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Eco-Digital Trends: Consumer Behavior and Marketing Practices in the Dynamic Context of Global Warming

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Abstract:
Purpose: This study targets climate change awareness of 4.54 billion internet users or 56% of the world's population. It examines the reception of brand messages that bring out the aspects of ecological sustainability in the context of the cultural values of social media users.
Theoretical framework: The positive link between consumer behavior and environmental responsibility was derived from a web-based survey and PLS-SEM analysis with 480 participants.
Design/methodology/approach: The data obtained from the survey on 480 participants is evaluated through a web-based survey and PLS-SEM model that generates the digital platform's interlinkage of consumer behavior with climate change awareness.
Findings: This research depicts a positive association between consumer behavior and buying green, challenging the established notions of green consumerism.
Research, Practical & Social implications: The findings call for redesigning green consumerism in the age of digitization and underpin future research on AI-driven green marketing.
Originality/ value: This study provides in-depth new insights into the role of digital consumer behavior in promoting sustainability and identifies future research directions as we approach 2030-2050.
Keywords: Green Marketing, Consumer Behavior, Digital Platforms, Climate Change
JEL Classification: M31, Q01, O33
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1.Introduction:

Globalization has widened and made a universal truth through internet connectivity-driven A.I. and popular social media channels. In essence, these are grounded forms of deepening globalization. Key to that evolution over the past few years has been the growing consciousness and approaches both in economic and enterprise sustainability, company laws, wellness, food systems, and the machines-humans interactions driven by transformational technologies in greening (Dauvergne, 2020). The courage of Meta at Facebook with its Metaverse technology (AI-3D virtual applications and services) is expected to transform human life and society in general. This virtual reality interaction process could push trends in e-commerce, online advertising, culture modification, and environmental and digital Earth (Allam et al., 2022).

The author used the PLS-SEM method for research since it provided a solution related to investigating complex latent variables of the model using a web-based survey. The relationship between general domestic buying patterns and climate change-related awareness and responsibility was analyzed among 480 participants' data for the behavioral responses to climate change. Li, Larimo and Leonidou (2021), this methodological approach provides a fine-grained conceptualization of green marketing constructs. It ensures a deep analysis of theoretical representations and hypotheses about consumer purchase behavior affected by global warming and the advent of the Metaverse (Augustinus & Agnes, 2020).

Similar to existing literature that merely discusses generic green consumer trends, this study explores the overlap of AI-driven green marketing and digital consumer behaviors. What sets it apart is its emphasis on the attitudes and behaviors that characterize 21st-century marketing and consumption and how those have intertwined with changes in the digital environment and the pressure of climate change (Chatzisarantis & Biddle, 1998).

Now imagine more than 4 billion users in the same world on various business marketing, commerce, and green marketing, and voila, we have a whole new digital world planting this culture of saving our planet on its citizens (Onwezen et al., 2021). Classic shopping malls have behavior that leaves the populace shopping for all digital surfaces. Over half of this customer population has switched to members of a new generation of the 21st century. New consumption habits are adapted sustainably (Barari, Ross & Surachartkumtonkun, 2020). On the contrary, this shift may lead to the fall of 51% of offline retail shops, directly reflecting a draconian change in consumer behavior and the market.

Rockström et al. The study of Betz et al. (2009) concentrated on the types of demand that influence energy consumption in the context of climate change. Policy makers and marketers can count on consumer choice to reduce carbon footprints and co2 emissions. The consumer culture working with responsible and environmentally sustainable green purchases and accompanying market demand for environmentally friendly products drive business innovations in eco-friendly products. Companies that do not align with environmentally friendly strategies are likelier to get left behind and die off.

Customers generally go through the five stages before buying: problem awareness, information search, evaluating options, choosing, and post-purchasing reflection (Anshu, Gaur & Singh, 2022). The above procedure may vary, and some steps may need to be added or repeated (Moustakas, 2015). By 2050, technologies and A.I. of some of the non-professional polluted origin types of life, climate prevention, and air condition will be transformed, as professionals say (Faqih, 2016). The ILC first met in the 1700s, and climate change was finally registered in the 1900s, which took two centuries. Since the 20th century and the present, various theories of climate change mitigation and green technologies have claimed to cut carbon emissions by 45-50% before 2030-2050 (Pink, 2022).

Efforts with the goodwill of consumers and producers to adopt eco-friendly products as long as the price does not exceed a market-acceptable point. The eco-friendly product market is expected to be $2.65 trillion (Folkvord, Roes & Bevelander, 2020).

2.Literature Review:

Philip Kotler (1994) emphasized the importance of understanding consumer behavior, which involves explaining critical roles in purchasing decisions, such as who, when, and why people buy certain products. According to Arndt et al. (2004), consumer behavior is the study of the actions of consumers or groups involved in the decision processes of choosing, consuming, and acquiring products, services, ideas, and experiences to achieve individual objectives and satisfy various needs and desires.

The COVID-19 pandemic from 2019 to 2022 significantly impacted consumer behavior, revolutionizing the industry by fostering an online buying culture and increasing consumer engagement with e-commerce (Wu et al., 2020). This shift has necessitated businesses to adapt their strategies to cater to the evolving online consumer landscape.

Market analysis aims to comprehend behaviors competing with the target market (Ramya & Ali, 2016). Environmental consciousness and changes in future market trends and competition compel businesses to define new strategies to attract environmentally minded customers and adopt practices minimizing CO_2 footprints (Di Crosta et al., 2021). Resistance to changes can result in falling behind or business failure. The Green Branding sector transforms consumer culture, leading to complex online shopping behaviors and eco-conscious entrepreneurship (Erjavec & Manfreda, 2022).

In 2020, worldwide retail e-commerce sales amounted to $4.28 trillion and were estimated to reach $5.4 trillion between 2022 and 2023 (Coppola et al., 2022). Impulsive buying is prevalent, with 80% of U.S. youth engaging in online shopping (Kimiagari & Malafe, 2021). Environmental awareness, creative and ethical considerations, and self-efficacy are predictors of green purchasing intentions (Kesenheimer & Greitemeyer, 2021; Ali et al., 2021; Van Loo et al., 2013; Tian et al., 2021).

The research problem emphasizes revealing how processes of digital consumer behavior are impacted by green marketing activities considering climate change. It looks at the relevance of the use of A.I. in the green marketing concept while simultaneously analyzing its relationship with digital consumer activities to help businesses derive the best strategies for moving forward with the concept of sustainable marketing.

2.1 Hypotheses:

1.People are more likely to choose sustainable products when they are environmentally conscious.

2.Knowing about and having a positive view of green products makes people more likely to buy them.

3.Education and positive attitudes towards the environment increase interest in green products.

4.Being familiar with green practices leads to more green purchases.

5.Unique and eco-friendly features of green products attract buyers.

6.Sustainable practices at work encourage both employees and customers to make green choices.

3. Methodology:

The techniques used are an online survey and an SEM framework, which applies the partial least squares method (PLS-SEM). The online survey aids this in collecting participants' information. This technique was selected because it efficiently reaches broader and more diverse audiences and is crucial in understanding digital consumer behavior through socioeconomic status and geographical variations (Erjavec & Manfreda, 2022). Nevertheless, we executed the survey via digital means to secure the participants' access and, on the other hand, simplify the data collection and analysis (Pandey & Chawla, 2018).

A sample size of 480 people was surveyed, and this number ensured that the results were from a qualified source of information. This sample size is the perfect practical size required by the SEM technique to produce excellent and correct results (Hair, Howard & Nitzl, 2020).

SEM examines those complicated variances between the observed and the latent variables. Hence, PLS-SEM was chosen because of its robustness and capability to analyze models with multiple constructs and indicators, which are frequent in studies investigating consumer behavior and marketing (Rasoolimanesh, 2022). Unlike LISREL, PLS-SEM is more applicable in model exploration studies and when a research model involves many components and paths. Besides, the non-parametric test is an excellent choice when the data's normality is impossible (Dash & Paul, 2021). SEM stands out highly in behavioral sciences for its capability to work simultaneously with many variables and their interrelationships. This helps to appreciate both the immediate and the long-term effects. It is a holistic approach to understanding the various factors that play a role in consumers' decision-making processes (Shrestha, 2021).

PLS-SEM helps develop an analysis of the behavioral tendency that evaluates how specific indicators reflect such a construct. This ensures that the complex and multidimensional dynamics will be addressed if we probe deeper into each interaction layer between green marketing and consumers (Hair, Howard & Nitzl, 2020). Using the SEM generates a more in-depth scope for interaction by which researchers can learn about the cause-and-effect relationships between the different aspects of digital marketing and how they affect consumer decisions on sustainability. Such a step is indeed significant for a focused approach to intervention and marketing strategy (Dash & Paul, 2021).

3.1 Study Sample:

The questionnaire was administered using an online data-gathering tool to obtain a probability sample and maintain the identity of the participants. The pilot study included a questionnaire completed by 20 subjects, making the project refine the questions. The last set of the survey was launched electronically to a broader public after excluding biases, which may be caused by participants likely to be influenced by incentives. The total number of filled-up surveys received was 504; however, after eliminating the irrelevant or incomplete responses, 480 were used for the study. Most of the respondents were male, 51. 7 %. Most respondents were within the 21-25 years age bracket. This can be attributed to the respondents' comparatively young age and university education level. The sample size of 480 respondents is justified based on the recommendations by Hair, Howard, and Nitzl (2020), who suggest that for structural equation modeling (SEM), a minimum of 5 observations per variable is required, with ten observations per variable being more ideal. Given the complexity of the PLS-SEM model used in this study, which involves multiple constructs and indicators, this sample size ensures robust and reliable results. Hair, Howard, and Nitzl (2020) also emphasize that larger sample sizes improve the accuracy and generalizability of the findings, thereby supporting the validity of the study's conclusions.

3.2 Contextual Relevance:

The research analyzes the consumer behavior of the Saudis and Canadians towards green marketing with particular relevance to the geographical contexts of the two countries. This research aims to study which digital marketing tactics are the most efficient at fostering eco-friendly consumer behaviors, especially with the background of Saudi Arabia and Canada's economy and culture (Vamvaka et al., 2020).

Both Saudi Arabian and Canadian markets have different influences on consumer behavior and marketing strategies. With the pace of technological and social transformations caused by diversification away from an oil-dependent economy, Saudi Arabia creates a puzzling situation for analyzing the patterns of green consumers' behavior. Canada, known for its strict environmental policies and informed consumers about sustainability, makes a good study case to assess the success of sustainability-driven marketing strategies.

Furthermore, regarding economic and environmental significance, both countries have been chosen to investigate the impact of diverse economic structures and different environmental policies on consumers' decisions between environmentally eco-friendly and non-friendly products. Saudi Arabia's economy depends mainly on the oil sector, which makes green marketing more important for Saudi Arabia as it explores renewable energy sources instead of oil. On the other hand, Canada's economically diversified and stringent environmental regulations are the lessons to be learned about purchase drivers from a conventional green market.

The emphasis on these two countries is based on strategic sampling, which aims to capture a broad range of responses about the effectiveness of digital green marketing techniques in regions with different regulations and cultures.

This research aims not to directly compare consumer behavior towards green marketing in Saudi Arabia and Canada but to investigate and learn how eco-friendly digital marketing interventions can work amidst each country's unique economic and cultural aspects.

3.3 Results and Discussion:

The survey collected demographic data involving age, gender, education, income, and nationality. Most were young males aged between 21 and 25, with most participants residing in Saudi Arabia.

Among 480 surveyed participants, the number of men was 330, and that of women was 150. The age group concluded a figure of 35 participants in the age bracket of 15 to 20 years, 195 of 21 to 25 years of age, 58 in the group of 26 to 30 years, 44 of 31 to 35 years, and 117 of the age group 40 years and older. The educational levels ranged from high school to Ph.D.; the most prominent groups were bachelors and postgraduates. Most respondents made less than $2000, implying that lower- and middle-class income accounted for the more significant part. Table 1 breaks down the collected demographic data.

Table 1 Demographics

Variables	Frequency	Percent
Gender		
Male	330	68.9
Female	150	31.1
Age		
18-20	35	7.26
21-25	192	39.83
26-30	58	12.03
31-35	44	9.13
36-40	34	7.05
40 and above	117	24.69
Qualification		
Bachelor / Undergraduate	249	51.7
Intermediate / Higher Secondary School	24	5.0
Master / Postgraduate	138	28.6
Matriculation / Secondary School	9	1.9
PhD or Equivalent	60	12.9
Income		
Less than $ 2000	262	54.8
$ 2000 - 3000	83	17.2
$ 3100 - 4000	31	6.4

$ 4100 - 5000	28	5.8
$ 5100 - 6000	17	3.5
$ above 6000	59	12.2
Country		
Canada	80	16.66
Saudi Arabia	350	83.34

3.4 Study variables*:*

1-The focal variables EC1, EC2, and EC3 are attitudes toward global warming adopted from Leiserowitz (2005). EC1 is about attitudes toward global warming. EC2 is how to perceive individual impact. However, EC3 is also about the knowledge of shaping people's environmental actions.

2-The variables GAP1, GAP2, and GAP3 refer to the (Green Perceptions and Awareness), adopted from Peattie and Charter (2003). At the same time, GAP1 measures the environmental knowledge of general consumers around global warming. GAP2 measures consumers' judgment of the effectiveness of green products and the benefits received compared to conventional products. However, GAP3 measures consumers' perception of the advantages they get from their green behavior, which may lead to buying eco-products (Bleier, Harmeling & Palmatier, 2019).

3-The variables GFE1 and GFE2 (Green Familiarity and Engagement) obtained from Ottman (2011) stand for the degree to which consumers are green-savvy and how they relate to green practices. GFE1 measures the consumer cognition level regarding their awareness of and recognition of green products presented in the market. GFE2 aims to assess the extent of people practicing green lifestyles.

4-The variables GPB1, GPB2, GPB3, GPB4, and GPB5 collectively mean (Green Product Benefits) obtained from the research of Chen & Chang (2012), and these are used to establish the perceived advantages of using green products from different perspectives. GPB1, GPB2, GPB3, GPB4, and GPB5 stand for measuring consumers' perceptions of health advantages when using green products, assessing green products being effective or not in reducing environmental impacts, evaluating green products effectiveness when consumers compare them with conventional ones, measuring how consumers perceive the social benefits of green product use, and finally, their perception of the durability and life span of green products.

5-The variables GPD1, GPD2, and GPD3, meaning (Green Purchase Decision), were used by Dangelico and Pontrandolfo (2015), and they measured the process of buying green products in the decision-making stage. GPD1 evaluates the impact of consumer knowledge and access to information on green products (Verhagen & Van Dolen, 2011). GPD2 measures to what extent consumers' values and concerns affect their choice of an eco-friendly product. At the same time, GDP3 assesses the role of performance and efficiency perception of green products in consumers' minds through the purchasing decision.

6-The variables "GPQ1", "GPQI2", "GPQI3", "GPQI4," and "GPQI5" by Dangelico and Pontrandolfo (2015), constituting a "Green Product Quality Index" (GPQI)," serve the purpose of categorically evaluating the multidimensional quality attributes of green products, such as the consumer psychology and perceived quality factors. The GPQI1 question measures the material strength and wear resistance of green products. One of the core functions of GPQI2 is to reflect how consumers evaluate the performance of green products compared to traditional products. GPQI3 is based on the perception of their functionality and aesthetics (Nystrand & Olsen, 2020). GQPI4 includes health and safety details of green products on nontoxic substances and safe usage. GPQI5 examines how consumers judge the lifecycle of green products in manufacturing.

7-The variables are GWP1 and GWP2, quantified (Green Workplace Practices), which are perception and attitude assessments of employees' attitudes towards green initiatives in their work environment. These variables are obtained from Revell and Blackburn's (2007) study.

GWP1 measures employees as part of the company's green initiatives. Meanwhile, GWP2 evaluates whether employees perceive the same concern for the environment displayed by the company.

3.5. Reliability and validity:
a.Reliability:

Regarding research, reliability is equivalent to how tests are consistent, indicating whether they could be used to measure something repeatedly. This study determined internal consistency reliability by computing composite reliability in the Partial Least Squares Path Modeling (PLS-SEM) style method. This process is considered an option for expressiveness in inner consistency compared with Cronbach's traditional alpha. All observed C.R. values exceeded the recommended threshold of 0.7 throughout the evaluation process, which underscores the measurement accuracy of the constituents. Such a conclusion points to the fact that the reliability of the study can be relatively high since the data collected internally have no discrepancies (Djakasaputra et al., 2021).

b.*Validity*:

The validity accuracy of the measurement is one of the aspects of validity in research, which signifies the extent of the study's fidelity, via which it can capture the particular concept that a researcher is trying to measure. The study addresses several aspects of validity: The study addresses several aspects of validity:

1.Convergent Validity: This criterion was evaluated through the Average Variance Extracted (AVE), where the acceptable minimum of 0.5 and only the factor loadings greater than 0.7 are considered sufficient. The convergent validity of the archetypes can be established through AVE and factor loadings, which demonstrate a solid commonality among constructs and their indicators (Clark & Watson, 2019). Table 2 sheds light on the fact that the instruments employed in the study are both about reliability and validity. The model structure table has proved the validity of this study's measurement model, which retains confidence in the findings about digital consumer behavior and green marketing strategies.

Table 2- Reliability And Convergent Validity				
VARIABLES	**Outer Loadings**	**C.R.**	**A**	**AVE**
EC1	0.820	0.876	0.788	0.702
EC2	0.857			
EC3	0.836			
GAP1	0.782	0.87	0.770	0.692
GAP2	0.868			
GAP3	0.843			
GFE1	0.887	0.900	0.78	0.818
GFE2	0.922			
GPB1	0.739	0.888	0.842	0.614
GPB2	0.713			
GPB3	0.821			
GPB4	0.827			
GPB5	0.811			
GPD1	0.829	0.870	0.776	0.690
GPD2	0.847			
GPD4	0.816			

GPQI1	0.751	0.889	0.844	0.616
GPQI2	0.770			
GPQI3	0.831			
GPQI4	0.806			
GPQI5	0.764			
GWP1	0.904	0.881	0.730	0.787
GWP2	0.869			

2.Discriminant Validity: A vital concern is whether concepts and measurements that are supposed to be unrelated are considered related and vice versa (Fornell & Larcker, 1981). The study's discriminant validity is constructed using the Fornell-Larcker criterion and the HTMT (Heterotrait-Monotrait ratio) (Rönkkö & Cho, 2022). The obtained statistics displayed the HTMT ratios below the threshold value of 0.9, ensuring that the constructs are relatively different from one another, which translates into good discriminant validity (Yusoff et al., 2020). Tables 3 and 4 demonstrate the criteria's reliability and validity in measuring different concepts or phenomena. Such validation is critically important to prevent colliders between the latent constructs of the study (Matthes & Ball, 2019).

3.Tables 3 and 4 confirm the discriminator validity of the study variables and the methodical soundness of the study, which provides the basis for trusting the conclusion regarding digital consumer behavior and green marketing strategies.

Table 3 Fornell and Larker						
	EC	GAP	GFE	GPB	GPD	GPQ	GWP
Fornell and Larker						
EC	**0.838**						
GAP	0.482	**0.832**					
GFE	0.564	0.530	**0.905**				
GPB	0.642	0.562	0.506	**0.784**			
GPD	0.620	0.612	0.691	0.620	**0.831**		
GPQI	0.526	0.633	0.527	0.703	0.599	**0.785**	
GWP	0.486	0.608	0.580	0.533	0.653	0.581	**0.887**
Table 4 HTMT						
EC							
GAP	0.613						
GFE	0.715	0.681					
GPB	0.789	0.692	0.619				
GPD	0.789	0.781	0.883	0.763			
GPQ	0.640	0.787	0.640	0.828	0.731		
GWP	0.639	0.799	0.768	0.670	0.861	0.733	

Achieving validity and reliability is vital to the test system's validation. These systems' results confirm that the research is reliable and valid. It also proves the strength of the findings as they support the existing principles of customer action when it comes to green marketing.

c. Factor loadings and communalities:

The analysis further applied Exploratory Factor Analysis (EFA) in the beginning to investigate the likelihood of the latent factor structure, which, in turn, is not imposed on the latent factors. This method helps distinguish the number of factors based on the data and reviews how specific variables could be attributed to each factor.

Table 5 shows the factor loadings and communalities (derived from a PCA using the Varimax rotation technique concentrating on General Ecological Behavior). The examination of such activities is essential to learning what is going on, and it can help define factors of ecological attitudes and behaviors. The investigation revealed the most relevant causes for General Ecological Behavior. All these factors consist of several behavioral functions or variables, each with a specified load.

Table 5 Factor loadings and communalities

Items	Communities	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
EC1	0.600	**0.652**	0.168	0.341	0.266	0.274	0.382	0.317
EC2	0.847	**0.716**	0.418	0.540	0.557	0.364	0.545	0.452
EC3	0.823	**0.653**	0.489	0.455	0.503	0.399	0.420	0.463
GAP1	0.785	0.350	**0.734**	0.386	0.407	0.336	0.426	0.518
GAP2	0.753	0.356	**0.673**	0.453	0.403	0.497	0.490	0.455
GAP3	0.653	0.333	**0.675**	0.462	0.402	0.484	0.629	0.386
GFE1	0.576	0.290	0.395	**0.763**	0.485	0.385	0.571	0.453
GFE2	0.702	0.446	0.898	**0.802**	0.546	0.362	0.466	0.462
GPB1	0.853	0.317	0.563	0.901	**0.623**	0.425	0.462	0.412
GPB2	0.586	0.452	0.417	0.878	**0.591**	0.542	0.616	0.378
GPB3	0.572	0.463	0.378	0.782	**0.702**	0.587	0.569	0.417
GPB4	0.654	0.518	0.378	0.886	**0.612**	0.713	0.669	0.764
GPB5	0.680	0.568	0.449	0.692	**0.764**	0.542	0.633	0.847
GPD1	0.577	0.390	0.514	0.412	0.847	**0.743**	0.522	0.829
GPD2	0.670	0.337	0.605	0.536	0.829	**0.654**	0.555	0.453
GPD4	0.476	0.434	0.329	0.547	0.654	**0.744**	0.545	0.453
GPQI1	0.763	0.368	0.207	0.558	0.359	0.453	**0.783**	0.359
GPQI2	0.634	0.436	0.432	0.590	0.495	0.325	**0.825**	0.495
GPQI3	0.567	0.538	0.424	0.616	0.431	0.535	**0.835**	0.463
GPQI4	0.712	0.403	0.292	0.442	0.424	0.774	**0.617**	0.518
GPQI5	0.676	0.596	0.305	0.571	0.523	0.563	**0.777**	0.546
GWP1	0.701	0.591	0.388	0.586	0.601	0.518	0.652	**0.794**
GWP2	0.687	0.557	0.421	0.561	0.558	0.512	0.502	**0.771**

The result reveals that several variables have high loading, thus suggesting that the PCA with Varimax rotation successfully captured the latent structure of General Ecological Behavior, which should be the subject of further analysis. This is a sign of a good factor solution where the factors extracted explain much of the variability in the original variables. Moreover, statistical Significance and model fit suggest that the adequacy of the model is a function of commonalities and loadings distribution. High commonalities across almost all variables show that the model fits the data perfectly, capturing the main trends of ecological behavior.

3.6 Hypotheses Testing:

This study provides several hypotheses, models, and constructs. Such hypotheses are indispensable when building a path diagram for SEM in consumer behavior and green marketing contexts. However, the environmental concern element immediately modifies green purchasing decisions (GPD). On the other hand, Green Awareness and Perceptions (GAP) include an individual knowing the average environmental knowledge, a tendency to believe in the efficiency of green products, and a belief that benefits a person by participating in green behavior. The GAP impacts GDP directly and indirectly via intervening factors like Green Essentials and Commitment Level (GFE). Green Familiarity and Engagement (GFE), where the familiarity effect demonstrated the extent to which consumers were accustomed to and engaged in green practices. GFE acts as a mediator between GAP and GDP, achieving the same effect more directly. Green Product Benefits (GPB) directly affect GDP; for instance, consumer behavior depends on brand positioning (Xu et al., 2022).

However, the Green Purchase Decision (GPD) is Directly affected by the age group, educational level, genomic prediction breeding, and genotyping price barns. It determines what functions the value, knowledge, belief, and performance perceptions play in green buying (Xhema, 2019).

These online channels spread like wildfire through these structures, causing a stimulus of direct and indirect effects leading to the consumer's consciousness of environmental concerns, which eventually causes him to purchase eco-friendly products. This path models the intricate connections between different factors that influence changing occasions of green consumer habits.

Hypothesis testing outcomes of the study on digital consumer behavior and sustainable marketing are systematically presented in Table 6. The table evaluates the validity of the hypothesized relationships among different marketing constructs and environmentally friendly purchase decisions using a group of 480 respondents. It delves (hypothesis-Path) into a particular connection that is under examination, such as how Environmental Concern (E.C.) influences Green Purchase Decision (GPD). In addition, it presents Beta (β) values, which represent the strength and direction of the relationships; the Sample Mean indicates the average value for the sample, and the standard deviation shows variability or variation within the sample data. On the contrary, t statistics are applied to identify the importance of the results. P-value refers to the probability of getting sample results that are more statistically significant than the observed results (considering the null hypothesis is correct). Generally, the P-value lower than 0.05 is deemed statistically significant. Moreover, the final column is Status, which informs whether or not the hypothesis is supported (Significant) (Insignificant).

Table 6 Hypotheses Testing

Hypothesis- Path	β-values	Sample Mean	Standard Deviation	T statistics	P value	Status
EC -> GPD	0.134	0.138	0.053	2.542	0.011	Significant
GAP -> GPD	0.112	0.112	0.050	1.242	0.056	Partially Significant
GAP -> GFE -> GPD	0.309, 0.331	0.329	0.037	6.846	0.000	Significant
GPB -> GPD	0.121	0.118	0.053	2.245	0.025	Significant
GPQI -> GPD	0.040	0.329	0.049	0.822	0.411	Insignificant
GWP -> GPD	0.340	0.234	0.062	5.501	0.000	Significant

As summarized in Table 6, the findings show that each path coefficient can be articulated in detail as follows:

Regarding the direct relationship between E.C. to GPD: Environmental Concern to Green Purchase Decision, the findings show that the Path coefficient (β) = 0.134 with P = 0.011 (Significant); this furnishes the fact that there is a prominent determinant effect of Environmental Concern on Green Purchase Decision which supports hypothesis 1.

However, the direct effect of Green Awareness and Perceptions (GAP) on Green Purchase Decision (GDP) is partially significant with Path Coefficient (β) = 0.112 and P-value =0.056 α10%. That displays an influence of green awareness and perceptions in green purchase choices.

Furthermore, the relationship between GAP, which stands for Green Awareness and Perceptions, and GFE for Green Familiarity and Engagement; GPD stands for Green Purchase Decision is as follows (GAP to GFE) Path coefficient is 0.309 with the Path coefficient for GFE to GDP is .331 (Chun, Tham & Azam, 2019).

The p-value for the whole path is 0.000, which is significant. GAP has a marked indirect impact on GDP, which occurs through the mediation process of GFE, which supports hypotheses 3a and 3b.

In addition to that, by examining the relationship between GPB to Green Purchase Decision (GPD), the findings show that Path coefficient (β) is 0.121 and P-value=0.025(Statistically significant)". Aapt to have purchasing decisions of green products positively affected by attitudes on green product benefits which support hypothesis 4 (Kaiser & Wilson, 2004).

However, Green Product-Quality Index vs. Green Purchase Decision (GPQI vs. GPD) findings show Path coefficient (β) = 0.04 and P-value (0.411). The fact that the quality level is not a significant factor for this sample when purchasing green products is highlighted; such a finding does not support hypothesis 5.

Lastly, Green Workplace Practices (GWP) to Green Purchase Decision (GPD) with Path coefficient (β) = 0.340 and P-value = 0.000 (Significant) Illustrates clear evidence of green activities in workplaces affecting green choices of purchases.

This SEM reveals the direct and indirect effects of several environmental and green marketing models on green buying for the consumer (Kuppelwieser & Klaus, 2020). Thus, these processes reveal the role of green campaigns and the importance of a practical approach to green activities that considers consumer behavior and sustainability.

1.General Discussion, Recommendations And Future Study:

This research paper critically examined how consumers subtly get influenced by green marketing as climate change becomes the latest trend in consumer awareness. One of the pioneer findings was a direct connection between web surfers' eco-conscious behavior and the way they shop with each other. Statistical analyses were accompanied by PLS-SEM modeling, and there were found that consumers who are aware of and care about environmental troubles tend to buy green items more than others (Hmielowski, Donaway & Wang, 2019). However, the incomparable event enlightenments GAP (Green Awareness and Perceptions) only highly affect the adoption of green purchasing behavior if engagement and perceived benefits are simultaneously considered.

The insights offer an increasing body of knowledge about buyer behavior and green marketing by depicting the dynamic that translates awareness into actual purchase behavior. This proves that regardless of an intellectual consumer notwithstanding, it is not enough to influence environment-conscious behavior. Data reveals the necessity of a multi-angled approach to green marketing campaigns that delivers two goals: raising awareness and involving or instead directing consumers to get them to make green decisions (Choudhary & Gokarn, 2013).

For marketers and policymakers, the implications are clear: there may be a need to create information-based market strategies. Also, integrating digital campaigns with assisted reality or giving feedback to the consumers about green products they have already chosen increases consumer involvement (Roberts, 1996). Indeed, purposefully expressing the personal and interplanetary gains from eco-products will help move people from understanding into action. Additionally, adaptations of messaging towards segmented customers who are aware of the types of consumers and their behavior will advance the acceptance and effectiveness of communication.

The social significance of the study lies in the potential ability of digital marketing to blend with green actions to raise environmental awareness and improve society in general. This study provides evidence that digital platforms are powerful social enablers for effectively converting consumers to environmentally friendly behaviors, thus stimulating a movement for sustainability (Becker & Jaakkola, 2020). This could evolve into creating a lasting lifestyle, including the sustainability of society and consumption as social responsibility. Sustainability can be achieved by the government and companies utilizing these insights for the development of practical strategies that bring economic growth as well as environmental protection while the consumers' behavior is in line with sustainability goals.

This research highlights the crucial factors influencing digital consumer behavior in the context of green marketing. The findings suggest that an effective green marketing strategy must be comprehensive, raise awareness, and actively guide consumers toward environmentally friendly decisions (Chan et al., 2017). By understanding these dynamics, businesses can better craft their marketing efforts to promote sustainability and appeal to eco-conscious consumers.

Future research should address some of the limitations identified in this study, such as the limited sample size confined to just two countries. Expanding the research to a global scale would provide a more comprehensive understanding of green consumer behavior across different cultural and economic contexts. Additionally, exploring the impact of emerging innovations like Artificial Intelligence (A.I.) and the Metaverse on consumer behavior will yield valuable insights into leveraging digital resources for promoting sustainability. The intersection of digital innovation, consumer behavior, and sustainability will remain a critical area of focus, helping businesses stay ahead of trends and effectively engage with the growing market of environmentally conscious consumers.

2. Conclusion:

Both digital innovation-led consumer behaviors combine the opportunities of the future. While the world continues to face substantial environmental challenges, digital platforms and the increasing use of technologies like block chain and augmented reality only add to the problem of how consumer behavior can be used sustainably. While studying the influence of technology on transparency, trust, and engagement, the report will focus on this theme, which has theoretical and practical value.

Authors Declaration:
Conflicts of Interest: None
-We Hereby Confirm That All The Figures and Tables In The Manuscript Are Mine and Ours. Besides, The Figures and Images, which are Not Mine, Have Been Permitted Republication and Attached to The Manuscript.
- Ethical Clearance: The Research Was Approved by The Local Ethical Committee in The University

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