



Does green trust mediate the relationship between green knowledge and purchasing behaviour of the youth in Saudi Arabia?

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ABSTRACT

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With the increasing popularity of environmental issues and discussions, it is important to understand the factors influencing green purchase decisions. This study investigates how green trust mediates the relationship between green knowledge and purchasing behavior. Using convenience sampling, questionnaires were distributed to 400 Saudi Arabian consumers from diverse backgrounds. The data were analyzed through PLS analysis. The findings indicate that green trust positively affects green purchasing behavior and partially mediates the relationship between green knowledge and green purchasing behavior. The results confirm that green knowledge has a direct positive impact on green purchasing behavior. Additionally, stronger green trust enhances green knowledge, which in turn increases the likelihood of consumers engaging in green purchasing behavior. Managers should focus on building consumer trust regarding their environmental claims by being transparent, authentic, and verifiable in their green practices. Trust is a crucial element that can improve green purchasing behavior. Furthermore, investing in consumer education campaigns to increase green knowledge is recommended, as informed consumers are more inclined to make environmentally friendly purchases when they believe the brand is environmentally responsible. Lastly, the overall relationship between consumer awareness and green purchasing intentions can be strengthened through trust-based green marketing strategies, including eco-certifications, transparent sustainability reporting, and reliable brand communication. Emphasizing credibility and consumer trust is essential to promote environmentally responsible purchasing, providing valuable insights for sustainable marketing approaches.

Contribution/Originality: This study is one of the few investigations that have examined the interrelationships between green knowledge, trust, and purchasing behavior within the Saudi food industry. It contributes to the existing literature by providing a clearer understanding that trust partially mediates the relationship between green knowledge and purchasing behavior among Saudi consumers.

1. INTRODUCTION

For governments, businesses, and consumers worldwide, environmental sustainability has become a significant concern due to its consequences. As concerns over pollution, climate change, and resource depletion increase, environmentally friendly or green behaviors and purchasing decisions are becoming more important (Alamsyah, Othman, Bakri, Udjaja, & Aryanto, 2021). Therefore, business organizations and marketers need to be competitive in implementing solutions to the growing environmental challenges to ensure sustainable development over the long term (Choudhary & Gokarn, 2013). Sustainable development is understanding the strengths and links between human

needs and the environment (Yusoff, 2020). The need for sustainable development motivates marketing researchers and practitioners to integrate green marketing into their perspectives and strategies. Green marketing is a business approach aimed at developing a greener economy in pursuit of sustainable development (Ofori, 2021), which promotes social and environmental issues among consumers (Cachero-Martínez, 2020). All marketing operations which actively assist with environmental challenges and simultaneously resolve environmental complications fall under the scope of green marketing (Sabri, Mansor, & Musa, 2020). Eun-Jung (2020) described green marketing as fundamental to cleaner production and sustainability in corporate management. Therefore, sustainability must be incorporated into marketing strategies (Vuong, Lam, & Bui, 2024).

Business organizations must undergo a transformation from traditional marketing strategies to green marketing strategies to survive in the environmentally conscious competitive domain and to positively impact the environment through green marketing elements. Research indicates that green marketing elements produce beneficial environmental outcomes (Govender & Govender, 2016). Certain consumers base their purchasing choices on sensible judgment because their expertise and past experiences influence their buying decisions. However, consumers' environmental knowledge demonstrates that these buyers understand how essential environmental protection is for sustainable existence (Kim & Lee, 2023). Nevertheless, the interest consumers have in green marketing and other social concerns varies across nations, as these differences help in understanding the challenges related to environmental issues and variations in consumer purchasing conditions. Therefore, for consumers to adopt responsible consumption decisions, it is essential to assume that they understand the outcomes of their purchase choices to make these decisions successfully (Bishoge, Kombe, & Mvile, 2021).

Marketing professionals must change their approach to not only respond to consumer and market needs but also become more responsible, which will prompt markets to develop sustainable products and services and foster sustainable societies (Sheth & Parvatiyar, 2020). The efficacy of green marketing tactics can help public and private businesses create and design consumer-pleasing green products (Devi Juwaheer, Pudaruth, & Noyaux, 2012). Understanding and exploring the significance and implications of green marketing is needed (Asif, Zhongfu, Irfan, Ahmad, & Ali, 2023; Budak, Filiz, & Erdal, 2023; Iqbal, Iqbal, Athar, & Khan, 2023; Machová, Ambrus, Zsigmond, & Bakó, 2022; Thakkar, 2021; Vuong et al., 2024; Witek, 2020). This study aims to investigate the impact of consumers' green knowledge and green trust on their green purchasing behavior within a sustainable and environmentally friendly context in Saudi Arabia.

Few empirical studies investigated the interrelationships between green trust, green knowledge, and green purchasing behaviours. More specifically, the literature review shows that some studies, such as Sharma, Aswal, and Paul (2023), only studied the direct association between green purchasing behaviour and green knowledge. Newer studies, such as Nguyen-Viet and Thanh Tran (2024), researched the direct relationship between green purchasing behaviours and green trust. Conversely, the mediating role of green trust on the direct relationship between green knowledge and green purchasing behaviour is inadequately understood (Cooray, Patabendige, & Mirando, 2023). Moreover, previous studies, including (Shaukat, Nawaz, & Naz, 2013) examined direct relationships between green knowledge, green trust, and green purchasing behaviours from different research contexts.

Based on the researchers' knowledge at the time of writing, no prior studies have addressed the interrelationships among these factors within the Saudi food industry. The research findings are expected to guide food vendors in recognizing the importance of non-financial factors, such as green trust and green knowledge, in enhancing organizational success and sustainability. Additionally, the findings could assist companies in Saudi Arabia in developing effective green marketing strategies to achieve success. Therefore, this study aims to ascertain: (1) the effect of green knowledge on green trust and green purchasing behavior; and (2) the mediating role of green trust in the relationship between green knowledge and green purchasing behavior.

In light of the foregoing, the study contributes to the existing body of knowledge on green consumer behavior by empirically demonstrating that green trust mediates the relationship between green knowledge and green

purchasing behavior within the Saudi Arabian context. The research provides robust evidence through the use of structural equation modeling with data collected from a diverse sample of consumers, illustrating that merely increasing consumer green knowledge is insufficient to stimulate sustainable purchasing. Instead, trust in the authenticity and credibility of green claims serves as a crucial mechanism that transforms knowledge into action. Consequently, the paper enhances theoretical understanding of consumer trust dynamics in environmental marketing and offers managerial implications for designing effective sustainability strategies that integrate transparency, education, and trust-building initiatives. Additionally, the research enriches cross-cultural insights into green behavior by highlighting how cultural and contextual factors influence the development of green trust in emerging markets. The paper is organized into four sections: introduction, literature review and hypothesis development, research design and demographic information, and finally, findings, interpretation, and insights.

2. LITERATURE REVIEW AND HYPOTHESES

2.1. Green Knowledge

Knowledge represents the intangible and abstract asset, which exists outside of the tangible world and plays a vital role in operational firm efficiency, according to Yu, Abbas, Alvarez-Otero, and Cherian (2022). People's comprehension of environmental issues and awareness regarding ecosystem understanding fall within the definition of "environmental knowledge" Turnhout (2018). In terms of green knowledge, an individual must have an understanding of the effect of environmental issues on businesses and marketing initiatives. Quijano et al. (2023) stated that environmental knowledge also comprises strategies and skills that help resolve environmental challenges. Further, Fu and Li (2022) explained that green knowledge explains the long-term impact on the environment, the integration of green technologies, and protection strategies that can help in achieving sustainability. The basic understanding of green knowledge can be found in green marketing. Conversely, Chea (2024) stated that green knowledge explains customers' level of understanding of environmental issues, sustainable products, and the effects of their purchases. Their understanding also influences their behaviors. Meanwhile, Suki (2016) described green knowledge as the level of understanding an individual has regarding environmental matters. Noor et al. (2012) opined that green knowledge reflects an individual's ability to recognise and understand how the environment can affect society. Besides improving social welfare, green knowledge includes ways to apply sustainable strategies for economic success. Hence, green knowledge covers more than the environmental conditions of surroundings (Jamison, 2001). Green knowledge is also the ability to see the differences between different ecological symbols, ecological concepts and behaviours (Laroche, Bergeron, & Barbaro-Forleo, 2001). Tan, Sadiq, Bashir, Mahmood, and Rasool (2022) highlighted that green knowledge must be present in organisations because it shows their ability to understand and assess the effects of the environment on people.

The literature review demonstrates that green knowledge drives various aspects, including customer preferences for environmentally friendly products (Zhuang, Luo, & Riaz, 2021), value (Baresel-Bofinger, Ketikidis, Koh, & Cullen, 2011), and sustainability and improvements in organisational performance (Ghorbani, 2023). More specifically, effective management of green knowledge can result in enhanced value; thus, defining and executing related measure items and objectives is important for enhancing the quality of green knowledge and is a crucial motivator for implementing green supply chain management practices (Baresel-Bofinger et al., 2011) and developing the green knowledge base that nurtures eco-innovation (Ghorbani, 2023). With access to green knowledge and resources, employees' creativity and innovative skills are keen on the formulation of sustainable solutions that improve the firm's competitiveness (Saleem, Pinto, & Malik, 2024). The significance of green knowledge plays a crucial role in promoting sustainability and enhancing organizational performance. However, by addressing issues and encouraging innovative solutions, the application of green knowledge management techniques helps businesses consider environmental factors more effectively (Ghorbani, 2023). Furthermore, organizations aiming for sustainability depend on the sharing and distribution of eco-friendly technologies and practices, which are facilitated by green knowledge resources.

Additionally, companies that focus on sharing environmental knowledge and information can build trust with their stakeholders, thereby enhancing their market image and potential (Saleem et al., 2024). Additionally, consumers' tendency to buy eco-friendly products is significantly influenced by their level of green insight. As a result of their improved understanding of the advantages and significance of sustainable products, they make better-informed purchasing decisions (Zhuang et al., 2024).

The study results demonstrate the significance of green product knowledge in enhancing consumers' intention to make environmentally friendly purchases. Additionally, the findings support institutions in developing strategies to increase green purchase intentions among their customers (Ansu-Mensah, 2021). Consequently, it can be stated that green knowledge contributes to increasing awareness about the significance of sustainable practices and encourages people to adopt environmentally friendly behaviors. Meanwhile, both environmental awareness and knowledge have grown significantly in terms of customer perceptions of green products (Pravin, 2024).

Norazah and Norbayah (2016) proved that green brand knowledge represented the strongest factor that influenced green product purchase intention. Environmental knowledge and attitudes generate positive effects on their green buying practices (Noor et al., 2012). Li (2025) stated that green consumer behaviour depends heavily on environmental awareness and purchasing intention because these factors help sustainable consumption and accomplish sustainable development goals. The green knowledge consumers have given them awareness if they want to buy environmentally friendly products because it helps them understand the benefits of such products. Li (2025) stated that the relationship between environmental awareness and purchasing preference helps influence consumers' behaviour and achieve sustainability goals. Additionally, Wang, Liu, and Wang (2022) disclosed that green knowledge related to products encourages the intention to make green purchases. Green purchasing decisions are promoted by developing green knowledge. They also stated that green purchase intention and green product knowledge are directly related. Zhuang et al. (2021) stated that customers with a better understanding choose their purchases based on this relationship. Thus, the following hypothesis is posited based on the discussion above.

H₁: Green knowledge significantly influences green purchasing behavior.

Moreover, according to Hossain, Nekmahmud, and Fekete-Farkas (2022), customers who understand environmental issues can more easily judge a brand's eco-friendly claims, distinguish between genuine efforts and false advertising, and are more likely to trust companies that are environmentally responsible. Environmental friendliness has a positive and significant effect on green trust (Chen, Lin, & Weng, 2015). Alamsyah et al. (2021) have disclosed that green brand awareness directly impacts green consumer confidence, which increases their purchases of products. Zhuang et al. (2021) further disclosed that customers with environment-related knowledge often show certainty in their ability to make purchases that influence change. Their purchases can inspire sustainable buying and contribute to achieving sustainable development goals. Li (2025) emphasized that environmental awareness and green trust are interconnected. For example, customers' awareness and concerns about green brands and the environment influence green trust (Srivastava & Maurya, 2024). Hossain et al. (2022) stated that green trust, which is customers' confidence in a company's or product's commitment to sustainability, is mostly impacted by how much they know about environmental issues. Thus, the hypothesis given below is suggested.

H₂: Green knowledge significantly influences green trust.

2.2. Green Trust

"A readiness to rely on a product or service because of the conviction or anticipation that arises from its legitimacy, kindness, and proficiency regarding environmental performance" is known as green trust (Chen, 2013). Green trust reflects customers' faith in the commitment of a business or product to sustainability (Hossain et al., 2022). Green trust is characterised by people's views and future possibilities that stem from their capacity (Wu & Long, 2024). Chairy and Alam (2019) stressed that trust is important in product or service marketing. Trust is the foundation for developing long-term relationships between consumers and sellers. Chairy and Alam (2019) also stated

that the credibility of a product increases due to consumers' trust in purchasing it. Therefore, green trust, which is important for businesses, results in positive purchasing behavior when a product is environmentally friendly (Monica & Anisah, 2025).

Prior studies show that green brand equity (Chen, 2010) and green knowledge (De Sio, Zamagni, Casu, & Gremigni, 2022) can be influenced by green trust. Wu and Long (2024) stated that green trust also influences consumers' behaviours, such as their intention to buy, perception, brand loyalty, and how they respond to environmentally friendly businesses. They also stated that high green trust will help a business achieve a competitive edge in competitive markets. Green trust is also associated with customers' satisfaction with eco-friendly products. Higher trust can lead to greater satisfaction, which can increase repeat purchases, positive advertising through word of mouth, and the overall reputation of a business (Issock, Mpinganjira, & Roberts-Lombard, 2020).

A key element of consumer behavior related to sustainability is green trust. It not only encourages businesses to adopt ethical practices and effective marketing strategies but also influences brand loyalty and purchasing intentions (Wu & Long, 2024). Additionally, brand advocacy is more common among customers who trust a company's environmental claims (Chen et al., 2015). The above discussion confirms the relevance of green trust in shaping the attitudes and behaviors of consumers. Additionally, customers and brands establish a deeper emotional connection in the presence of green trust (Wu & Long, 2024). Furthermore, other variables have had an impact on the green trust, including green brand equity (Chen, 2010), the perceived advertisement greenness Tee, Lim, Ng, and Wong (2022), and the awareness of green brands by the customers (Alamsyah et al., 2021).

Besides, the choices made by Customers to green purchases were strongly influenced by their belief in green products (Srivastava & Maurya, 2024). Green trust is one of the aspects that influence consumer behavior towards eco-friendly products. It enhances customers' expectations regarding the quality of the product and its environmental responsibility (Wu & Long, 2024). Li (2025) highlighted that the related functions of green trust and green buying intention towards consumers' green behavior are significant. This understanding can assist individuals in making more environmentally friendly purchasing decisions and contribute to achieving sustainability objectives. It highlights the importance of green trust in the selection of green products. Customers are more likely to purchase environmentally friendly products when they are assured that a brand is genuinely concerned about the environment. Such trust enhances their confidence in their decisions and increases their willingness to use green brands (Wu & Long, 2024). As per the discussion, the hypothesis is posited:

H₁: Green trust significantly influences green purchasing behaviour.

The Theory of Planned Behavior assumes that an individual's behavior is determined by behavioral intentions, which are influenced by attitudes, subjective norms, and perceived behavioral control (TPB; (Ajzen, 1985, 1987, 1991)). In the context of this study, green knowledge influences consumers' attitudes toward eco-friendly products, while green trust functions as an attitudinal and psychological mechanism that reinforces consumers' confidence in the credibility of green claims made by businesses. When trust is high, it strengthens the link between intention and behavior, thereby increasing the likelihood of engaging in green purchasing behavior.

Empirically, when green purchase intentions were associated with green product knowledge, Wang et al. (2022) found that green trust mediates green purchase intentions and green product knowledge partially. In the connection between green buying choices and environmental issues, Srivastava and Maurya (2024) expressed the view that green trust mediates such relationships. They found out that green trust moderated the preference to consume green food and the perceived environmental knowledge in consumers. They also established that there is increased purchase of green food when there is increased trust because of increased environmental knowledge (De Sio et al., 2022). The more informed customers are about environmental concerns, the more they judge a brand's claims as eco-friendly. They are better able to notice greenwashing and tend to trust business organizations that are genuinely environmentally committed. This increased confidence encourages customers to purchase environmentally friendly products when making purchasing decisions (Hossain et al., 2022). Customers with knowledge about environmental

issues often accept green products easily. When people understand environmental issues, they feel more confident that their purchasing choices can make a difference (Zhuang et al., 2021). Trust, as a mediator, explains how green knowledge influences green purchasing behavior. Green trust affects whether consumers decide to purchase green products (De Sio et al., 2022). Consumers who are aware of environmental issues are more likely to believe in green marketing messages, which increases their interest in purchasing such products (De Sio et al., 2022). Thus, the empirical evidence supports the introduction of a mediating variable in this study. The hypothesis stated below is suggested.

H₁: Green trust mediates the association between green knowledge and green purchasing behavior.

2.3. Green Purchasing Behaviour

Consumer behavior encompasses the psychological processes that individual consumers experience when identifying their needs, exploring ways to satisfy these needs, making purchasing decisions, processing information, planning, and implementing these plans (Roy & Datta, 2022). Green purchasing indicates purchasing products considered beneficial to the environment and not buying environmentally damaging products (Chan, 2001). Green buying behaviour is among the pro-environmental behaviours that refer to product purchase and consumption that only exert minor influences on the environment (Tan & Lau, 2011). Green purchase behaviour is a multifaceted ethical decision-making and socially responsible behaviour (Chan, 2001). Green purchasing behavior can also be defined as sustainable or eco-friendly purchasing behavior. It is an overarching concept that encompasses consumer awareness and their intentional purchasing actions aimed at supporting environmentally responsible products and brands (Yusoff, Alias, & Ismail, 2023). Green purchasing behaviors are related to buying environmentally friendly products. In this regard, Mostafa (2009) defined green products as recycled or preserved items that do not cause pollution or deplete natural resources. Nonetheless, terms such as “eco-friendly,” “environmentally safe,” “recyclable,” “biodegradable,” and “ozone-friendly” are the most popular green advertising titles used by businesses to promote green products. The intention to purchase green products significantly influences actual green purchasing behavior. Furthermore, attitudes towards green products positively impact green purchase behavior, indicating that consumer perceptions and beliefs play a crucial role in environmentally conscious purchasing decisions (Jaiswal & Bihari, 2020). Green purchasing behaviours, sometimes referred to as eco-friendly or sustainable purchasing behaviours, describe customers’ deliberate choices to purchase ecologically friendly goods (Yusoff et al., 2023).

The importance of considering the environmental impact of products, the sustainability performance of enterprises, and their contribution to a more sustainable future is increasingly recognized in the current market (Wolniak, Gajdzik, & Grebski, 2023). By choosing environmentally friendly products, customers can change the world to lower the level of pollution, conserve resources and promote sustainable production and consumption practices (Yusoff et al., 2023). This demonstrates the importance of green purchasing behavior. Green purchasing behavior reduces the overall environmental impact (Yusoff et al., 2023). In addition, companies that read and satisfy consumer needs for environmentally friendly products often enhance their corporate social responsibility (CSR) image. This can lead to growth in reputation and brand loyalty among environmentally conscious customers (Zhang & Chabay, 2020). The significance of green buying practices lies in the fact that they empower customers, promote environmental sustainability, and drive the growth of goods with an eco-friendly nature (Yusoff et al., 2023).

Several factors have influenced green purchasing behaviour such as green promotion (Boztepe, 2012) green marketing practices (green ads, eco-labelling, and green branding) (Khalil & Adnan, 2021), green product features (Boztepe, 2012), environmental advertising (Delafrooz, Taleghani, & Nouri, 2014), environmental knowledge and attitudes (Noor et al., 2012), environmental awareness (Boztepe, 2012). In this regard, dimensions of green marketing (green advertising, green price, green products, environmental concern, and environmental knowledge) affect green purchase behaviour (Mankgele, 2024). Moreover, previous green purchasing behavior, peer pressure, and an

individual's green self-identity are additional factors that influence the purchase of environmentally friendly products (Jaiswal & Singh, 2018).

2.4. Conceptual Model of the Study

The conceptual model illustrates the hypothesized relationships among green knowledge (GK), green trust (GT), and green purchasing behavior (GP). Figure 1 indicates that green knowledge positively influences green purchasing behavior both directly and indirectly through green trust, which acts as a mediating variable that strengthens the connection between consumers' awareness of environmental issues and their willingness to engage in sustainable purchasing. This model provides a theoretical foundation for analyzing the role of trust in transforming awareness into action within the context of green marketing.

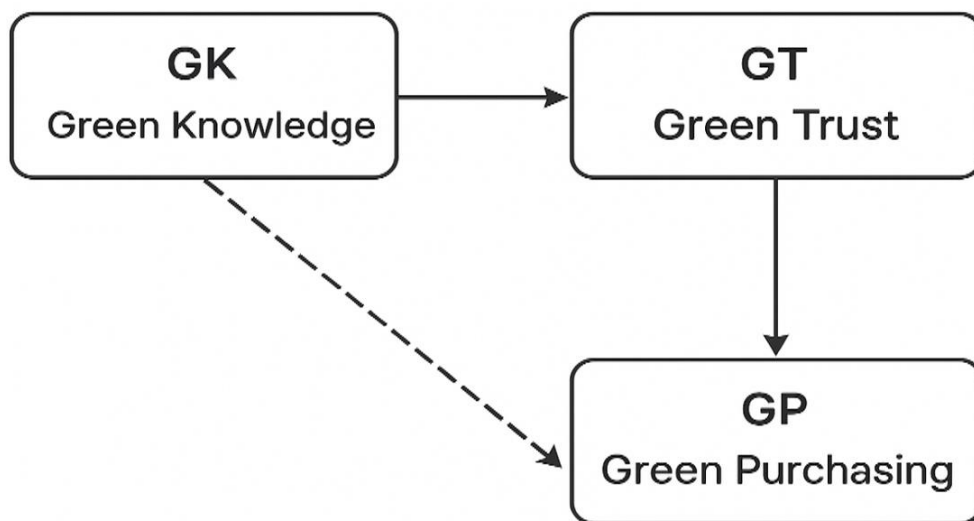


Figure 1. Conceptual model.

3. METHODOLOGY

Ethical permission to conduct the study was obtained from the Research Committee of the School of Business Studies at Arab Open University (AOU), Saudi Arabia. Each participant received an informed consent statement that explained the purpose of the study, emphasized the voluntary nature of participation, and outlined their right to withdraw at any time without penalty. No personally identifiable information was collected, and strict measures were taken to ensure anonymity and confidentiality. Responses were gathered solely for academic research purposes.

This study collected data from three major cities in Saudi Arabia. The majority of respondents were from Dammam (66%), followed by Alkhobar (29%), and Al Dahrhan (5%). Based on previous research, a survey-based questionnaire was developed and selected as the data collection method. After obtaining ethical approval from the Research Committee, the questionnaires were distributed to 400 selected participants using a convenience sampling method. Following distribution and completion, 360 usable questionnaires were received, resulting in a response rate of 90%. Although this approach enabled efficient access to a large respondent population, it has limitations, as the results may not be generalizable to the entire Saudi population due to potential self-selection bias and the non-probability sampling method. Nonetheless, this method was considered appropriate given the exploratory nature of the research and its objective to examine the relationships among green knowledge, green trust, and green purchasing behavior.

Among the demographic variables assessed in the survey were gender, qualification, occupation, monthly income, and age. Most respondents were female (51.2%), while the remaining were male (48.8%). A total of 48.4% of respondents possessed university degrees, while 26.4% held master's degrees. Approximately 10.5% owned a PhD, and the remaining 14.7% had a qualification of high school or less. Most participants were employees (51.6%), followed

by students (22.2%), unemployed (8.9%), self-employed (11.5%), or retired (5.8%). In terms of age, 23.6% were between 24 and 29 years old, followed by those aged 30 to 35 (21.3%), 18 to 23 (19.4%), 36 to 41 (18.2%), and 42 years and above (17.5%). This study includes participants who represent a broader assessment of Saudi Arabian customers' perspectives on green marketing for all consumer goods and services. Table 1 presents a breakdown of the respondent demographics.

Table 1. Respondent's demographic background.

Variables	Categories	Frequency	Percentage
Age	18–23 years	70	19.4%
	24–29 years	85	23.6%
	30–35 years	77	21.3%
	36–41 years	65	18.2%
	42 and above	63	17.5%
Gender	Male	176	48.8%
	Female	184	51.2%
Qualification	High school or less	53	14.7%
	Bachelor's degree	174	48.4%
	Master's degree	95	26.4%
	Doctorate degree	38	10.5%
Occupation	Student	80	22.2%
	Employee	186	51.6%
	Unemployed	32	8.9%
	Self-employed	41	11.5%
	Retired	21	5.8%
Monthly income	SR5, 000 or below	65	18.1%
	SR5, 001–7,000	87	24.2%
	SR7, 001–10,000	90	25%
	SR10, 001–15,000	70	19.4%
	SR15, 001–20,000	30	8.3%
	SR 20,001 or above	18	5%

The research questionnaire comprised 15 questions designed to evaluate the importance of green marketing through three key dimensions: green knowledge, green trust, and purchasing behavior. All measurement items included in the questionnaire were sourced from validated instruments previously employed in prior studies. The scale measuring green knowledge consisted of five items and was adapted from the work of Silintowe and Sukresna (2022). The questions related to green trust (five items) were adopted from the work of Guerreiro and Pacheco (2021). In terms of purchasing behaviour, five items were adopted from the work of Guerreiro and Pacheco (2021) and Silintowe and Sukresna (2022). The respondents expressed their opinions by selecting from a five-point Likert scale (1 - strongly disagree to 5 - strongly agree). The data were analyzed to identify both direct and indirect effects using structural equation modeling (SEM) in SmartPLS. Since this research involves a relatively moderate sample size ($n = 360$) and includes a mediating relationship, PLS-SEM offers robust estimation power that does not require multivariate normality assumptions, unlike covariance-based SEM. Additionally, it allows for the simultaneous testing of both the measurement model (reliability and validity) and the structural model (hypothesized paths), making it an ideal analytical method to explain the multidimensionality of consumer attitudes and behavioral intentions related to green marketing.

4. RESULTS

Both reliability and composite reliability tests were conducted to determine the constructs' internal consistency. The tests showed that Cronbach's alpha was 0.781 for green knowledge, 0.796 for green trust, and 0.777 for purchasing behavior (see Table 2). Additionally, the research indicates that the values for composite reliability ranged between 0.790 and 0.860. Based on these findings, since the values for reliability and composite reliability (CR) are

above 0.6, the measurements are considered reliable. The authors employed the cross-loading technique and the Fornell-Larcker criterion to conduct two forms of discriminant validity assessment. Table 2 and Table 3 demonstrate that through acceptable and tested average variance extracted (AVE), factor loadings, reliability, and composite reliability, the research attains convergent and discriminant validity. This study found that the study model was a good fit based on the result of SRMR, which was 0.149

Table 2. Research factors and statistics.

Construct	Items	Loadings	Cronbach α	CR	AVE
GK	GK1	0.704	0.781	0.790	0.538
	GK2	0.739			
	GK3	0.797			
	GK4	0.773			
	GK5	0.739			
GT	GT1	0.871	0.796	0.860	0.554
	GT2	0.716			
	GT3	0.745			
	GT4	0.762			
	GT5	0.827			
GP	GP1	0.783	0.777	0.850	0.535
	GP2	0.801			
	GP3	0.817			
	GP4	0.737			
	GP5	0.764			

Note: The statistical findings of the factors are presented in this table.

Table 3. Discriminant validity (Fornell-Larcker Criterion).

Constructs	GK	GT	GP
GK	0.662		
GT	0.697	0.744	
GP	0.671	0.857	0.732

The effects of green knowledge on green trust and purchasing behavior were analyzed using Smart PLS to examine the structured model of SEM as shown in Figure 2. The findings reveal that all the hypotheses that were postulated were confirmed. Table 4 shows that green knowledge has a positive influence on the green trust ($b = 0.671$, $t\text{-value} = 5.902$, $p = 0.000 < 0.05$) and purchasing behavior ($b = 0.222$, $t\text{-value} = 2.244$, $p = 0.025 < 0.05$). Therefore, the findings uphold H1 and H2. It was also indicated in Table 4 that the effect of green trust on purchasing behavior ($b = 0.708$, $t\text{-value} = 4.564$, $p = 0.000 < 0.05$) was also significant and positive. Though indirectly, the further analysis performed indicated that green knowledge positively and significantly mediated the relationship between green trust and purchasing behavior ($b = 0.475$, $t\text{-value} = 12.612$, $p = 0.000 < 0.05$). However, the mediation was partial. Table 5 indicated that R^2 value was 0.54% in case of green knowledge, 0.62% in case of green trust and 0.70% in case of green purchasing behavior. The findings indicate that the R^2 s of green knowledge, green trust and green purchasing behaviors were high (Cohen, 1988; Mitchell & Jolley, 2012). Thereafter, as illustrated in Table 6, f^2 values ranged from 0.14 to 0.22. The f^2 values indicate the strength of the effect between the dependent and independent variables. Therefore, the effects of the size are at a medium level, which exceeds the values suggested by Fong and Law (2013).

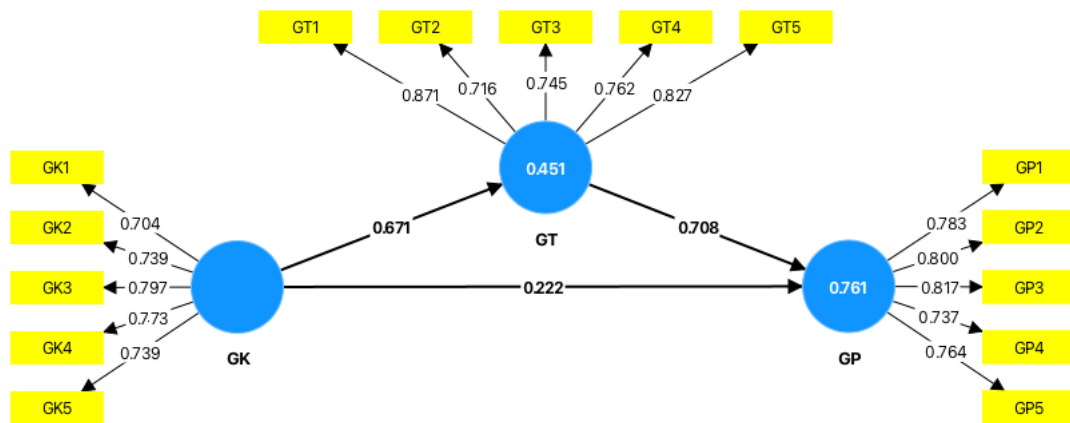


Figure 2. Structural model.

Table 4. Structural model results for hypotheses testing.

Hypotheses	Path coefficient	T-value	P-values	Results
GK->GP	0.222	2.244	0.025	Supported
GK->GT	0.671	5.902	0.000	Supported
GT->GP	0.708	4.564	0.000	Supported
GK-> GT-> GP	0.475	12.612	0.000	Supported

Table 5. Coefficient of determination and predictive relevance assessment.

Construct	R²	Result	Predictive relevance Q²
GK	0.54	Strong	0.41
GT	0.62	Strong	0.47
GP	0.70	Strong	0.52

The effect size analysis as shown in Table 6, based on Cohen (1988) guidelines, shows that all paths in the structural model indicate medium effects, which suggests that each independent variable meaningfully contributes to explaining the variance in its respective dependent variable. Specifically, green knowledge (GK) exerts a medium effect on green purchasing behavior (GP) ($f^2 = 0.14$); consumer knowledge moderately influences green purchasing behavior. Similarly, the effect of GK on green trust (GT) ($f^2 = 0.22$) indicates a moderately strong effect. Lastly, green trust's effect on green purchasing behavior ($f^2 = 0.15$) also falls within the medium range, which implies that while trust is not the sole determinant of purchasing behavior, it remains a substantial and consistent predictor.

Table 6. Effect size (f^2).

Path	f^2	Size effect
GK->GP	0.14	Medium
GK->GT	0.22	Medium
GT->GP	0.15	Medium

5. DISCUSSION

Green marketing is considered a vital issue in modern business due to its implications. This motivates researchers to assess green purchasing behaviors, specifically through green knowledge and green trust. According to the research findings, all the proposed hypotheses were supported. More specifically, the study demonstrates that green knowledge exerts a positive influence on purchasing behavior, indicating that enhancing green knowledge can lead to increased green purchasing behavior. The findings of the study are consistent with prior research, which also revealed a significant and positive relationship between green knowledge and green purchasing behavior (Amoako, Dzogbenuku, & Abubakari, 2020; Norazah & Norbayah, 2016; Sahoo, Kumar, & Upadhyay, 2023; Suki, 2016; Zhuang et al., 2021). The scholars established that green knowledge yields positive results for green purchasing behavior.

The results further show the arguments of Amoako et al. (2020) that green knowledge and green attitude are the determinants of decisions made regarding buying. The research additionally indicates that individuals make their choices regarding green purchases based on environmental issues (Srivastava & Maurya, 2024). This result also corroborates the findings of Suki (2016), who argued that the more environmentally-conscious customers are more willing to buy and consume green products.

Therefore, green information has a strong influence on customer purchasing behavior associated with green consumption activities (Cui, Li, & Wang, 2024; Luo, Wang, & Li, 2023). The more environmental awareness an individual has, the more he or she is likely to become an environmentally friendly consumer (Pagiaslis & Krontalis, 2014). The lack of green knowledge is detrimental to the growth of green purchasing behavior (Suki, 2016). Different researchers prove that green knowledge is not the necessary precondition needed to achieve the intention to engage in green purchasing (Wang et al., 2022). A study conducted by Norazah and Norbayah (2016) concluded that the most important factor that makes users purchase green products is green brand knowledge. The extent of consumer knowledge about green products is a key factor that influences their preference for using environmentally friendly products, as it enhances understanding and awareness of sustainable options (Zhuang et al., 2021).

The study found that green knowledge has a positive relationship with green trust. Accordingly, positive green knowledge is a source of high levels of green trust. It was also found in the past (Alamsyah et al., 2021; Li, 2025; Srivastava & Maurya, 2024) that there is a strong association between green knowledge and green trust. Equally, the same authors, Alamsyah et al. (2021), reported that green brand awareness directly influences consumers' green trust in purchasing products. After that, Zhuang et al. (2024) found that consumers that have stronger environmental issues possess stronger confidence regarding the impacts of their purchase in environmental change. Therefore, the companies are obliged to present credible and comprehensive information to their consumers to assist in the mitigation of the concerns that customers might have with regard to green products (Akturan & Tezcan, 2019). The results indicate that the level of customer confidence in businesses, referred to as green trust, is based on the extent of the customer's knowledge of environmental matters (Hossain et al., 2022).

The results indicate that green trust can positively influence purchasing behavior, meaning that customers who trust a product are more likely to buy it. The study aligns with previous research that found that having green trust enhances purchasing behavior (Akturan & Tezcan, 2019; Li, 2025; Sayed, El Saghier, & Sadek, 2021; Srivastava & Maurya, 2024; Wu & Long, 2024). According to Wu and Long (2024), consumer behavior towards products of environmental friendliness is affected by the green trust because it increases consumer expectations of quality and environmental friendliness (Wu & Long, 2024). The Green Trust must be influential in selecting environmentally friendly products due to their significance. Research indicates that customers are more likely to purchase eco-friendly brands if their trust level is high (Wu & Long, 2024). As an illustration, Akturan and Tezcan (2019) discovered in a study on Egyptian food and beverage industry that customers were interested in green products whose information was trustworthy.

Based on the findings, green trust partially mediates the direct relationship, which implies that customers' purchasing behavior is influenced both directly and indirectly through green knowledge. The current research validates earlier findings that green trust acts as a mediator in this relationship (Li, 2025; Sayed et al., 2021; Srivastava & Maurya, 2024; Wang et al., 2022). Wang, Ma, and Bai (2019) developed the idea that green trust acts as a partial mediator between green product knowledge and green purchase intention. Green trust, which closely resembles green knowledge, serves as a mediator influencing consumer behaviors and their intentions to purchase green products (De Sio et al., 2022). Green trust acts as a partial mediator in the relationship between green knowledge and purchasing behavior, but it remains a significant variable to consider when determining this relationship. This finding supports the hypothesis that consumers with better knowledge about environmental information are more likely to believe environment-related claims, which consequently influences their purchase intentions (De Sio et al., 2022).

6. CONCLUSION

The study concludes that the most effective framework for understanding the interrelationships between green knowledge, green trust, and green purchasing behavior is likely based on the Theory of Planned Behavior (TPB). An individual's green purchasing behavior primarily results from their beliefs, knowledge, and attitudes. In this context, TPB helps explain how green knowledge can influence the development of green attitudes and trust, which ultimately determine consumers' purchasing decisions. The study contributes valuable insights to the field of green marketing by providing validated scales for green knowledge, trust, and purchase behavior specific to the Saudi Arabian context, representing the Arab world. Notably, this research is the first to offer theoretical insights tailored to Saudi Arabia. To ensure the robustness of the findings, the study examined multiple sectors, including banking, clothing, and food industries, to validate the applicability across different market segments.

The use of green marketing is a strategy that enables businesses to gain a sustainable competitive advantage. This finding underscores the importance of further research into the role of green knowledge, trust, and behaviors, particularly as they are influenced by age in relation to green issues. For practitioners, it is essential to enhance green trust by expanding green knowledge and promoting green purchasing behaviors. Green knowledge can be understood as understanding how to effectively engage in green practices that contribute to business success in the marketplace. Improving various aspects of green knowledge and adopting approaches to enhance corporate sustainability are vital for long-term success. This approach emphasizes the importance of understanding and integrating environmental and social issues relevant to target markets to achieve competitive advantage. Additionally, companies should be aware of key green practices such as employing green technologies and ingredients, implementing green managerial practices, utilizing green packaging, recycling, and fostering green innovation. As a result, customers in the target market are likely to perceive the company's commitment positively. Practitioners must ensure that customers are aware of the green marketing practices being employed. To this end, firms should utilize appropriate promotional tools to raise awareness about the significance of green marketing in current business environments. This strategy can help improve customer trust and purchasing patterns. Embracing green marketing is increasingly viewed as a competitive strategy that offers sustainable solutions and products capable of meeting customer needs and preferences. Green knowledge should be highlighted within organizations because of its direct contribution to enhancing green trust and green purchasing behaviors. Moreover, organizations should emphasize green trust, as it plays a crucial role in promoting green purchasing behaviors. It is important to address aspects of green trust such as reliability, dependability, and trustworthiness of green products. The presence of these qualities indicates that the environmental promises made by the brand meet consumer expectations in the market. Customers also believe that the company's commitment to green products is genuine and reliable in fulfilling environmental promises. With a proper understanding of these factors, brands can achieve sustainable success in Saudi Arabia through effective green marketing. It is worth noting that a significant practical implication of this analysis is the awareness of green knowledge and green trust as key components for success in increasing green purchasing behaviors, consumer satisfaction, and market share among managers.

As previously mentioned, green trust depends on green knowledge, highlighting the importance for decision-makers to focus on green knowledge to enhance green trust, dependability, reliability, and trustworthiness. Green purchasing behaviors are influenced by both green knowledge and green trust; therefore, it is essential for decision-makers to emphasize these factors. Green knowledge and green trust encourage consumers to engage in environmentally friendly purchasing behaviors, such as buying products that have a positive environmental impact, cause less pollution, and have minimal or no negative effects on both people and the environment. Additionally, consumers prefer products that are recyclable and eco-friendly. Consequently, business practitioners need to modify their strategies, products, and services to align with green marketing, which has become the key to success in the current market landscape. Organizations should continuously evaluate various approaches to green marketing to improve their performance in international markets, ensuring they meet evolving consumer expectations and

regulatory standards. To achieve sustainable business success, all business practitioners across industries must consider green knowledge, trust, and purchasing behaviors. This approach will lead to a higher degree of customer satisfaction with the business. Broadly defined, the green marketing construct incorporates several perspectives and elements aligned with sustainability principles and the organization's objectives. The findings from this study could be valuable for policymakers and business practitioners who may consider them when devising strategies to withstand and succeed in today's challenging environment. Additionally, it emphasizes the need for regulatory frameworks specifically designed for global application, which would account for green factors at all levels to achieve a sustainable competitive position and success system-wide. This study has several limitations. Specifically, it only covered three major regions of Saudi Arabia, which included Dammam, Al Dahrn, and Al Khobar. Future research is encouraged to include more cities across Saudi Arabia to improve the external validity of the findings. Additionally, the authors suggest conducting cross-cultural analyses on samples from other countries such as the UAE, Oman, and Qatar. Caution should be exercised when generalizing the results, as the study utilized convenience sampling. Another limitation was the exclusion of control variables, such as gender, age, environmental awareness campaigns, and product availability, from the structural model. Omitting these variables may restrict the ability to isolate the unique effects of the primary constructs. Therefore, future studies should incorporate relevant control variables to enhance model accuracy and account for potential confounding factors.

The findings of this study can also be validated by investigating specific business sectors such as the food industry and textile industry. The study suggests examining how green attitudes and green values influence green purchasing behavior. It is understandable that green marketing strategies are viewed as the way forward for businesses. Additionally, the relatedness of green knowledge to trust, value, attitude, and purchasing behaviors is an important area for future research. Despite the limitations, the study makes the following summarized contributions:

- **Theoretical Advancement** - The Theory of Planned Behavior (TPB) was introduced to clarify the role of green knowledge in increasing trust and attitudes which in turn contribute to green purchasing behavior, especially in the kingdom of Saudi Arabia.
- **Green Marketing Insights** - Confirmed context-specific scales for measuring green knowledge, trust, and buying behavior represent a valuable addition to the green marketing literature and consumer behavior research.
- **Managerial Applications** - Underlined practical business approaches, such as green promotion, the creation of consumer- and decision-maker-level green knowledge, and marketing instrumentation to build trust and foster devotion.
- **Policy Recommendation** - The study provided evidence for policymakers so that they can formulate sustainability-focused regulations, consumer education initiatives, and industry-wide programs that will incorporate green knowledge and trust.
- **Social Benefit** - Facilitated environmental awareness, responsible consumption, and a culture of trust between corporations and consumers, which encourage long-term sustainable lifestyles and overall sustainability.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

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