



“Understanding the interplay of psychological and contextual factors in green consumer behavior”

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UNDERSTANDING THE INTERPLAY OF PSYCHOLOGICAL AND CONTEXTUAL FACTORS IN GREEN CONSUMER BEHAVIOR

Abstract

This research explores the factors that contribute to green consumer behavior in an emerging market setting, highlighting the growing importance of sustainability-related consumption studies. The main objective of the study is to uncover how psychological and contextual elements combine to foster pro-environmental behavior among consumers in Tunisia. Utilizing an extended framework based on the Theory of Planned Behavior and key concepts from green consumer research, this study examines survey responses from 409 participants, collected through an online survey administered to Tunisian consumers active in online shopping communities during March and April 2025, and analyzes them using fuzzy-set Qualitative Comparative Analysis with the fsQCA 4.1 software. This method enables the discovery of various pathways leading to green consumer behavior, considering causal complexity and the possibility of multiple solutions. The results of this study show that consumer green behavior is achieved through five different configurations. Perceived behavioral control and trust in eco-labels are found to be core conditions across most solutions, while subjective norms are largely absent or irrelevant in most configurations. This research highlights the importance of using a configurational approach in studying sustainable behavior, as it captures the different pathways through which consumers engage in pro-environmental behavior via multiple causal mechanisms. These insights are relevant for practitioners and policymakers by guiding the design of differentiated strategies that reflect the diversity of pathways to green consumption.

Keywords

green consumer behavior, sustainable consumption, fuzzy-set qualitative comparative analysis, configurational analysis, green marketing, Theory of Planned Behavior

JEL Classification

Q01, M30, M31

INTRODUCTION

In recent years, consumers' demand for sustainable products saw a significant expansion due to the increase of environmental awareness and the growing commitment towards ethical modes of consumption. This shift is in line with the global trend where consumers are more inclined towards the adoption of a green lifestyle that aims to limit environmental harm and ensures the availability of resources for the next generations (Silva et al., 2021). This increasing focus among consumers is closely linked to the urgency posed by climate change and the degradation of the environment. These issues also motivated not only consumers but also marketers and policymakers to choose sustainable alternatives and prioritize green practices and business operations (Wal et al., 2018). The market for environmentally sustainable products has also seen a significant growth, which highlights the economic potential of the green consumer segment (Peluso et al., 2021).

Despite the recent consumers' interest in sustainable behavior, Donato and Adıgüzel (2022) point out the importance of clarity in communication and labeling since consumers might lack awareness when it



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comes to the significance of eco-labels and be unable to interpret the sustainable claims made on product's packaging. Sigurðsson et al. (2023) also emphasize the idea that when consumers seek to make informed choices, they increasingly rely on certifications that are trustworthy and can verify the product's ecologically responsible credentials. Moreover, other studies have shown the role of sustainability in enhancing brand equity and increasing profitability, as consumers prefer brands that they perceive as environmentally responsible (Xu & Gürsoy, 2015). This rapid flourishing interest in green consumer behavior emphasizes the importance of gaining a clear understanding of the interplay between personal, social and contextual factors that drive consumers towards pro-environmental choices. As consumers become more conscious about the environmental impact of their behaviors, individual characteristics become crucial in shaping their propensity to engage in a green consumption behavior (Choi et al., 2015). The research done by Jang et al. (2015) shows that personal factors have a significant influence on consumers' response to green product initiatives.

Consumers are often inspired by their social environment when choosing a certain behavior, which makes them more likely to adopt pro-environmental practices if they consider that their peers and highly influential individuals in their social circles endorse green behaviors (Koo et al., 2015). Moreover, consumers' perception of the ease and ability to perform a certain behavior, also called perceived behavior control, shapes how they approach green behaviors and influences their actual behavior (Paul et al., 2016). Ertz et al. (2016) highlight that consumers' decisions to buy green products can be influenced by a combination of intrinsic values such as environmental concern and extrinsic factors like peer influence. This interplay between social and personal factors underscores the complexity of green consumer behavior. Although prior research has acknowledged the influence of personal, social and contextual factors on green consumer behavior, the way these elements interact remains insufficiently understood. Previous studies often examine these drives in isolation and overlook the assessment of the different combinations of factors that can lead to the same outcome. This gap underscores the need for an approach that can account for causal complexity and show the different pathways leading consumer to adopt green behaviors.

1. LITERATURE REVIEW

Green consumer behavior reflects the growing importance of environmental issues in everyday decision-making. It is generally defined as a set of behaviors that harm the environment as little as possible or can be even beneficial to the environment (Polonsky et al., 2012). This concept includes green consumption, which, according to Joshi and Rahman (2015), refers to buying environmentally friendly alternatives and avoiding any product that can be harmful to the environment. Consumers engaged in green consumption still seek to meet their needs and improve their quality of life as long as their behavior does not compromise the needs of the next generations whether it is by limiting the use of certain substances and resources or by choosing more responsible ways of handling the waste and pollutants resulting from their purchases and consumptions. Dagher and Itani (2014) illustrate that green purchase behavior is a mechanism by which consumers support the

businesses that are making efforts towards sustainability. These authors also indicate that consumers who perceive environmental problems as a serious issue and believe they have a personal responsibility towards the protection of the environment are more likely to engage in green purchase decision. Green consumer behavior can be traced back to consumers' increase in their consciousness towards environmental issues. Dermody et al. (2018) found that for such behaviors, individuals are motivated by their own personal values linked to environmental concerns and their assessment of their personal responsibility.

In order to ensure a more theory-based research concerning the determinants of green consumer behavior, a review of the relevant theories for the studied outcome of this research was done and revealed that the Theory of Planned Behavior (TPB), an extension of the Theory of Reasoned Action (TRA), developed by Ajzen (1991), is the most commonly used framework for studies linked to

sustainable behavior as it is one of the most robust and influential social-psychological models and has been widely used in multiple areas of green consumer behavior (Mahardika et al., 2020). This theory hypothesizes that consumers' attitude along with their perceived behavioral control and the subjective norms are essential variables for understanding consumer behaviors. Ajzen (1991) also stipulates that this theory allows the exploration of the effect of additional contextual variables. This gave researchers like Kumar et al. (2017) more flexibility in order to evaluate the impact of other constructs on consumers' pro-environmental behavior. On the other hand, Davies et al. (2002) argued that the relationship between intentions and behaviors might not be as robust as the model proposed. This is especially relevant for green consumer behavior as previous studies clearly show a gap between intentions and actual behavior (Kim & Lee, 2023). Accordingly, integrating self-reported actual behavior is more prudent as it is the main concern rather than intentions (Rokka & Uusitalo, 2008). In order to address this problem, Leonidou et al. (2010) chose to examine behavior rather than intentions in the context of environmental marketing research. Therefore, this study will focus on the self-reported consumer green behavior as the central outcome of the research model.

Closer examination of the individual components of the TPB provides insight into the factors influencing green consumer behavior. Ajzen (1991) considers the first component, attitude, as the individual's judgment linked to an action which determines a person's feelings towards a particular situation. When it comes to green behavior studies, attitudes are considered an essential factor that influences the individual's tendency to a sustainable act. As for its assessment, Trong Nguyen et al. (2023) recommend the inclusion of an instrumental and empirical evaluation, which translates in gauging whether individuals consider the behavior valuable and delightful. The research done by Wei et al. (2018) emphasizes the role of attitude as one of the leading factors that can drive consumers' green product consumption. Joshi and Rahman (2015) also highlight that attitude is a predictor of sustainable consumer behavior. This confirms the findings of Kozar and Connell (2013) that found that a negative attitude is considered one of the main barriers for environmentally con-

scious behavior. On the other hand, the research done by Lai and Chang (2020) does not find a positive impact of attitude in the context of a sustainable behavior.

Beyond their internal evaluations, consumers' preferences and decisions are also influenced by subjective norms. Schwartz and Howard (1982) define the norms as a set of shared expectations regarding a behavior that is considered appropriate and can be split into both social and moral dimensions. Social norms represent the social dimension. Ajzen (1991) indicates that social norms, also called subjective norms, constitute the social pressure that drives individuals to behave in a socially accepted way. This social pressure emanates from the people who are close to the consumers such as their families and friends (Soomro et al., 2022). These authors emphasize the role of subjective norms in influencing a person's sustainable behavior. Previous research made by Hsu et al. (2017) indicates the significant impact of social norms in the context of pro-environmental behaviors. This effect is more relevant when studying such behaviors and subjective norms in collectivist cultures as Leonidou et al. (2010) emphasize the critical role of social pressure in this context. While according to Alzubaidi et al. (2021), the majority of studies show a significant effect of social norms on the adoption of green behavior, other research found an absence of significance of the effect of this variable in collectivist cultures such as the work of Kumar et al. (2017) in India.

The third variable in the TPB framework is the perceived behavioral control, which is explained by Ajzen (1991) as the individual's perception of the potential difficulties and obstacles that can be encountered when conducting a certain behavior. Chen and Hung (2016) describe it as the belief linked to owning the resources and chances needed to engage in a particular behavior. These authors elucidate the bifurcation of this belief in two parts. The first is linked to the availability of money, time and other resources required for a behavior. The second is the individuals' confidence in their ability to perform a specific behavior. Wang et al. (2023) found that perceived behavioral control within TPB has a better predictive power of pro-environmental behavior compared to other theories like Value-Belief-Norm or

Norm Activation Model that are also prominent in studying green behavior. This variable has been used as a predictor in studies of different green behaviors, such as the work of Moser (2015) about green products. The research done by Agag and Colmekcioglu (2020) shows the existence of a strong relationship between perceived behavioral control and consumer green behaviors, while Yeow and Loo (2022) found that it had no significant influence in the same context.

Moreover, the level of knowledge that a consumer has on a certain topic can affect his/her behavior, especially when it comes to issues that tend to gain importance such as sustainability. Fryxell and Lo (2003) define the environmental knowledge as a generalized knowledge base that is purely factual and encompasses various concepts as well as the relationship between the natural environment and its important ecosystems. Pellegrini (2007) considers knowledge as a helpful element that guides towards a goal, which in this case is the preservation of the environment. Multiple studies suggest adding knowledge as a variable, that is as relevant as the main predictors used in the TPB framework (Liao & Li, 2019). This extension of the TPB is even more relevant in green consumer behavior context as several authors like Nimri et al. (2020) consider that integrating green knowledge meets the requirements of Ajzen (1991) about extending the TPB model since this variable does not overlap with the other constructs from this theory. When consumers are exposed to information related to the environmental issue, they tend to become more aware of its importance and start seeking green alternatives and adopt sustainable behaviors in their daily life (Khan et al., 2022). Rausch and Kopplin (2021) and Taufique et al. (2017) found environmental knowledge to be an indicator of green purchase behavior. A divergence of finding exists in the literature as Bang et al. (2000) found a weak relationship between environmental knowledge and consumer behavior in their study focused on the use of renewable energies.

In addition to knowledge, another factor frequently examined in the context of green consumer behavior is environmental concern. This concept refers to the attachment an individual can have related to ecological issues and the protection of the environment (Park & Lin, 2020). Stern et al.

(1993) consider the environmental concern a social-altruistic value orientation even if it can originate from self-interest or out of biospheric values. Similarly, to environmental knowledge, environmental concern was previously used to extend the TPB model in a green behavior context. Wang et al. (2018) found that extending the TPB framework improved the understanding of consumer behavior in the context of green hotel guest visit. This variable was also incorporated in an extended TPB model by Wang et al. (2016) to better understand the adoption of hybrid electric cars and was found to have a significant effect. Although Liu et al. (2012) highlight that a high degree of concern for the environment does not necessarily translate into a green behavior, a considerable body of knowledge confirms the existence of a positive influence of these concerns on sustainable behaviors (Kopplin & Rösch, 2021).

Eco-labels provide verifiable information on products and services intended to reflect their environmental impact. According to ISO (1999), such information aims to improve the supply and demand for alternatives that create less stress on the environment, leading to a market-driven constant environmental improvement. Rex and Baumann (2007) state that the information put forward by eco-labels is considered a facilitator of consumers' decision-making process and helps guide them towards the consumption of products that are safe for the environment. Consumers tend to find it easier to evaluate products and their ingredients when they are exposed to such information and it affects their decision on paying more for green products (Biswas & Roy, 2015). Different studies show that sustainable consumption behavior depends at least partly on the relevant information coming from different sources including eco-labels on packaging (Taufique et al., 2017). However, the reliance of consumers on this information, as shown by the research of Young et al. (2010), is heavily dependent on the level of trust they seem to have on it. Previous research done by Daugbjerg et al. (2014) found that consumers' trust in these labels influences their green purchase behavior. On the other hand, Chen and Tung (2014) found no evidence of effect in the context of green hotels.

In exploring methodological alternatives for analyzing complex consumer behavior, Pappas and

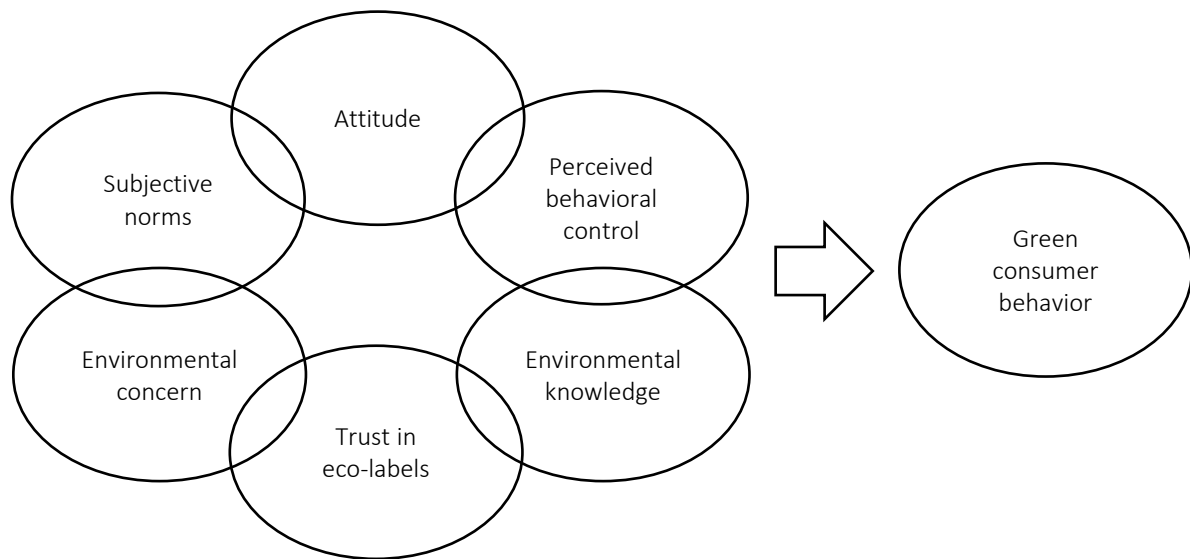


Figure 1. Configurational research model

Woodside (2021) recommend shifting from traditional variation methods like linear regression or structural equation modeling. According to these authors, researchers need to use a more holistic approach that takes into account the complex and non-linear relationship between variables by utilizing fuzzy-set qualitative comparative analysis (fsQCA). This method is based on both complexity theory and configurational theory in its causation, asymmetry and equifinality, as they provide its philosophical and methodological foundation (Kumar et al., 2022). Rooted in systems theory, complexity theory is a system where an outcome is the result of a plurality of interacting and intersecting parts and the system loses its properties when its parts are evaluated separately (Olya & Akhshik, 2018). On the other hand, configurational causation states that the effect of one factor may be dependent on the presence of others. This view shifts from isolated additive and compensatory effects and focuses on a more holistic view based on the configurations of factors leading to an outcome. Asymmetry differs from variance-based methods since it is not a linear approach. This means that if an element predicts a certain outcome, its absence does not necessarily predict the absence of this particular outcome. Lastly, equifinality translates to the idea that an outcome can be reached through different combinations of factors.

This study examines how psychological and contextual factors combine to influence green con-

sumer behavior. Drawing from the literature review, this research proposes a configuration model in Figure 1 that illustrates the combined configurational effect of attitude, subjective norms, perceived behavioral control, environmental concern, environmental knowledge and trust in eco-labels, leading to the outcome of a high degree of green consumer behavior.

2. METHODOLOGY

In order to explore the configurational effects of our extended TPB factors on green consumer, a survey-based research approach was used. The survey was administered online using purposive sampling and shared in local Tunisian social media shopping communities. The data collection phase took place from March to April 2025 using the questionnaire that was first tested to refine its questions in order to capture the research constructs while minimizing potential bias. After removing the incomplete surveys, 409 responses were retained and used for data analysis. The survey contained two sections, one for the research items and the other for respondents' demographic information. The study received ethical approval from the Ethical Committee of the Research on Enterprise and Decisions (RED) laboratory, referenced LR23ES10, and approved by the Tunisian Ministry of Higher Education and Scientific Research. The online questionnaire included an informed consent statement, and the respondents

were familiarized with the study’s purpose along with the guarantee that their answers will remain anonymous and will solely be used for academic purposes. The respondents were 51% female and 49% male. Most were aged between 25 and 44 (59%), held a university degree (62%), and reported a monthly household income between 1,000-3,000 TND (54%) as detailed in Table 1.

Table 1. Demographic characteristics of the respondents

Demographic variable	Category	N	%
Gender	Men	200	49%
	Women	209	51%
Age	Between 18 and 25 years	49	12%
	Between 25 and 35 years	139	34%
	Between 35 and 45 years	102	25%
	Between 45 and 65 years	74	18%
	More than 65 years	45	11%
	Education level	Preparatory school level	12
High school level		143	35%
Bachelor degree level		155	38%
Master’s degree or Ph.D.		99	24%
Household income	Less than 1000 TND/month	82	20%
	1,000-3,000 TND/month	221	54%
	3,000-5,000 TND/month	74	18%
	More than 5,000 TND/month	32	8%

To measure the constructs used in this research and to increase reliability and validity, this research used scales from previous studies that were validated. The 3-item scale of Varshneya et al. (2017) was used to measure consumers’ attitude towards green behavior. Perceived behavioral control was assessed with the scale of Kumar (2021) that contains 4 items. Subjective norms and environmental knowledge were measured using the scales of Kumar et al. (2017), both containing 3 items. The 3-item scale of Taufique et al. (2017) was used for trust in eco-labels. Environmental concern was measured through the scale of Kopplin and Rösch (2021) with 4 items and green consumer behavior was assessed with the 5-item scale of Trong Nguyen et al. (2023). Following the recommendation of Preston and Colman (2000) and in order to enhance reliability, all the items were measured using a 7-point likert scale ranging from strongly disagree (1) to strongly agree (7).

This study used fuzzy-set Qualitative Comparative Analysis (fsQCA) to assess the different configurations emerging from the extended TPB model

of this research that can lead to green consumer behavior. As explained by Ragin (2008), this technique is a set-theoretic method that can create an understanding of how different constructs combine to form configurations and to evaluate the complex causality and causal conditions. The choice of fsQCA is particularly relevant in finding the different combinations of theoretically related constructs in order to reach a certain outcome (Wang et al., 2019). Instead of measuring the net effects of individual variables like in variance-based methods, fsQCA aims to create sets of variables with different levels that can lead to an outcome (Pappas & Woodside, 2021). According to these authors, this approach is also less demanding in terms of sample size and is used for the identification of the sufficient conditions of causality. Therefore, fsQCA is highly valuable for studying social phenomena that are complex and where nonlinear relationships and the multiplicity of causes combine in order to create an outcome (Geremew et al., 2024). The software fsQCA (version 4.1) was used for data calibration, testing necessary conditions, constructing the truth table, and identifying configurations of conditions leading to green consumer behavior as the outcome.

3. RESULTS

The reliability of the measurement scales used in this study was evaluated using Cronbach’s alpha, which indicates that all variables used in this study had coefficients above the commonly accepted threshold of 0.7. Following the recommendations of Hair et al. (2008), the validity was initially assessed through factor loading, with all the items showing values between 0.722 and 0.895, which is considered satisfactory. Composite reliability results also surpass the recommended threshold of 0.7 and the Average Variance Extracted (AVE) surpasses 0.5 for all the scales of this study. The results are further detailed in Table 2.

Discriminant validity was assessed with the Fornell-Larcker criterion by evaluating whether the square root of the AVE of a construct is greater than it is correlation with the other constructs of this research. The results displayed in Table 3 respect this condition for all the inter-construct correlations, confirming the discriminant validity of the used measurements.

Table 2. Construct reliability, validity, and item loadings

Construct	Item	Loading	Cronbach's alpha	Composite reliability	AVE
Attitude (ATT)	ATT1	0.77	0.724	0.738	0.620
	ATT2	0.79			
	ATT3	0.81			
Subjective norms (SN)	SN1	0.87	0.854	0.856	0.774
	SN2	0.88			
	SN3	0.89			
Perceived behavioral control (PBC)	PBC1	0.87	0.915	0.916	0.796
	PBC2	0.89			
	PBC3	0.91			
	PBC4	0.88			
Environmental concern (EC)	EC1	0.82	0.859	0.873	0.709
	EC2	0.86			
	EC3	0.83			
	EC4	0.87			
Environmental knowledge (EK)	EK1	0.91	0.909	0.911	0.847
	EK2	0.93			
	EK3	0.92			
Trust in eco-labels (TEL)	TEL1	0.94	0.941	0.943	0.895
	TEL2	0.95			
	TEL3	0.94			
Green consumer behavior (GB)	GCB1	0.83	0.910	0.921	0.742
	GCB2	0.87			
	GCB3	0.85			
	GCB4	0.86			
	GCB5	0.80			

Table 3. Fornell-Larcker criterion

Construct	ATT	SN	PBC	EC	EK	TEL	GB
ATT	0.787	–	–	–	–	–	–
SN	0.669	0.880	–	–	–	–	–
PBC	0.460	0.586	0.892	–	–	–	–
EC	0.718	0.489	0.411	0.842	–	–	–
EK	0.766	0.536	0.604	0.624	0.920	–	–
TEL	0.264	0.084	0.578	0.564	0.365	0.946	–
GB	0.574	0.402	0.657	0.808	0.587	0.744	0.861

To avoid common method bias, respondents' anonymity was guaranteed in data collection and the order of items in the survey was randomly presented to the participants. Following the recommendations of Lindell and Whitney (2001), we added a common latent variable and compared the model fits of the model containing it and the one that does not include it. We found no significant difference between the two model fit indices (1.624 and 1.688), indicating that common method bias is not a major concern in our data. As for data normality, we found that the research variables did not deviate from the recommended threshold of Hair et al. (2008) ranging from -2 to +2 for skewness and from -7 to +7 for kurtosis. This confirms that all the variables do not show severe non-normality.

In order to perform an analysis using fsQCA, it is necessary to transform the used attributes and the outcome into set-membership scores according to the theoretic and substantive knowledge (Ragin, 2008). This process is used to transform interval scales into fuzzy-set membership scores by choosing three qualitative anchors that are non-membership; full membership and the crossover point that maximizes the ambiguity of membership within a certain target set (Wang et al., 2019). Since our variables were measured using 7-point Likert scales, we followed the direct calibration recommendation of Pappas and Woodside (2021) by setting the values of 6, 4 and 2 as threshold for full membership, crossover point and full non-membership. The same calibration method was used for all the variables of this research.

The necessary condition analysis was done before running the truth table algorithm in order to determine the conditions that are present in most cases (Ragin, 2008). Then, for examining the relationships between different configurations of the studied elements and the outcome, truth table algorithm was used. This analysis identifies all combinations that can logically result in the desired

outcome. Configurations with low frequency were removed and the consistency threshold was set to the minimum required value of 0.75 (Ragin, 2008).

After running the necessary condition analysis, perceived behavioral control, environmental knowledge and attitude emerge as quasi-necessary conditions, which indicates that these conditions are present in almost all the cases where the studied outcome of this research, green consumer behavior, occurs. This is verified since their consistency scores are superior to the 0.9 threshold used by Dul (2016) who also highlights the idea that even when they are quasi-necessary, the presence of these conditions does not force the existence of the outcome and they can also be absent, contrarily to sufficient conditions that elicit the outcome by their presence but can also be absent when this outcome occurs. Table 4 shows the results obtained from the truth table algorithms using the notation system from Ragin and Fiss (2008), every column indicates the conditions combination that constitutes a solution that leads to the outcome of high green consumer behavior. The core elements of every solution are illustrated with a large circle and the peripheral conditions are indicated with a small circle. The present elements are represented by a full circle while a crossed circle is used to indicate the absence of the element. A blank space indicates an indifference to the element for the specific solution. The consistency scores of the five configurations leading to green consumer behavior are superior to the cut-off value of 0.75. This indicates that the models made from these configurations are considered adequately specified. Consistency indicates the ex-

tent of the approximation of the relationship while coverage measures the empirical relevance of the consistent subset (Ragin, 2008). Similar to correlation, the overall consistency result is an indicator to the strength of the solution while the overall solution coverage, if compared to traditional regression analyses, is the equivalent of R-square, which in our case translates into the degree to which green consumer behavior is determined from the configurations found.

As illustrated in Table 4, the high overall results of both consistency (0.94) and coverage (0.89), reached with five solutions, indicate that the model explains most cases very well and that there are multiple pathways that can lead to green consumer behavior. The results found confirm the presence of equifinality in our proposed model since different combinations of conditions lead to the same outcome. The truth table findings also confirm the importance of perceived behavioral control, as a core condition, in four out of five solutions. Trust in eco-labels is also considered a core element that is present in two solutions. Attitude, environmental knowledge and environmental concern are each present in four different solutions as peripheral conditions for reaching high green consumer behavior, which highlights their roles in different solutions in order to reach the outcome without being essential to it. Subjective norms seem to exhibit a limited role when it comes to explaining green consumer behavior. This condition is negated in the first, third and fourth configuration, which highlights that, in most of the solutions, its absence, contributes to reaching the outcome. The second solution has a

Table 4. Truth table analysis results for green consumer behavior

Condition	Solutions				
	1	2	3	4	5
Attitude	●	●	●		●
Subjective norms	⊗		⊗	⊗	●
Perceived behavioral control	●	●	●	●	
Environmental knowledge	●	●		●	●
Environmental concern		●	●	●	●
Trust in eco-labels			⊗	●	●
Consistency	0.992	0.937	0.985	0.995	0.972
Raw coverage	0.361	0.787	0.189	0.258	0.545
Unique coverage	0.054	0.144	0.014	0.009	0.025
Overall solution consistency	0.940				
Overall solution coverage	0.888				

Note: Symbols: ● = presence of condition; ⊗ = absence of condition; blank = presence or absence not relevant in that configuration; large circles indicate core conditions; small circles indicate peripheral conditions.

unique coverage score of 0.144, which is the highest among the five solutions. According to this configuration, perceived behavioral control is considered a core element for achieving green consumer behavior and it is enhanced with attitude, environmental knowledge and environmental concern.

4. DISCUSSION

The analysis of the configurational pathways leading to green consumer behavior integrated the conditions from the extended TPB configuration model discussion in the literature review. The results show that five different configurations of causal conditions reached the outcome of high green consumer behavior. This finding confirms the complex nature of green consumer behavior along with its combinatorial nature. Perceived behavioral control and trust in eco-labels emerged as core conditions indicating their central role in the configurations where they are present in order to achieve green consumer behavior. Environmental knowledge, attitude and perceived behavioral control showed a consistency score that surpasses the 0.9 threshold, which makes them present in nearly all the solutions found to achieve green consumer behavior. On the other hand, subjective norms did not meet the required threshold for necessity and are found to be either an absent condition or a marginal one in most solutions, highlighting the idea that external social pressure is not a consistent driver of green consumer behavior.

The findings of this study confirm the results of Amit Kumar (2021) about the importance of perceived behavioral control in the context of pro-environmental behavior but also extend its assessment by showing its central role in the different interactions possible with other variables in order to achieve green consumer behavior. The results of this study also relate to the findings of Rausch and Kopplin (2021) who showed that subjective norms have no significant effect on green consumer behavior. This aligns with the results found in most of our configurational solutions but is nuanced with the fifth solution that shows that this element can play a role in achieving green consumer behavior if combined with attitude, environmental knowledge and environmental concern as peripheral conditions along with trust in eco-label as a core element. This result underscores the fact that in most configurations, social pressure does not

appear as a contributing condition to green consumer behavior. Our results also indicate that attitude is present in four out of five configurations leading to green consumer behavior. This finding correlates with the work of Varshneya et al. (2017) that found that attitude had a significant positive effect on green behavior.

The fourth solution in our findings contrasts the results of Trong Nguyen et al. (2023) about the importance of attitude as we found that it is absent in this particular configuration, showing that green consumer behavior can occur without the presence of this variable in some pathways. This, in turn, confirms the results found by Moser (2015), indicating that some pathways to green consumer behavior do not require the existence of a favorable attitude. Our findings contrast the results of Chen and Tung (2014) as trust in eco-labels does not appear in the first three sufficient configurations leading to green consumer behavior. This shows that in these configurations, trust in eco-labels is absent, indicating that green consumer behavior can still occur without high trust in these cases. On the other hand, the results of the fourth and fifth solution, showing this variable as a core condition, confirm the findings of Daugbjerg et al. (2014) about the positive role of this variable in shaping consumer green behavior.

As for environmental knowledge, our results support the conclusions of Taufique et al. (2017) confirming the frequent contribution of this condition to green consumer behavior within configurations. This finding is present in four out of the five solutions, highlighting that environmental knowledge frequently appears in configurations alongside other conditions, though in one configuration, green behavior occurs without a high level of knowledge. This highlights the fact that in most cases, being informed about the extent of environmental issues and the possible actions that can be taken, frequently appears in configurations leading to green consumer behavior. Similarly, the results show that environmental concern is present in nearly all the solutions, aligning with the work of Wang et al. (2016) that found a significant effect of this construct on green behavior. Conversely, one solution shows that this variable can be absent in one of the combinations of factors leading to green consumer behavior. This finding correlates with the conclusions of Liu et al. (2012).

CONCLUSION

This study aims to investigate how psychological and contextual factors interact to shape green consumer behavior in Tunisia through a configurational approach. The findings show five verified pathways leading to sustainable consumption behavior. Among the studied constructs, perceived behavioral control and trust in eco-labels emerge as core conditions across multiple configurations, while subjective norms are generally absent or peripheral in achieving green consumer behavior.

The results offer multiple actionable insights that can be useful to marketers, policymakers and advocates of sustainability that are aiming to promote pro-environmental consumer behavior. The recurring importance of perceived behavioral control across different configurations highlights the need for consumer empowerment, which can take effect by reducing the barriers to eco-friendly behaviors, creating clearer information that is easy to access and providing green alternatives that are cost-effective, thus improving consumers' sense of agency. Environmental knowledge frequently appears in the solutions, and trust in eco-labels consistently emerges as a central condition, which suggests that businesses and non-lucrative organizations should focus on creating transparent and credible communication by prioritizing campaigns that educate consumers about the environmental impact of their actions and by making eco-labels well-regulated and easier to recognize in order to avoid any confusion or mistrust about the information they indicate. The limited presence of subjective norms in the configurations suggests that strategies relying mainly on social pressure are not consistently effective. Instead, communication should be more focused on personal values and motivations. The multiplicity of solutions indicates that stakeholders should adopt a differentiated approach to target multiple consumer profiles and adapt their communication according to the particularities of each combination of internal and external drivers of green consumer behavior.

Like all empirical studies, this research has some limitations. First, the use of purposive sampling can limit the generalizability of the findings. Second, the reliance on self-reported data may introduce bias. Future studies can use observed data to get a more concrete estimation of green consumer behavior. Other variables can be included as conditions to form a more exhaustive view of the way potential drivers of green consumer behavior combine to reach the intended outcome. Furthermore, this study was conducted in Tunisia, which invites other researchers to adapt the investigated conditions according to the specificities of their context by considering the differences of culture, income and the presence of green alternatives and regulation mechanisms.

AUTHOR CONTRIBUTIONS

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CONFLICT OF INTEREST STATEMENT

The author(s) report no conflict of interest.

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APPENDIX A

Table A1. Survey questions

Item	Question	Variable
ATT1	I think practicing green consumption is valuable	Attitude
ATT2	I think practicing green consumption is delightful	
ATT3	I think it is wise to practice green consumption	
SN1	My friends expect me to engage in environmentally sustainable product usage behavior	Subjective norms
SN2	My family expects me to engage in environmentally sustainable product usage behavior	
SN3	My society expects me to engage in environmentally sustainable product usage behavior	
PBC1	I have complete control over the number of eco-friendly products that I will buy for personal use in the coming month	Perceived behavioral control
PBC2	I see myself as capable of purchasing environmentally friendly products in the future	
PBC3	I have resources to purchase environmentally friendly products	
PBC4	I have time to search and purchase environmentally friendly products	
EC1	I am concerned about the environment	Environmental concern
EC2	The condition of the environment affects the quality of my life	
EC3	I am willing to make sacrifices to protect the environment	
EC4	My actions impact the environment	
EK1	Using environmentally sustainable products is a primary way to reduce pollution	Environmental knowledge
EK2	Using environmentally sustainable products is a substantial way to reduce wasteful use of natural resources	
EK3	Using environmentally sustainable products is a great way to conserve natural resources	
TEL1	The labels are genuinely committed to environmental protection	Trust in eco-labels
TEL2	Most of what labels say about its products is true	
TEL3	If the label makes a claim or promise about its product, it's probably true	
GCB1	I often buy eco-friendly products/services	Green consumer behavior
GCB2	I often buy recyclable products	
GCB3	I trust organic products	
GCB4	I give preference to using environmentally friendly means	
GCB5	I use cloth bags or paper bags instead of plastic bags	