) supporting H4, H5, H6, and H7. Our results were consistent with the findings of Medalla et al. (2021), Bazi et al. (2020) and Nadeem et al. (2020) that green product value is an essential driver of motivation in green consumption. The result further strengths the role of green product value on the relationship between perceived values and different motivation types. It shows that consumers are emphasizing more on the green value of products, such as whether the green products have eco-friendly elements, good environmental image that can help preserve the environment. With regard to SDT, when consumers find the green product is of significant green quality, they will be engaged in green consumption through differential motivational factors (Riva et al., 2022; Chen et al., 2016), such as receiving a reward of buying green products (external),

avoiding feelings of shame when buying green products (introjected), realizing product benefits of green buying (identified), and innate interest in green purchase (integrated).

Third, how different types of regulations enhance the intention to purchase green products? The results indicated that autonomous motivation (identified and integrated regulations) could influence consumers' intention to purchase green products. The result, supporting H10 and H11, confirms a positive relationship between autonomous motivation and green purchase intention, aligned with previous findings (Chen et al., 2016; Li et al., 2020) that autonomous motivation is a more reliable motivation that could generate behavioral intention in the long run. However, the relationship between controlled motivation (external and introjected regulations) and green purchase intention is insignificant, failing to support H8 and H9. It infers that consumers are not motivated to engage in green purchase even when receiving rewards and recognition with the purchase (i.e. external regulation). Similarly, even if making purchase could avoid guilt feelings (i.e. introjected regulation), consumers are not motivated either. The results were inconsistent with Gilal et al. (2020) that external motivation is vital for environmental protection. There are possible reasons for the inconsistent results. First, the study by Gilal et al. (2021) examined the impact of motivation types on green consumers' behavior of young adults with the majority age ranged from 25 – 34 years old. Thus, young adults may be more motivated by adopting green practices through external motivation (e.g. rewards, incentives). Second, the monthly income level of respondents in Gilal et al. (2021)'s study is around PKR\$30,000 (~US\$108) which is below the median monthly level (US\$287) in Pakistan (Shah et al., 2022); whereas in our study, respondents' monthly income level is around US\$4,500 which is slightly higher than the median monthly income level (US\$3,900) in China (Time Doctor, 2023), resulting in different motivation outcomes on green purchase behavioral intention. Third, Gilal et al. (2020) did not include integrated motivation as one of the extrinsic motivational factors in the study.

Accordingly, our study found that autonomous motivation (identified and integrated regulations) has a significant effect on green purchase intention. This implies that green purchase is often motivated by personal values and belief (Han, 2020). In China, consumers buy green products by a sense of personal responsibility and a desire to protect the environment, reducing environmental impacts (e.g. air pollution) (Sang et al., 2020). Therefore, green purchase intention was driven by autonomous motivation more than by controlled motivation, because Chinese people are interested in joyfulness and self-fulfilment beyond turnover (e.g. social approval, monetary rewards, etc.) in developing a sustainable daily life (Zhang et al., 2023).

5.1 Theoretical contributions

The present study contributes to the green consumption literature by advancing the understanding on the influence of perceived values and different motivation types on consumers' green purchase intentions. First, this study provided a novel perspective by linking perceived values and different motivation types to green purchase intention under the theoretical notion of CVT and SDT. The findings confirm that functional, relational and emotional values of green products predict customer's overall product assessment, i.e. green product value; the green perceived values influence both controlled (external and introjected) and autonomous (identified

and integrated) motivations. The motivational forces of identified and integrated regulation in turn affect consumers' green purchase intention.

Second, this study presented an integrated CVT and SDT to understand green purchase intention; thus, it extends the understanding of the green purchasing by acknowledging the importance of green product value that links the relationship between customers' perceived values (functional, relational and emotional) and motivation types (external, introjected, identified and integrated). The findings explicitly confirm the crucial role of green product value in determining consumer's motivational factors, as Rahman et al. (2023)'s suggestion on future studies.

Third, this study reasonably explained the significant relationship between autonomous motivation and green purchase intention. The study provides a robust and reliable research model with adequate explanatory capacity ($R^2 = 57.5\%$) to predict consumers' green purchase intention. The framework may be applied in other studies for a more comprehensive understanding of customers' green purchase and sustainable consumption.

5.2 Practical implications

This paper offers practical implications to green businesses and government. Perceived green product value is essential to address as it is generated by different perceived values and connects to motivation in purchasing green products. Businesses can utilize emotional advertising to promote green and create emotional value perceived by the customers. In particular, the emotional connection that appeals to the customer's emotions, emotional advertising refers to the link between the brand or product and the consumer (Trump & Newman, 2021). For instance, they can compare the green and non-green alternative products from their productions to litter to stir up the feelings and emotions. Customers may find green consumption more sustainable and harmless to the environment and the creatures thus consume the green products.

To strengthen relational value of green products, green businesses could hold online group buying and group membership for green products (Kim et al., 2021). Many businesses have already adopted this approach in which customers could consume products online with others as a group to gain discounts. Some businesses allow customers to receive some discounts by sharing their consumption records or the products e.g., Uber, and Amazon (Qiao et al., 2021). Green businesses could take reference to these businesses, allowing customers to share their interest in green consumption and their intention to stay sustainable with their family and friends. Hence, like-minded people would be grouped together and consume green products with more discounts. Therefore, as a business strategy, green businesses could utilize relational value to generate green product value and motivation for green consumption.

To enhance the functional value of green products, green businesses could use eco-labelling on green products as a business strategy (Fazal-e-Hasan et al., 2023). Ecolabeling aims to benefit the market forces by informing consumers about the environmental profile of items, such as environmentally safe manufacturing and residual disposal procedures, recycling potential, and consumption quality (Jacobs & Hörisch, 2022). Providing customers with functional information and features of green products has several advantages. Consumer attraction suggests that by educating customers on the environmental advantages of green products, the company can trigger

their interest in environmental issues and create a purposeful demand for a certain category of green products (Erdmann & Ponzoa, 2021). The environmental labels could also indicate corporate social responsibility to customers, the public, partners, and regulators and enhance its public standing. Moreover, when the functional value of the customers is generated, they would perceive the green products as more environmentally valuable. Thus, green businesses could utilize the functional value to create green product value, motivation and intention to purchase green products.

Governments could provide a regulatory framework for business operations that generate both emotional and functional values, aiming to restrict the environmentally harmful and encourage environmentally friendly business behavior, creating values by acknowledging the impact of human actions on the environment and acting in response to customer pressure. These acts cause more people to "go green," increasing their green buying volume, and add green value. Examples include the laws and regulations governing environmental taxation, green public procurement, integrated product policy, eco-labelling, and eco-auditing. To be qualified to operate for and with the government, businesses must achieve specific environmental performance requirements, or "ISO 14000," according to green public procurement (Elrick-Barr, et al., 2022). Thus, the regulatory pressure allows the customers to feel secure in consuming the green products for daily use. Individuals who are environmentally aware could act on their own or work together to make changes.

Furthermore, governments and businesses can enhance environmental awareness and encourage environmentally safe practices through public promotion and education campaigns (Khan, et al., 2020). By emphasizing that individuals' green behaviours are manifested through their personal choices, such as a sense of personal alignment with their personal value and integration of sustainable practices into their daily lives. This, in turn, can induce autonomous motivations and in turn increase the likelihood of green purchases.

5.3 Limitations and future research

This study has provided comprehensive findings, yet with some limitations. First, the respondents were recruited in China, and the results may only be applicable to Chinese society and Chinese cultures. Further study could recruit respondents from different countries with different cultures to find out the difference in green consumption between collectivistic and individualistic cultures using perceived values and different motivation types. Second, correlations were assessed in the findings. Further study could equip laboratory or field experiments to examine the causation between perceived values, motivation regulations and purchase intention towards green products. Third, 60% of the respondents in this study were above the median monthly income in China (i.e., US\$3,900 in March 2022) (Time Doctor, 2023). Further study could conduct Multigroup analysis (MGA) to investigate the difference between the low and high-income groups in green consumption.

6 CONCLUSION

This study examines the underlying mechanisms between perceived values, self-determination spectrum, and green purchase intention. Our research reveals that consumers' perceived green product value influences different motivation types, and in turn affects their green purchase

behavioral intention. While the literature has examined many perceived values of customers, this study delivered the key role of green product value which is a vital value in driving customers' motivational factors in the context of green purchases. It is noteworthy that autonomous motivation (identified and integrated regulations) positively increases green purchase intention among Chinese consumers. As demonstrated in this study, to encourage the intention to consume green products, establishing perceived green product value is essential to create autonomous motivation while functional, relational and emotional values are important factors to trigger green product value. This study has contributed to the literature on CVT, SDT and green business strategy regarding the theoretical implications. Practical implications are provided to green businesses and the government to generate perceived values and motivation types of customers to make green purchase decision. This research is crucial in the context of green purchases and their potential contribution to sustainable living.

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