



A multidimensional analysis of environmental awareness: The moderating effect of institutional trust

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ABSTRACT

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The research aims to examine global environmental awareness and recognises the need to employ four behavioural dimensions (affective, cognitive, dispositional, and active) into a structured model. We also include trust in institutions to understand its moderating effect on individuals' behaviour. The study used a broad sample from the ISSP in 29 countries and 44,400 individuals between October 2019 and May 2023. The quantitative model was tested with SmartPLS 4. All the hypotheses were confirmed. The affective dimension of environmental awareness positively affects its cognitive dimension. Both the affective and cognitive dimensions have a positive influence on the dispositional dimension. The dispositional dimension positively influences its active dimension. Trust in institutions positively moderates the relationship between the dispositional and active dimensions. Our research demonstrated that each person simultaneously acts as a change agent based on their perception of personal responsibility and as a consumer, a concept that managers strive to comprehend. Previous research was validated by establishing a causal link between different dimensions of behavior. Managers must focus on integrating the factors that influence pro-environmental behaviour. Governments are essential in changing mentalities and turning dispositional attitudes into effectively active behaviours.

Contribution/Originality: Our research assumes a multi-dimensional and multi-relational approach to researching environmental awareness in an extensive database. We also included institutional trust to understand its moderating influence on the behaviour of individuals. Our findings can assist governments and management in determining the optimal course of action in a world where environmental effects are crucial.

1. INTRODUCTION

The harmful effects of environmental degradation are a cause for concern in all parts of the world and the most developed and emerging economies. The search for economic growth is increasingly linked to its social and environmental effects, which is why the United Nations (UN) defined the 2030 Agenda as a shared vision for humanity, consisting of 17 sustainable development objectives, ranging from eradicating poverty and hunger to protecting the planet (UN, 2015). Every nation has unique obstacles to developing and implementing laws that promote sustainable finance (Rani, Dariah, Madhoun, & Srisusilawati, 2023). On the other hand, the fundamental responses to heightened environmental concerns go beyond environmental policies and government actions, as companies have embraced the green movement and incorporated environmental objectives into their business decisions (Rajput et al., 2022). However, the motivation to adopt the concept of the green movement in their

businesses remains closely linked to a high degree of environmental attitude among consumers, which translates into a commitment to environmentally friendly purchasing (Mehta & Chahal, 2021). Sharma and Bansal (2013) warned that the increase in demand for green products puts pressure on companies to become green and start selling them.

Environmental awareness refers to an individual's perception and knowledge of environmental issues, as well as the behaviours that result from them (Saari, Damberg, Frömbing, & Ringle, 2021). Consumer green consumption behaviour can only be established if environmental knowledge and social norms are internalised (Pristl, Kilian, & Mann, 2021). Using a structured model to describe environmental awareness is relevant because it provides a methodical framework for elucidating the complex aspects of green attitudes and actions and encourages coherence across study domains (Gholamrezai, Aliabadi, & Ataei, 2021). This study conceptualises environmental awareness as a multidimensional construct with four variables: affective, cognitive, dispositional, and active. The model was created by Sánchez and Lafuente (2010) in an effort to provide a comprehensive framework of findings about individual attitudes, beliefs, and behaviours related to environmental issues. Recent studies underline how environmental consciousness shapes pro-environmental attitudes and actions, essential for encouraging society's commitment to sustainable development (Chen, Huang, Wu, Ip, & Wang, 2023).

On the other hand, learning how people react to environmental crises depends on studying institutional trust since higher levels of trust encourage people to adopt sustainable activities and cooperate more with environmental regulations (Fairbrother, Sevä, & Kulin, 2019). Previous works state that confidence in institutions strongly influences public motivation to participate in environmental efforts and follow legislation since trust influences views of institutional efficacy and justice (Kulin & Johansson Sevä, 2021). The relationship between institutional trust and environmental consciousness is significant in the global context, given the pressing issues such as climate change and biodiversity loss (Yu, Han, Ding, & He, 2021).

This vast database is secondary data, and the relevant articles helped us reach some meaningful conclusions by replying to the research questions using our theoretical knowledge and concepts as a foundation. The model hypotheses were tested using the least squares method. The results empirically confirm that there is a positive relationship between the personal importance given to the environment and people's perceived information, as well as individual demands regarding responsibility and costs of climate action; in turn, pro-environmental activism also arises from the positive relationship with the previous variable, and a moderating relationship with trust in institutions was discovered here. These conclusions contribute to the literature on environmental awareness and help to understand the phenomenon to help business managers understand consumer behaviours and governments make decisions about encouraging populations to act in an environmentally sustainable way.

2. LITERARY REVIEW AND FORMULATION OF HYPOTHESES

2.1. Environmental Awareness

Environmental consciousness is the term used to describe psychological elements that influence people's inclination to engage in pro-environmental behaviours (Zelezny & Schultz, 2000). The terminology was first recognised in the 1960s by people who belonged to a group that refused to purchase some items due to their potentially harmful by-products (Wasaya et al., 2021). Over time, this kind of thinking gained traction and customer began to care enough to refrain from purchasing environmentally harmful products, which pushed businesses to focus on producing environmentally friendly goods (Mishal, Dubey, Gupta, & Luo, 2017). Environmentally responsible behaviour can be inferred as widespread and developed behaviour with a more extended presence in consumers' lives than socially responsible behaviour (Hosta & Zabkar, 2021). High environmental awareness is associated with a greater willingness to support new consumers' purchasing intention for organic foods. This is why environmental groups and consumers lead the organic food purchasing movement,

thus increasing consumer awareness (Li, Ahmed, Qalati, Khan, & Naz, 2020). Environmental awareness significantly and comparatively strongly influences green purchasing intention (Makhitha, 2024).

2.1.1. Affective Dimension (Personal Importance)

The affective dimension of environmental awareness is the individual's set of attitudes and plans for conduct about environmental concerns or activities that are recognized (Schultz, Shriver, Tabanico, & Khazian, 2004).

When people better understand their surroundings, their importance for the survival of all creatures in the world, and, most importantly, their significant role in their protection, they can become more positively involved in environmental issues (Darvishmotevali & Altinay, 2022). Pro-environmental consumers are attracted to personal and subjective norms, attitudes toward behaviour, and intentions (Onel, 2017). Virtuousness and the importance of acting virtuously are essential considerations in green consumption, suggesting the importance of the consumer as a moral agent (Spielmann, 2021). Improving environmental quality and the abundance of natural resources can be achieved through changing unsustainable behaviours, as people face various barriers to changing environmental behaviours; some are personal barriers, while others are organisational or institutional (Grilli & Curtis, 2021). According to Quoquab and Mohammad (2020) the emotional or sentimental segment of an individual's attitude, the affective domain, represents their satisfaction, dissatisfaction and preference, indicating a clear relationship between environmental apathy and green purchasing intentions.

2.1.2. Cognitive Dimension (Level of Information)

Information has a significant and beneficial influence on the environmental choices made by consumers (Liu, Han, & Teng, 2021). Contrasting scientists' or experts' environmental knowledge, public responsiveness demonstrates the necessity of government actions to curb environmentally harmful consumer behaviour and not rely only on consumers' awareness of the risks (Khan, Chauhan, & Akram, 2020). Therefore, information about the environment, including concepts and their link to nature and the ecosystem, is called the cognitive dimension. Education or observation facilitate the acquisition of this knowledge (Cabral & Dhar, 2021). If intention may be encouraged and green consumption behaviour can result from environmental information (Xie, Wang, & Gong, 2022), it makes sense that environmental initiatives would increase the favorable correlation between consumers' intentions to purchase and their perceptions of green brands (Khan et al., 2020). In this context, the following hypotheses are formulated:

H: The affective dimension of environmental awareness positively affects its cognitive dimension.

2.1.3. Dispositional Dimension (Responsibility and Costs)

The environmental purpose is a critical component of corporate strategy, as green manufacturing is now a way for businesses to stand out and position themselves in the market (Dragomir, 2019). Support for environmental protection, inclination towards environmental responsibility, companies' respect for the environment, and social appeal are essential factors affecting purchasing decisions for green products (Kumar & Ghodeswar, 2015). This conscientious conduct forces businesses to comprehend customers' intentions and support their long-term market viability (Kumar, Prakash, & Kumar, 2021). Environmentally conscious consumer behaviour is significantly influenced by green knowledge and the perception of environmental consequences, while environmental concern is primarily influenced by the desire to be environmentally friendly (Kautish & Sharma, 2020). This segment is also more motivated towards environmentally friendly behaviours concerning families and mobility, so their behaviour in these domains was less motivated by economic reasons. However, environmental protection reasons played a significant role (Funk, Sütterlin, & Siegrist, 2021). On the other hand, business managers and pro-environmental policymakers may not be able to impact consumers' objective contextual factors, but they can influence perceptions and attitudes (Ertz, Karakas, & Sarigöllü, 2016). Within this framework, we formulated the following hypotheses:

H₂: The affective dimension of environmental awareness positively affects its dispositional dimension.

H₃: The cognitive dimension of environmental awareness positively affects its dispositional dimension.

2.1.4. Active Dimension (Pro-Environmental Behaviour)

Generally speaking, this dimension is described as a higher-order two-dimensional construct that blends usage and preservation: with use being the exploitation of natural resources for the advantage of humanity, preservation refers to the conservation of nature and its resources (Milfont & Duckitt, 2010). While adopting an external environmental attitude makes it easier to adopt general environmental behaviour that results in higher satisfaction with the product life, adopting an internal environmental attitude is thought to be conducive to green purchasing behaviour that results in high product satisfaction (Leonidou, Leonidou, & Kvasova, 2010). It is a mindset strengthened by an awareness of environmental challenges, respect for the natural world and its inhabitants, and scrutinizing socio-environmental conflicts (Alvarez-García, Sureda-Negre, & Comas-Forgas, 2018). Customers who exhibit positive environmental behaviour develop a stronger desire to act and behave in an environmentally conscious manner, and their favorable attitude toward environmental preservation significantly encourages the purchase of green products (Dhir, Sadiq, Talwar, Sakashita, & Kaur, 2021). In this context, the researchers formulated the following hypothesis:

H₄: The dispositional dimension of environmental awareness positively affects its active dimension.

2.2. Trust in Institutions

According to Devos, Spini, and Schwartz (2002) trust in institutions positively correlates with values that emphasize stability, protection, and the preservation of traditional practices, as institutions play a crucial role in preserving social stability and order, albeit at the expense of individual freedom. The COVID-19 pandemic has heightened institutional and interpersonal trust (Esaiasson, Sohlberg, Ghersetti, & Johansson, 2021). Trust is an interpersonal or personal quality inherent in human relationships and fostered by repeating transactions, community norms, informal processes, or personal commitments (Wang & Gordon, 2011). In order to mitigate and adapt to climate change, the public must have faith in specialists. Thus, it is crucial to have a deeper understanding of how people's mitigation and adaptation behaviours are impacted by their level of confidence (Cologna & Siegrist, 2020).

H₅: Trust in institutions positively moderates the relationship between the dispositional and active dimensions of environmental awareness.

Figure 1 shows the research model by Sánchez and Lafuente (2010) chosen for this study, as it has multi-dimensional characteristics that best adapt to the initial questions.

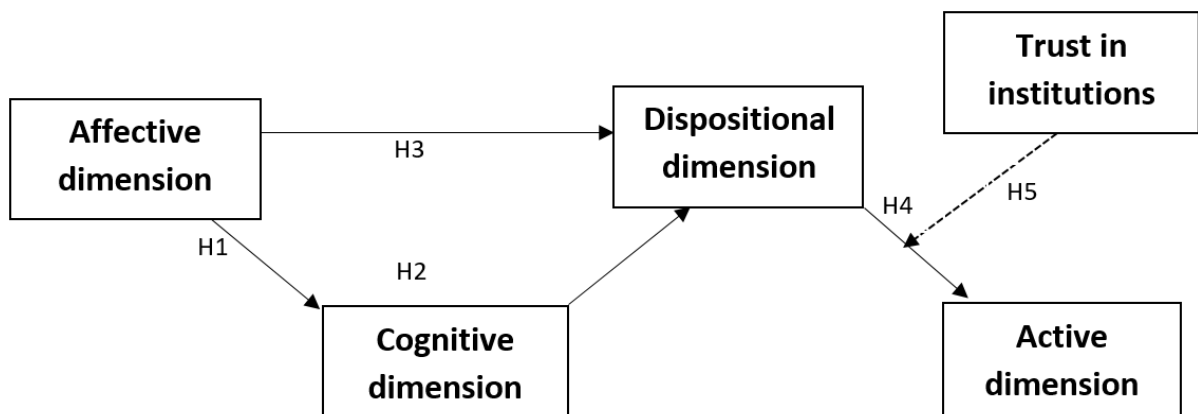


Figure 1. Research model.

3. METHODOLOGY

The International Social Survey Program (ISSP) is a continuous international partnership initiative that conducts yearly research on social science-related subjects. It was founded 40 years ago by Australia, Germany, the United Kingdom, and the United States, but now has 45 institutional members, each representing one nation. Members consist of academic organizations, universities, or survey institutes. The data from this investigation are part of Environment IV - ISSP 2020. They were collected by survey between 15.10.2019 and 31.05.2023 in Austria, Switzerland, Denmark, Finland, Hungary, Iceland, Japan, New Zealand, Philippines, Russian Federation, Slovenia, Thailand, Taiwan, Germany, China, Croatia, Lithuania, Norway, Slovakia, South Africa, Spain, France, Sweden, United States Italy, Republic of Korea, India and Australia (Höllinger, Hadler, & Eder, 2023). The surveys may be applied to cross-national and cross-temporal relationships and are made to be replicated. Each ISSP module centers around a recurring topic. The sample consists of 44,100 individuals, and the interview was used to gather data: computer-assisted telephone interviews, self-administered questionnaires on paper, web-based questionnaires and interviews, and face-to-face interviews on pencil and paper (Group, 2023). The 44,100 individuals hailed from the following countries: Austria, 1261; Switzerland, 4280; Denmark, 1198; Finland, 1137; Germany, 1702; Hungary, 1001; Iceland, 1150; Japan, 1491; New Zealand, 993; Philippines, 1500; Russia, 1583; Slovenia: 1102; Thailand, 1498; Taiwan, 1822; China, 2741; Croatia, 1000; Lithuania, 1200; Norway, 1131; Slovakia, 1013; South Africa, 2844; Spain, 2254; France, 1520; Sweden, 1921; United States, 1847; Italy, 1138; South Korea, 1205; Australia, 1147; India, 1421.

The time frame represents a turning point in the public conversation about sustainability and institutional trust, capturing shifts brought about by institutional solutions to global concerns and environmental movements (Kulin & Johansson Sevä, 2021). In addition, the duration collects extensive international data that can reveal long-term patterns in environmental views and actions (Höllinger et al., 2023)—this period allowed the investigation to see how people, corporations, and governments have responded to changing environmental laws and social pressure to embrace environmentally friendly practices (Rajput et al., 2022).

The initial step in this study's methodological approach was to define environmental awareness using the primary analytical approaches found in the literature. Based on this definition and its operationalization, we start from a behavior model of values (beliefs) and attitude (personal) Sánchez and Lafuente (2010) and we adapt their questionnaire to the items in the secondary database. Since then, researchers have proven, used, and inspired the definition and presented (Garner, Taft, & Stevens, 2015; Russell, Russell, & Honea, 2016). Further research has also highlighted the critical role of values in promoting environmental awareness and behavioural intentions to purchase green products (Kautish & Sharma, 2020).

In this way, five items were chosen for the affective dimension, four for the dispositional dimension, five for the cognitive dimension, and four for the active dimension, for a total of eighteen questions. All of these are based on the premises and criteria used in the original survey by Sánchez and Lafuente (2010). Thanks to this multidimensional approach, all aspects of environmental awareness are considered, allowing for a deeper analysis of how people view and respond to environmental challenges (Gholamrezaei et al., 2021). When analysing complicated interactions between latent variables, crucial when researching behavioural intentions and moderating factors like institutional trust, the structural equation modeling technique (SmartPLS 4.0) is especially well-suited for application (Hulland, 1999). The study also incorporated questions from the same barometer and four items related to trust in institutions. In the latter case, the measurement from the ISSP Research Group (2012) was maintained concerning the original questionnaire, as it is a scale widely used by the ISSP over time and has given rise to many scientific articles. Questions related to environmental awareness issues use the Likert scale from 1 to 5 (from "strongly disagree" to "strongly agree"), with those on trust in institutions on a scale from 1 to 10 (from "does not trust in any way" to "trusts completely").

First, descriptive statistics were analysed using the SPSS software. Then, the model was evaluated using the "bootstrap" method using the SmartPLS 4.0 software to test the hypotheses of the present study.

4. RESULTS

4.1. Descriptive Analysis

The items that generated the most significant agreement among respondents were those relating to "science solving environmental problems" and "the challenge of doing something about the environment." In other words, there is a firm universal hope in science and, simultaneously, a feeling of impotence in the face of environmental problems. Table 1 presents the descriptive statistics regarding the variables, namely the statistical universe (N), the mean, and the standard deviation.

Table 1. Descriptive statistics.

Variables	N	Mean	Standard deviation
Affective dimension			
AFET1	41889	3.34	1.112
AFET1	42693	2.68	1.055
AFET1	42242	3.2	1.11
AFET1	41238	2.73	1.084
AFET1	41373	3.07	1.067
Dispositional dimension			
DISP1	42999	3.32	1.149
DISP2	42794	2.53	0.917
DISP3	42803	3.18	1.121
DISP4	42020	3.19	1.059
Cognitive dimension			
COG1	43140	2.44	0,893
COG2	42985	2.02	0,841
COG3	42911	2.2	0,935
COG4	42657	2.17	0,953
COG5	42267	2.12	0,963
Active dimension			
ATV1	43688	1.92	0.264
ATV2	43591	1.81	0.391
ATV3	43511	1.85	0.36
ATV4	43475	1.94	0.229
Trust in institutions			
INST1	41561	6.66	2.399
INST2	42983	4.81	2.56
INST3	42066	5.24	2.249
INST4	42689	4.88	2.89

4.2. PLS Model Evaluation

Cronbach's alpha coefficient (α) (Cronbach, 1951) is more significant than 0.70 in all variables. Therefore, the sample questions have an acceptable average correlation. Composite reliability (CR) demonstrates good internal consistency of the scale items, more significant than 0.60. For the average variance extracted, the value of the variables is more significant than 0.50, the reference value according to Hulland (1999). According to the Fornell (1981) the discriminant validity of the variables is acceptable. Therefore, the model is reliable and convergent, as shown in the table below. Tables 2 and 3 demonstrate the validity of the obtained model in terms of reliability, relevance, and discriminatory validity.

Table 2. Model evaluation.

Variables	C (α)	CR (rho_a)	CR (rho_c)	AVE
Affective	0.776	0.778	0.848	0.528
Active	0.774	0.794	0.846	0.581
Dispositional	0.717	0.719	0.825	0.541
Cognitive	0.786	0.789	0.854	0.539
Trust in inst.	0.750	0.810	0.836	0.562

Table 3. Fornell-Larcker.

Variables	Affective	Active	Dispositional	Cognitive	Trust inst.
Affective	0.726	-	-	-	-
Active	0.061	0.762	-	-	-
Dispositional	0.543	0.075	0.736	-	-
Cognitive	0.370	0.133	0.368	0.734	-
Trust inst.	0.309	0.046	0.280	0.209	0.749

4.3. Explanatory Analysis

The relationships established in the research model were tested by implementing a bootstrap analysis in the Smart PLS software, and the results are shown in Table 4. The affective dimension positively affects the cognitive dimension ($\beta = 0.009$, $p < 0.001$), and the same happens regarding the affective dimension compared to the dispositional one ($\beta = 0.011$, $p < 0.001$). Thus, hypotheses H1 and H2 were confirmed, respectively. There is also a positive effect of the cognitive dimension of environmental awareness on the dispositional dimension ($\beta = 0.01$, $p < 0.001$) and of the latter on the active dimension ($\beta = 0.009$, $p < 0.001$), reciprocally confirming hypotheses H3 and H4. Regarding the moderating effect of institutional trust, the proposition was also confirmed, and the test was validated, confirming the fifth hypothesis. Institutional trust moderates the relationship between the dispositional and active dimensions ($\beta = 0.006$, $p < 0.001$), which confirms the fifth hypothesis.

Table 4. Analysis of hypotheses.

Variables	B	T	P values	Hypothesis
Affective → Cognitive (H1)	0.011	32.894	0.000	Yes
Affective → Dispositional (H2)	0.009	52.722	0.000	Yes
Cognitive → Dispositional (H3)	0.010	18.901	0.000	Yes
Dispositional → Active (H4)	0.009	7.524	0.000	Yes
Trust inst. → Dispos./Active (H5)	0.006	4.251	0.000	Yes

5. DISCUSSION OF RESULTS AND IMPLICATIONS

5.1. Discussion of Results

The present study examines the aspects of environmental awareness and how they interconnect in the model presented. Furthermore, it investigates the moderating effect of trust in institutions on the pro-environmentalist variable.

First, the findings indicate that personal relevance positively influences the level of information. The cognitive mind's susceptibility to the affective nature of understanding climate change information has already been highlighted by earlier research. We underlined that a person's relationship with the environment is based on reflection and adapts to the "interests" of nature because they are sensitive to the characteristics of a natural object and have a tendency to interpret and react to them subjectively (Khrushch & Karpiuk, 2021). The cognitive channel most closely links life satisfaction to a green self-image and a cognitive attitude (Welsch, Binder, & Blankenberg, 2021).

Our study confirmed that the affective dimension of environmental awareness positively influences its dispositional dimension. It was previously concluded that green consumption values and emotional affinity with

nature positively influence green attitudes and stimulate feedback behaviour (Van Tonder, Fullerton, & de Beer, 2020). Perera et al. Perera, Kalantari, and Johnson (2022) postulated that it is best to be cautious when promoting climate change as a promotional theme to reinforce environmental identity (for example, reinforcing consumer identity through branding strategies for climate change-aware products); instead, it is strongly recommended to focus on environmental personal norms, significantly as these strengthen environmental change behaviour. The study confirms the hypothesis that the cognitive dimension of environmental awareness influences its dispositional dimension. Knowledge of environmental problems and the primary forms of solutions generates individual concern, awakens the desire to participate, and, ultimately, leads to participation in pro-environmental actions (Suárez-Perales, Valero-Gil, Leyva-de la Hiz, Rivera-Torres, & Garcés-Ayerbe, 2021). When citizens realise the seriousness of environmental problems, which can endanger themselves and their families, they are led to engage in more environmental protection activities (Liu et al., 2021).

The fourth hypothesis also confirmed a positive correlation between the dispositional and active dimensions. Dong, Palomo-Vélez, and Wu (2021) found that dispositions predicted pro-environmental behaviours only when actors were given a greater sense of authority. Thus, the results demonstrated power as a crucial and effective communication strategy that helps individuals follow their recommendations and live according to their pro-environmental beliefs. On the other hand, when environmental benefits outweigh human costs, pro-environmental views are more likely to predict pro-environmental behaviour (Wyss, Knoch, & Berger, 2022).

The hypothesis about the moderating influence of institutional trust on the link between the dispositional and active dimensions was equally verified. Climate-friendly public behaviours are correlated with trust in institutions (Cologna & Siegrist, 2020). This is consistent with St-Laurent, Hagerman, Kozak, and Hoberg (2018) which identifies and reaffirms problems about public confidence in government decision-makers. The government may handle this issue by forming alliances with other robust and reliable players, such as environmental organizations.

5.2. Theoretical Implications

The present investigation enriches the topic of environmental awareness and establishes a causal link between different dimensions of behaviour regarding this topic. The method constructed by Sánchez and Lafuente (2010) was chosen to operationalise this definition, obtaining indices of this phenomenon that could be applied in different social contexts and periods. The present study concluded that environmental attitudes, values, personal norms, and perceived responsibility positively affect individuals' pro-environmental involvement. The results are consistent with previous studies (Ajibade & Boateng, 2021; Čapienė, Rūteliūnė, & Krukowski, 2022; Piligrimienė, Žukauskaitė, Korzilius, Banytė, & Dovalienė, 2020).

The findings underline the importance, relationship, and consequences of knowledge on pro-environmental behaviour; they also show that raised awareness can enormously impact behavioural change in people (Chen et al., 2023). In addition, this study reveals how institutional trust is a critical moderating factor, enhancing the pro-environmental behavioural effects via environmental attitudes (Yu et al., 2021).

This study's particular relevance is its assumption of a multidimensional and multi-relational model to study environmental awareness, validating questions about the beliefs and behaviours of the world population. Furthermore, we prove that trust in institutions has a moderating effect on the active environmental dimension. Recent studies related to the pandemic highlight the crucial role of trust in institutions in emergencies and the need to strengthen trust in institutions (Kosic, Kana Kenfack, & Dionisi, 2024). We integrate the originality of a model that proves that analysis of environmental awareness in the database and concludes trust in institutions has a moderating effect on the active environmental dimension. This complexity reinforces the claim that oversimplified models of environmental behaviour could miss essential elements impacting individual behaviour (Pristl et al., 2021). We contribute to the growing body of research demonstrating that successful environmental

policies must take into account both specific psychological aspects and more significant institutional dynamics. (Bremer, Glavovic, Meisch, Schneider, & Wardekker, 2021).

5.3. Practical Implications

An environmentally conscious company can influence its suppliers to be more "responsible" regarding environmental impact (Rajput et al., 2022). To promote environmentally conscious consumer behaviour, managers must strengthen environmental knowledge and perceived environmental consequences to reach consumers (Kautish & Sharma, 2020). Also, green marketers who want to positively shape consumer attitudes toward green shopping should prioritise their efforts and resources in promoting environmental values (Laheri, Lim, Arya, & Kumar, 2024). Prior studies have demonstrated the importance of environmental awareness in promoting pro-environmental behaviours; this work expands on that understanding by defining the distinct functions of the cognitive, affective, dispositional, and active dimensions of awareness (Chan & Ma, 2021). Communities can be effectively mobilised to participate in pro-environmental actions by concurrently reinforcing environmental awareness's cognitive and affective elements (Kautish & Sharma, 2020). Businesses can build consumer trust and increase support for environmentally friendly products and services by promoting sustainable practices and demonstrating a genuine commitment to environmental issues (Makhitha, 2024).

Because trust in institutions can help keep things in check, public managers can use the tools they have access to, political pressure, and required actions to make people feel more responsible for protecting the environment. This will lead to economic growth and change (Li, Zhou, Bi, Liu, & Li, 2020). Additionally, the findings suggest that educational initiatives should prioritise building institutional trust in addition to increasing public understanding of environmental challenges since this combined strategy can encourage citizens to take more excellent initiatives (Yu et al., 2021). Such initiatives are crucial for cases where coordinated activities are necessary for long-term effectiveness, e.g., in the context of urgent global challenges like climate change and biodiversity loss (Bremer et al., 2021). In this way, people can continue rather than block out and turn around what makes it possible for them to be prejudiced and focus on transformative and collective work (Muñoz-García, Alcántara-Manzanares, & Medina Quintana, 2022).

6. CONCLUSION

This study aimed to investigate environmental awareness using a large secondary sample from various countries. In addition to the applied model, institutional trust was added as a moderator. The objectives of this study were to explore environmental awareness in a behavioural model within a broad global sample and to investigate the effect of trust in institutions as a moderator between environmentally responsible personal disposition and militantly pro-environmental individual actions. The results demonstrated that perceptions about one's beliefs have a positive effect in cognitive and dispositional terms, with pro-environmentalism originating from the positive influence of each of these dimensions of environmental awareness. The contribution of this research is significant due to the persistent interest in the topic and the relevance that people, companies, and institutions have on environmental issues. Therefore, it is part of the individual certainty that we have behaviour and an opinion that must be heard and studied. This vision, both specific and global, will be the driving force behind the future path towards environmental sustainability. Trust in institutions highlights the importance of decision-makers educating individuals about sustainability to enable informed management in consumer and governance realms that engage citizens in shared responsibility for sustainability efforts. Given the above research, this serves as a perfect reminder that waking up to and having faith in institutions go hand in hand and, and our attitudes toward environmental sustainability depend on both. The results suggest that environmental knowledge alone may not be sufficient, presenting challenges to protests advocating changes by institutions that are already primarily distrusted and calling attention to good communication capacities in stimulating general public participation in projects related to

the environment that might affect people's behaviour. It will be necessary for scholars to consider these complex relationships between trust and environmental awareness when stakeholders design interventions that seek to foster collective efforts toward sustainability.

Our results emphasise how important it is for decision-makers to comprehend the spectrum of environmental consciousness and how their efforts must include behavioural, emotional, cognitive, and dispositional components. Governments and organisations that tailor their strategies to these criteria can increase public engagement and commitment to sustainability. It also demonstrates the inadequacy of simple models to describe actual behaviour related to issues. Hence, there is a need for integrated frameworks to ensure environmental problems are adequately tackled.

6.1. Limitations and Future Research

The limitations of the work have to do with the use of a comprehensive database, which, although it may have its benefits in having a global view of environmental awareness, could be sharper in differentiating between developed and emerging countries. Furthermore, this study only used cross-sectional data for analysis; longitudinal data may be more helpful. On the other hand, in the European Union, the relationship between attitude and behaviour shows systematic heterogeneity. Our study condenses the data, making it impossible to observe these differences. At the same time, more variables could be considered, and a concept that was more than empirical could be used, which could lead to results that were different from those obtained. Therefore, it is crucial to establish a universally applicable methodological framework for measuring environmental awareness. Future research could encompass more variables in individuals' conscious environmental behaviours and obtain quadrants of thought more linked to psychology or an interdisciplinary approach.

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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.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: Conceptualization, methodology, investigation, writing – original draft, writing – review & editing, visualization, D.D.; supervision, methodology, software, investigation, writing – review & editing, funding acquisition, S.G. All authors have read and agreed to the published version of the manuscript.

REFERENCES

- Ajibade, I., & Boateng, G. O. (2021). Predicting why people engage in pro-sustainable behaviors in Portland Oregon: The role of environmental self-identity, personal norm, and socio-demographics. *Journal of Environmental Management*, 289, 112538. <https://doi.org/https://doi.org/10.1016/j.jenvman.2021.112538>
- Alvarez-García, O., Sureda-Negre, J., & Comas-Forgas, R. (2018). Assessing environmental competencies of primary education pre-service teachers in Spain: A comparative study between two universities. *International Journal of Sustainability in Higher Education*, 19(1), 15-31. <https://doi.org/10.1108/IJSHE-12-2016-0227>
- Bremer, S., Glavovic, B., Meisch, S., Schneider, P., & Wardekker, A. (2021). Beyond rules: How institutional cultures and climate governance interact. *Wiley Interdisciplinary Reviews: Climate Change*, 12(6), e739. <https://doi.org/https://doi.org/10.1002/wcc.739>
- Cabral, C., & Dhar, R. L. (2021). Green competencies: Insights and recommendations from a systematic literature review. *Benchmarking: An International Journal*, 28(1), 66-105. <https://doi.org/10.1108/BIJ-11-2019-0489>
- Čapienė, A., Rūteliūnė, A., & Krukowski, K. (2022). Engaging in sustainable consumption: Exploring the influence of environmental attitudes, values, personal norms, and perceived responsibility. *Sustainability*, 14(16), 10290. <https://doi.org/https://doi.org/10.3390/su141610290>

- Chan, R. Y., & Ma, K. H. (2021). How and when environmental orientation drives corporate sustainable development in a cross-national buyer–supplier dyad. *Business Strategy and the Environment*, 30(1), 109-121. <https://doi.org/10.1002/bse.2612>
- Chen, J., Huang, Y., Wu, E. Q., Ip, R., & Wang, K. (2023). How does rural tourism experience affect green consumption in terms of memorable rural-based tourism experiences, connectedness to nature and environmental awareness? *Journal of Hospitality and Tourism Management*, 54, 166-177. <https://doi.org/https://doi.org/10.1016/j.jhtm.2022.12.006>
- Cologna, V., & Siegrist, M. (2020). The role of trust for climate change mitigation and adaptation behaviour: A meta-analysis. *Journal of Environmental Psychology*, 69, 101428. <https://doi.org/https://doi.org/10.1016/j.jenvp.2020.101428>
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334. <https://doi.org/10.1007/BF02310555>
- Darvishmotevali, M., & Altinay, L. (2022). Green HRM, environmental awareness and green behaviors: The moderating role of servant leadership. *Tourism Management*, 88, 104401. <https://doi.org/https://doi.org/10.1016/j.tourman.2021.104401>
- Devos, T., Spini, D., & Schwartz, S. H. (2002). Conflicts among human values and trust in institutions. *British Journal of Social Psychology*, 41(4), 481-494. <https://doi.org/https://doi.org/10.1348/014466602321149849>
- Dhir, A., Sadiq, M., Talwar, S., Sakashita, M., & Kaur, P. (2021). Why do retail consumers buy green apparel? A knowledge-attitude-behaviour-context perspective. *Journal of Retailing and Consumer Services*, 59, 102398. <https://doi.org/https://doi.org/10.1016/j.jretconser.2020.102398>
- Dong, M., Palomo-Vélez, G., & Wu, S. (2021). Reducing the gap between pro-environmental disposition and behavior: The role of feeling power. *Journal of Applied Social Psychology*, 51(3), 262-272. <https://doi.org/https://doi.org/10.1111/jasp.12733>
- Dragomir, V. D. (2019). *Springerbriefs in applied sciences and technology*: Springer. https://doi.org/https://doi.org/10.1007/978-3-030-29548-6_3.
- Ertz, M., Karakas, F., & Sarigöllü, E. (2016). Exploring pro-environmental behaviors of consumers: An analysis of contextual factors, attitude, and behaviors. *Journal of Business Research*, 69(10), 3971-3980. <https://doi.org/https://doi.org/10.1016/j.jbusres.2016.06.010>
- Esaiasson, P., Sohlberg, J., Ghersetti, M., & Johansson, B. (2021). How the coronavirus crisis affects citizen trust in institutions and in unknown others: Evidence from 'the Swedish experiment'. *European Journal of Political Research*, 60(3), 748-760. <https://doi.org/https://doi.org/10.1111/1475-6765.12419>
- Fairbrother, M., Sevä, I. J., & Kulin, J. (2019). Political trust and the relationship between climate change beliefs and support for fossil fuel taxes: Evidence from a survey of 23 European countries. *Global Environmental Change*, 59, 102003. <https://doi.org/doi.org/10.1016/j.gloenvcha.2019.102003>
- Fornell, C. (1981). *Structural equation models with unobservable variables and measurement error: Algebra and statistics*. Publications Sage. <https://doi.org/10.1177/002224378101800313>.
- Funk, A., Sütterlin, B., & Siegrist, M. (2021). Consumer segmentation based on stated environmentally-friendly behavior in the food domain. *Sustainable Production and Consumption*, 25, 173-186. <https://doi.org/https://doi.org/10.1016/j.spc.2020.08.010>
- Garner, M. A., Taft, E. D., & Stevens, C. L. (2015). Do children increase their environmental consciousness during summer camp? A comparison of two programs. *Journal of Outdoor Recreation, Education, and Leadership*, 7(1), 20-34. <https://doi.org/10.7768/1948-5123.1238>
- Gholamrezai, S., Aliabadi, V., & Ataei, P. (2021). Understanding the pro-environmental behavior among green poultry farmers: Application of behavioral theories. *Environment, Development and Sustainability*, 23(1), 1-19. <https://doi.org/https://doi.org/10.1007/s10668-021-01331-1>
- Grilli, G., & Curtis, J. (2021). Encouraging pro-environmental behaviours: A review of methods and approaches. *Renewable and Sustainable Energy Reviews*, 135, 110039. <https://doi.org/https://doi.org/10.1016/j.rser.2020.110039>
- Höllinger, F., Hadler, M., & Eder, A. (2023). Environment IV - ISSP 2020. <https://doi.org/https://doi.org/10.4232/1.14153>

- Hosta, M., & Zabkar, V. (2021). Antecedents of environmentally and socially responsible sustainable consumer behavior. *Journal of Business Ethics*, 171, 273-293. <https://doi.org/https://doi.org/10.1007/s10551-019-04416-0>
- Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal*, 20(2), 195-204. [https://doi.org/10.1002/\(SICI\)1097-0266\(199902\)20:2](https://doi.org/10.1002/(SICI)1097-0266(199902)20:2)
- ISSP Research Group. (2012). International social survey programme: Environment III-ISSP 2010. *GESIS Data Archive, Cologne. ZA5500 Data file Version*, 2(0), 10.4232. <https://doi.org/10.4232/1.14153>
- Kautish, P., & Sharma, R. (2020). Determinants of pro-environmental behavior and environmentally conscious consumer behavior: An empirical investigation from emerging market. *Business Strategy & Development*, 3(1), 112-127. <https://doi.org/https://doi.org/10.1002/bsd2.82>
- Khan, S. J., Chauhan, C., & Akram, M. U. I. (2020). Cognitive factors influencing green consumption behaviour of young millennials: An empirical check on Indian consumers. *International Journal of Green Economics*, 14(4), 293-314. <https://doi.org/https://doi.org/10.1504/IJGE.2020.112566>
- Khrushch, O., & Karpiuk, Y. (2021). Psychological aspects of building environmental consciousness. *Grassroots Journal of Natural Resources*, 4(2), 120-135. <https://doi.org/https://doi.org/10.33002/nr2581.6853.040209>
- Kosic, A., Kana Kenfack, C. S., & Dionisi, E. (2024). The relationship between populism and attitudes on vaccine against COVID-19: Trust in institutions as a moderation factor. *Analyses of Social Issues and Public Policy*, 24(1), 150-169. <https://doi.org/https://doi.org/10.1111/asap.12378>
- Kulin, J., & Johansson Sevä, I. (2021). Who do you trust? How trust in partial and impartial government institutions influences climate policy attitudes. *Climate Policy*, 21(1), 33-46. <https://doi.org/https://doi.org/10.1080/14693062.2020.1792822>
- Kumar, A., Prakash, G., & Kumar, G. (2021). Does environmentally responsible purchase intention matter for consumers? A predictive sustainable model developed through an empirical study. *Journal of Retailing and Consumer Services*, 58, 102270. <https://doi.org/https://doi.org/10.1016/j.jretconser.2020.102270>
- Kumar, P., & Ghodeswar, B. M. (2015). Factors affecting consumers' green product purchase decisions. *Marketing Intelligence & Planning*, 33(3), 330-347. <https://doi.org/https://doi.org/10.1108/MIP-03-2014-0068>
- Laheri, V. K., Lim, W. M., Arya, P. K., & Kumar, S. (2024). A multidimensional lens of environmental consciousness: Towards an environmentally conscious theory of planned behavior. *Journal of Consumer Marketing*, 41(3), 281-297. <https://doi.org/10.1108/JCM-03-2023-5875>
- Leonidou, L. C., Leonidou, C. N., & Kvasova, O. (2010). Antecedents and outcomes of consumer environmentally friendly attitudes and behaviour. *Journal of Marketing Management*, 26(13-14), 1319-1344. <https://doi.org/10.1080/0267257X.2010.523710>
- Li, C., Ahmed, N., Qalati, S. A., Khan, A., & Naz, S. (2020). Role of business incubators as a tool for entrepreneurship development: The mediating and moderating role of business start-up and government regulations. *Sustainability*, 12(5), 1822. <https://doi.org/https://doi.org/10.3390/su12051822>
- Li, R., Zhou, Y., Bi, J., Liu, M., & Li, S. (2020). Does the central environmental inspection actually work? *Journal of Environmental Management*, 253, 109602. <https://doi.org/https://doi.org/10.1016/j.jenvman.2019.109602>
- Liu, P., Han, C., & Teng, M. (2021). The influence of Internet use on pro-environmental behaviors: An integrated theoretical framework. *Resources, Conservation and Recycling*, 164, 105162.
- Makhitha, K. (2024). The effect of green purchase intention on emerging market consumers' clothing purchase behaviour in South Africa. *International Journal of Management and Sustainability*, 13(2), 299-308. <https://doi.org/0.18488/11.v13i2.3670>
- Mehta, P., & Chahal, H. S. (2021). Consumer attitude towards green products: Revisiting the profile of green consumers using segmentation approach. *Management of Environmental Quality: An International Journal*, 32(5), 902-928. <https://doi.org/10.1108/meq-07-2020-0133>

- Milfont, T. L., & Duckitt, J. (2010). The environmental attitudes inventory: A valid and reliable measure to assess the structure of environmental attitudes. *Journal of Environmental Psychology*, 30(1), 80-94. <https://doi.org/doi.org/10.1016/j.jenvp.2009.09.00>
- Mishal, A., Dubey, R., Gupta, O. K., & Luo, Z. (2017). Dynamics of environmental consciousness and green purchase behaviour: An empirical study. *International Journal of Climate Change Strategies and Management*, 9(5), 682-706. <https://doi.org/https://doi.org/10.1108/IJCCSM-11-2016-0168>
- Muñoz-García, I. M., Alcántara-Manzanares, J., & Medina Quintana, S. (2022). Key aspects of adolescents' environmental attitudes with a view to transformative education. *Education Sciences*, 12(9), 591. <https://doi.org/https://doi.org/10.3390/educsci12090591>
- Onel, N. (2017). Pro-environmental purchasing behavior of consumers: The role of norms. *Social Marketing Quarterly*, 23(2), 103-121. <https://doi.org/https://doi.org/10.1177/1524500416672440>
- Perera, C. R., Kalantari, H., & Johnson, L. W. (2022). Climate change beliefs, personal environmental norms and environmentally conscious behaviour intention. *Sustainability*, 14(3), 1824. <https://doi.org/doi.org/10.3390/su14031824>
- Piligrimienė, Ž., Žukauskaitė, A., Korzilius, H., Banytė, J., & Dovalienė, A. (2020). Internal and external determinants of consumer engagement in sustainable consumption. *Sustainability*, 12(4), 1349. <https://doi.org/https://doi.org/10.3390/su12041349>
- Pristl, A. C., Kilian, S., & Mann, A. (2021). When does a social norm catch the worm? Disentangling social normative influences on sustainable consumption behaviour. *Journal of Consumer Behaviour*, 20(3), 635-654. <https://doi.org/10.1002/cb.1890>
- Quoquab, F., & Mohammad, J. (2020). Cognitive, affective and conative domains of sustainable consumption: Scale development and validation using confirmatory composite analysis. *Sustainability*, 12(18), 7784. <https://doi.org/https://doi.org/10.3390/su12187784>
- Rajput, N., Sharma, U., Kaur, B., Rani, P., Tongkachok, K., & Dornadula, V. H. R. (2022). Current global green marketing standard: Changing market and company branding. *International Journal of System Assurance Engineering and Management*, 13(Suppl 1), 727-735. <https://doi.org/https://doi.org/10.1007/s13198-021-01604-y>
- Rani, A. M., Dariah, A. R., Madhoun, W. A., & Srisusilawati, P. (2023). Awareness of sustainable finance development in the world from a stakeholder perspective. *International Journal of Management and Sustainability* 12, 323-336. <https://doi.org/10.18488/11.v12i3.3428>
- Russell, C. A., Russell, D. W., & Honea, H. (2016). Corporate social responsibility failures: How do consumers respond to corporate violations of implied social contracts? *Journal of Business Ethics*, 136, 759-773. <https://doi.org/doi.org/10.1007/s10551-015-2868-x>
- Saari, U. A., Damberg, S., Frömling, L., & Ringle, C. M. (2021). Sustainable consumption behavior of Europeans: The influence of environmental knowledge and risk perception on environmental concern and behavioral intention. *Ecological Economics*, 189, 107155. <https://doi.org/https://doi.org/10.1016/j.ecolecon.2021.107155>
- Sánchez, M. J., & Lafuente, R. (2010). Defining and measuring environmental consciousness. *Revista Internacional de Sociología*. <https://doi.org/10.3989/ris.2008.11.03>
- Schultz, P. W., Shriver, C., Tabanico, J. J., & Khazian, A. M. (2004). Implicit connections with nature. *Journal of Environmental Psychology*, 24, 31-42. [https://doi.org/https://doi.org/10.1016/S0272-4944\(03\)00022-7](https://doi.org/https://doi.org/10.1016/S0272-4944(03)00022-7)
- Sharma, K., & Bansal, M. (2013). Environmental consciousness, its antecedents and behavioural outcomes. *Journal of Indian Business Research*, 5(3), 198-214. <https://doi.org/https://doi.org/10.1108/JIBR-10-2012-0080>
- Spielmann, N. (2021). Green is the new white: How virtue motivates green product purchase. *Journal of Business Ethics*, 173(4), 759-776. <https://doi.org/https://doi.org/10.1007/s10551-020-04493-6>
- St-Laurent, G. P., Hagerman, S., Kozak, R., & Hoberg, G. (2018). Public perceptions about climate change mitigation in British Columbia's forest sector. *PLOS One*, 13, e0195999. <https://doi.org/https://doi.org/10.1371/journal.pone.0195999>

- Suárez-Perales, I., Valero-Gil, J., Leyva-de la Hiz, D. I., Rivera-Torres, P., & Garcés-Ayerbe, C. (2021). Educating for the future: How higher education in environmental management affects pro-environmental behaviour. *Journal of Cleaner Production*, 321, 128972. <https://doi.org/https://doi.org/10.1016/j.jclepro.2021.128972>
- UN. (2015). *Transforming our world: The 2030 agenda for sustainable development*. New York: United Nations.
- Van Tonder, E., Fullerton, S., & de Beer, L. T. (2020). Cognitive and emotional factors contributing to green customer citizenship behaviours: A moderated mediation model. *Journal of Consumer Marketing*, 37(6), 639-650. <https://doi.org/https://doi.org/10.1108/JCM-06-2019-3268>
- Wang, L., & Gordon, P. (2011). Trust and institutions: A multilevel analysis. *The Journal of Socio-Economics*, 40(5), 583-593. <https://doi.org/https://doi.org/10.1016/j.socec.2011.04.015>
- Wasaya, A., Saleem, M. A., Ahmad, J., Nazam, M., Khan, M. M. A., & Ishfaq, M. (2021). Impact of green trust and green perceived quality on green purchase intentions: A moderation study. *Environment, Development and Sustainability*, 23(9), 13418-13435. <https://doi.org/https://doi.org/10.1007/s10668-020-01219-6>
- Welsch, H., Binder, M., & Blankenberg, A.-K. (2021). Green behavior, green self-image, and subjective well-being: Separating affective and cognitive relationships. *Ecological Economics*, 179, 106854. <https://doi.org/https://doi.org/10.1016/j.ecolecon.2020.106854>
- Wyss, A. M., Knoch, D., & Berger, S. (2022). When and how pro-environmental attitudes turn into behavior: The role of costs, benefits, and self-control. *Journal of Environmental Psychology*, 79, 101748. <https://doi.org/https://doi.org/10.1016/j.jenvp.2021.101748>
- Xie, C., Wang, R., & Gong, X. (2022). The influence of environmental cognition on green consumption behavior. *Frontiers in Psychology*, 13, 988585. <https://doi.org/https://doi.org/10.3389/fpsyg.2022.988585>
- Yu, W., Han, X., Ding, L., & He, M. (2021). Organic food corporate image and customer co-developing behavior: The mediating role of consumer trust and purchase intention. *Journal of Retailing and Consumer Services*, 59, 102377. <https://doi.org/doi.org/10.1016/j.jretconser.2020.102377>
- Zelezny, L. C., & Schultz, P. W. (2000). Psychology of promoting environmentalism: Promoting environmentalism. *Journal of Social Issues*, 56(3), 365-371. <https://doi.org/https://doi.org/10.1111/0022-4537.00172>

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