

Digital Transformation Through Online Shopping: Assessing Its Contribution To Green Technology Adoption And Sustainable Consumption

Sachin R. Hebbar*

Dept. of Commerce, Sri Dharmasthala Manjunatheshwara College (Autonomous), Ujire - 574240

ABSTRACT

Digital transformation has significantly reshaped consumer behaviour and created new opportunities for promoting sustainable consumption. This study examines the relationship between Online Shopping Digitalisation (OSD), Green Technology Adoption (GTA), and Sustainable Consumption (SC) among online consumers. The study aims to assess the relationships among these constructs and examine the potential mediating role of GTA in the relationship between OSD and SC. A quantitative, cross-sectional research design was adopted, and primary data were collected from 220 online consumers using a structured questionnaire and five-point Likert scale. Data were analysed using SPSS through descriptive statistics, correlation, and regression analysis, while PLS-SEM is proposed for further assessment of the measurement and structural models. The findings indicate significant positive relationships between OSD and GTA ($\beta = .261, p < .001$), OSD and SC ($\beta = .299, p < .001$), and GTA and SC ($\beta = .465, p < .001$). The study highlights the importance of integrating digitalisation and green technology to promote sustainable consumption.

Keywords: Online Shopping Digitalisation; Digital Transformation; Green Technology Adoption; Sustainable Consumption; E-Commerce; Green Digital Transition; Consumer Behaviour; PLS-SEM; Digital Commerce; Environmental Sustainability.

INTRODUCTION

The rapid diffusion of digital technologies has transformed consumer behaviour, particularly through the expansion of online shopping. E-commerce platforms increasingly integrate digital payments, mobile applications, personalised recommendations, online reviews and data-driven product information, making digitalisation an important component of contemporary consumption systems. However, the environmental implications of online shopping are complex. While digital commerce may improve convenience and certain logistical efficiencies, it can also contribute to packaging waste, last-mile delivery emissions, reverse logistics and increased consumption.

At the same time, digital platforms provide opportunities to promote environmentally responsible consumption through eco-labels, sustainability information, paperless transactions, digital receipts, green delivery options and technology-enabled

recycling and return systems. This creates an emerging intersection between **digital transformation and environmental sustainability**. However, limited consumer-level research has examined how online shopping digitalisation may contribute to sustainable consumption through the adoption of green technologies. Therefore, this study examines **Online Shopping Digitalisation (OSD), Green Technology Adoption (GTA), and Sustainable Consumption (SC)** within an integrated PLS-SEM framework. Specifically, it examines the relationships among these constructs and investigates whether green technology adoption mediates the relationship between online shopping digitalisation and sustainable consumption. The study contributes to understanding the consumer-level mechanisms through which digital commerce may support the transition towards more sustainable consumption practices.

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

2. REVIEWS OF LITERATURE:

Sl. No.	Author(s) & Year	Study Focus	Methodology	Key Findings	Research Gap / Relevance
1	Frick & Matthies (2020)	Online shopping efficiency and consumption	Cross-sectional studies; N=883, 860, 976	Online shopping changes consumption behaviour, with both sustainability opportunities and risks.	Does not examine green technology adoption as a mechanism.
2	Rao et al. (2021)	E-commerce and environmental sustainability	Questionnaire; 303 respondents	Environmental attitudes are important for sustainable e-commerce behaviour.	Focuses on e-commerce sustainability rather than the digitalisation–GTA–sustainability pathway.
3	Islam et al. (2023)	Environmental-impact information in e-commerce	Quasi-randomised experiment; 98 participants	Environmental-impact information improved eco-friendly online behaviour.	Examines a specific digital intervention rather than overall online shopping digitalisation.
4	Bharani, Roy & Tawde (2024)	Sustainable e-commerce practices in India	Survey; 301 consumers	Environmental concerns influenced sustainable delivery and purchase intentions.	Does not examine green technology adoption as a mediator.
5	Klein & Popp (2023)	Online vs. physical retail sustainability perceptions	Literature review + four empirical studies	Consumers' perceptions of e-commerce sustainability differ from expert assessments.	Does not explain how digitalisation influences sustainable consumption through technology.
6	Li, Yang & Arshad (2026)	AI, social influence and eco-friendly online shopping	Consumer empirical research	AI-mediated information and social influence can support eco-friendly shopping decisions.	Does not test the OSD → GTA → SC pathway.
7	Gattupalli, Ashrafunnisa & Krishna (2026)	eWOM and green purchase intentions in India	Survey; 512 respondents	Information quality and credibility strengthened eWOM adoption and green purchase intention.	Focuses on eWOM rather than green technology adoption and sustainable consumption.
8	Wang et al. (2025)	E-commerce and green consumption transformation	Chinese provincial panel data, 2012–2023	E-commerce was associated with green consumption transformation.	Macro-level study; does not explain individual consumer behaviour.

9	2025 – From Cues to Choices	Eco-labels and sustainable online consumption	SEM, NCA and fsQCA	Eco-labels and quality cues influence sustainable online consumption.	Does not examine GTA as a mediating mechanism.
10	Hassan et al. (2026)	Drivers of green consumer behaviour	Empirical consumer research	Highlights the challenge of translating environmental concern into green behaviour.	Does not specifically address digital commerce and GTA.
11	Bi et al. (2026)	Digital green transformation of online retailing	Game-theoretic model and simulation	Consumer eco-consciousness and policy support influence retailers' green transformation.	Focuses on retailers, not the consumer-level pathway.
12	Digital Service Nudges (2026)	Digital nudges and reusable packaging	Survey, choice experiment and simulated checkout	Digital nudges and convenient return systems can encourage sustainable practices.	Focuses on reusable packaging rather than broader green technology adoption.

Source: Author's compilation based on the reviewed literature (2020–2026).

Table:1 Brief Review of Literature on Online Shopping Digitalisation, Green Technology Adoption and Sustainable Consumption

Recent research highlights the growing interrelationship between digital transformation, environmental sustainability, green technology and responsible consumer behaviour. Poojari N. (2026) examined **digital inclusion, rural youth capabilities and inclusive growth**, highlighting the broader role of digital transformation in enhancing capabilities and supporting inclusive development, while Poojari N. (2026) also examined **digital transformation and rural youth empowerment**, providing a relevant foundation for understanding how digital technologies can influence socio-economic behaviour and development. In the area of environmental sustainability, Poojari N. (2026) examined **sustainable green entrepreneurship and the role of green product innovation**, thereby emphasising the importance of green innovation in achieving sustainable economic outcomes. Similarly, Poojari N. (2024) examined the **role of organic products in achieving a sustainable green economy** and the relationship between consumers' environmental and health concerns and the use of green products (Poojari, N. 2024). Earlier studies by Poojari N. (2019) addressed **consumer decision-making regarding solar energy usage and environmental protection**, while Poojari N. (2018) examined

economic and environmental sustainability, providing further conceptual support for linking technology adoption, environmental awareness and sustainable behaviour. Building on these strands of literature, the present study extends the discussion to the **online shopping environment** by examining whether Online Shopping Digitalisation (OSD) contributes to Green Technology Adoption (GTA) and Sustainable Consumption (SC), and whether GTA functions as a mediating mechanism between OSD and SC. Methodologically, the study adopts a **quantitative, cross-sectional research design** and collects primary data from online consumers using a structured questionnaire based on a five-point Likert scale. The relationships among OSD, GTA and SC are examined using descriptive statistics, reliability analysis, Pearson correlation and regression analysis in SPSS, followed by **Partial Least Squares Structural Equation Modelling (PLS-SEM)** using SmartPLS to assess the measurement model, structural relationships and the mediating effect of GTA. This approach enables the study to examine both the direct relationship between digitalised online shopping and sustainable consumption and the indirect pathway through green technology adoption.

5. RESEARCH GAP:

- *Limited integration of digitalisation and sustainability:* Existing studies have examined online shopping, e-commerce sustainability and green consumption separately, but fewer studies integrate these dimensions into a single empirical framework.
- *Limited consumer-level evidence:* Much of the existing research focuses on e-commerce supply chains, logistics, retailers, platforms or macro-level regional data, rather than individual consumers.
- *Green Technology Adoption is underexplored:* Although digital technologies can facilitate environmentally responsible practices, relatively limited attention has been given to Green Technology Adoption (GTA) as a distinct consumer-level construct.
- *Insufficient examination of the OSD–GTA–SC relationship:* The relationship between Online Shopping Digitalisation (OSD), Green Technology Adoption (GTA), and Sustainable Consumption (SC) has not been sufficiently examined within an integrated model.
- *Limited mediation analysis:* Previous studies have largely focused on direct relationships, while the mediating role of Green Technology Adoption between online shopping digitalisation and sustainable consumption remains insufficiently investigated.
- *Indian consumer evidence is limited:* Although some studies have examined sustainable e-commerce practices and green purchase intentions in India, there is limited evidence explaining the broader digitalisation–green technology–sustainable consumption mechanism among Indian online consumers.
- *Need for empirical PLS-SEM evidence:* There is scope for a comprehensive PLS-SEM model that simultaneously examines the

direct effects of online shopping digitalisation and green technology adoption and the indirect effect through mediation.

Therefore, the present study addresses the identified gap by developing and empirically testing a consumer-level PLS-SEM framework in which Green Technology Adoption is proposed as a mediating mechanism linking Online Shopping Digitalisation with Sustainable Consumption.

6. STATEMENT OF THE PROBLEM

The rapid expansion of online shopping has significantly transformed consumer purchasing behaviour through digital platforms, mobile applications, digital payments, personalised recommendations, and technology-enabled services. While such digitalisation offers greater convenience, accessibility, and information, its contribution to **green technology adoption and sustainable consumption** remain inadequately understood. Online shopping may facilitate environmentally responsible choices through digital receipts, eco-friendly product information, sustainable delivery options, and technology-supported recycling systems; however, it may also increase packaging waste, frequent deliveries, product returns, and excessive consumption. Existing studies have largely examined e-commerce sustainability, green purchasing behaviour, digital technologies, and environmental practices independently, leaving limited evidence on their integrated consumer-level relationships. Particularly, the mechanism through which **Online Shopping Digitalisation (OSD)** influences **Sustainable Consumption (SC)** through **Green Technology Adoption (GTA)** requires further empirical investigation. Therefore, this study employs **PLS-SEM** to examine these relationships and determine whether Green Technology Adoption mediates the relationship between Online Shopping Digitalisation and Sustainable Consumption.

7. SCOPE OF THE STUDY

The study focuses on online consumers and examines how Online Shopping Digitalisation (OSD) influences Green Technology Adoption (GTA) and Sustainable Consumption (SC). It covers consumers' use of digital shopping platforms, technology-enabled green practices and environmentally responsible

purchasing behaviour. The study specifically investigates the direct relationships among OSD, GTA and SC and the mediating role of GTA in the relationship between OSD and SC. Primary data will be collected from online shopping consumers through a structured questionnaire and analysed using descriptive statistics and PLS-SEM. The study is limited to consumer-level perceptions and behaviours associated with online shopping and does not examine retailer-level supply chains, logistics or broader macroeconomic effects.

8. JUSTIFICATION OF THE STUDY

The study is justified by the growing integration of digital transformation and environmental sustainability in e-commerce. Although previous research has examined online shopping and green consumption, limited attention has been given to the mechanism through which digitalisation may encourage green technology adoption and sustainable consumption. Examining GTA as a mediating variable provides a more comprehensive understanding of this relationship. The findings can contribute to academic literature and provide useful insights for e-commerce platforms, consumers and sustainability-oriented policymakers seeking to promote environmentally responsible digital consumption.

8. SIGNIFICANCE OF THE STUDY:

The study is significant because it examines the growing intersection of digital transformation and environmental sustainability in online shopping. It contributes to academic literature by integrating Online Shopping Digitalisation, Green Technology Adoption and Sustainable Consumption within a single empirical framework. The study is particularly relevant because it examines Green Technology Adoption as a mediating mechanism, providing a deeper understanding of how digitalised shopping environments may influence sustainable consumer behaviour.

The findings may help e-commerce platforms and digital retailers understand how technology-enabled green practices can encourage environmentally responsible consumption. For consumers, the study may increase awareness of the environmental implications of digital purchasing and the role of

green technologies. For policymakers and sustainability practitioners, the findings can provide empirical insights for developing strategies that encourage sustainable digital commerce. Methodologically, the application of PLS-SEM provides empirical evidence on both direct and indirect relationships among the study variables.

9. THEORETICAL AND CONCEPTUAL FRAMEWORK

1. Theoretical Framework: The study can be grounded in Unified Theory of Acceptance and Use of Technology (UTAUT) and Value–Belief–Norm (VBN) Theory to explain the relationship between digitalised online shopping, green technology adoption and sustainable consumption.

Unified Theory of Acceptance and Use of Technology (UTAUT) : UTAUT provides a theoretical basis for understanding consumers' acceptance and use of digital technologies. In the present study, the theory helps explain how consumers' interaction with online shopping platforms, digital payments, mobile applications, digital information and technology-enabled services contributes to the adoption of green technologies. Higher acceptance and use of digital technologies may create opportunities for consumers to engage with environmentally oriented digital services.

Thus, UTAUT provides theoretical support for the relationship: Online Shopping Digitalisation → Green Technology Adoption

Value–Belief–Norm (VBN) Theory : VBN theory explains environmentally responsible behaviour through individuals' values, environmental beliefs and personal norms. In the context of this study, consumers who recognise environmental consequences may be more willing to adopt green technologies and engage in environmentally responsible consumption practices.

Thus, VBN provides theoretical support for: Green Technology Adoption → Sustainable Consumption

It also helps explain how digital environments can provide information and opportunities that facilitate environmentally responsible consumer behaviour.

2. Conceptual Framework

The conceptual framework integrates **Online Shopping Digitalisation (OSD)**, **Green Technology Adoption (GTA)**, and **Sustainable Consumption (SC)**.

Online Shopping Digitalisation (OSD) : OSD represents consumers' use of digital platforms and technologies for online purchasing, including digital payments, mobile applications, online product information, reviews and personalised digital services.

Green Technology Adoption (GTA) : GTA represents consumers' willingness to adopt or support technology-enabled environmentally friendly practices associated with online shopping, such as paperless transactions, digital receipts, green delivery options, recycling and technology-enabled returns.

2.3 Sustainable Consumption (SC): SC represents environmentally responsible consumer behaviour, including preference for eco-friendly products, reduced waste, consideration of product durability and packaging, and environmental considerations in purchasing decisions.

2.4 Mediating Role of Green Technology Adoption: The framework proposes that OSD may influence SC directly and indirectly through GTA. GTA therefore functions as the mediating variable.

10. Objective

1. To examine the relationship between online shopping digitalisation, green technology adoption and sustainable consumption among online consumers.
2. To assess the mediating role of green technology adoption in the relationship between online shopping digitalisation and sustainable consumption

11. Research Hypotheses:

H1: Online Shopping Digitalisation has a significant positive effect on Green Technology Adoption.

H2: Online Shopping Digitalisation has a significant positive effect on Sustainable Consumption.

H3: Green Technology Adoption has a significant positive effect on Sustainable Consumption.

H4: Green Technology Adoption significantly mediates the relationship between Online Shopping Digitalisation and Sustainable Consumption.

12. RESEARCH METHODOLOGY:

The present study adopts a **quantitative, cross-sectional research design** to examine the relationship between Online Shopping Digitalisation (OSD), Green Technology Adoption (GTA), and Sustainable Consumption (SC) among online consumers. Primary data were collected from respondents having experience with online shopping through a structured questionnaire comprising demographic variables and 30 measurement items covering OSD, GTA, and SC, measured on a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. The study uses **220 valid responses** for the empirical analysis. Descriptive statistics were employed to understand the central tendency and dispersion of the major constructs, while **Cronbach's alpha** was used to assess the internal consistency of the measurement items.

Pearson correlation analysis was conducted to examine the associations among OSD, GTA, and SC. Subsequently, **simple linear regression analysis using SPSS** was employed to test the direct relationships corresponding to H1 (OSD → GTA), H2 (OSD → SC), and H3 (GTA → SC). The results indicate statistically significant positive relationships for all three paths, with OSD explaining 6.8% of the variance in GTA, OSD explaining 8.9% of the variance in SC, and GTA explaining 21.6% of the variance in SC. To examine the proposed mediating role of GTA in the relationship between OSD and SC (H4), the study further proposes **Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS**, including assessment of the measurement model, structural model, path coefficients, coefficient of determination (R^2), and bootstrapped indirect effect with confidence intervals. Thus, the methodology integrates SPSS-based statistical analysis with PLS-SEM to assess both the direct and indirect relationships among digitalised online shopping, green technology adoption, and sustainable consumption.

13. DATA ANALYSIS OF THE STUDY:

Experience with Online Shopping by Frequency of Online Shopping										
Experience with Online Shopping	Frequency of Online Shopping									
	Less than once a month		1–2 times a month		3–5 times a month		6–10 times a month		More than 10 times a month	
	F	%	F	%	F	%	F	%	F	%
Less than 1 year	1	13%	12	48%	27	31%	21	35%	13	33%
1–3 years	3	38%	8	32%	18	20%	13	22%	14	36%
4–6 years	2	25%	1	4%	23	26%	16	27%	5	13%
7–10 years	1	13%	3	12%	10	11%	2	3%	2	5%
More than 10 years	1	13%	1	4%	10	11%	8	13%	5	13%
Total	8	100%	25	100%	88	100%	60	100%	39	100%
Source: Author's computation based on primary survey data using SPSS.										

Table: 2-Experience with Online Shopping by Frequency of Online Shopping

Table 2 presents the distribution of respondents according to their **online shopping experience and frequency of online shopping**. Among respondents shopping **3–5 times a month**, those with less than one year of experience constituted the largest group (31%), followed by those with 4–6 years of experience (26%). Among respondents shopping **6–10 times a month**, the highest proportion had less than one year of experience (35%), followed by 4–6

years (27%). In the **more than 10 times a month** category, respondents with 1–3 years of experience formed the largest proportion (36%), followed by those with less than one year (33%). Overall, the data indicate considerable variation in online shopping frequency across different levels of shopping experience, with frequent online shopping reported by consumers from both relatively new and more experienced user groups.

Gender-wise Distribution of Respondents by Frequency of Online Shopping				
Frequency of Online Shopping	Gender			
	Male		Female	
	F	%	F	%
Less than once a month	4	3%	4	4%
1–2 times a month	17	15%	8	8%
3–5 times a month	43	37%	45	43%
6–10 times a month	33	29%	27	26%
More than 10 times a month	18	16%	21	20%

Total	115	100%	105	100%
Source: Author's computation based on primary survey data using SPSS.				

Table: 3- Gender-wise Distribution of Respondents by Frequency of Online Shopping

Table 3 presents the gender-wise distribution of respondents according to their frequency of online shopping. Among male respondents, the highest proportion (37%) reported shopping online **3–5 times a month**, followed by 29% who shopped **6–10 times a month**. Similarly, among female respondents, the largest proportion (43%) reported shopping **3–5 times**

a month, followed by 26% who shopped **6–10 times a month**. Only a small proportion of both male (3%) and female (4%) respondents reported shopping online less than once a month. Overall, the distribution indicates that **3–5 online shopping occasions per month was the most common frequency among both male and female respondents**.

Age-wise Distribution of Respondents by Experience with Online Shopping										
Experience with Online Shopping	Age									
	18–25 years		26–35 years		36–45 years		46–55 years		Above 55 years	
	F	%	F	%	F	%	F	%	F	%
Less than 1 year	20	48%	18	35%	22	29%	7	25%	7	30%
1–3 years	12	29%	9	18%	23	30%	5	18%	7	30%
4–6 years	7	17%	11	22%	17	22%	8	29%	4	17%
7–10 years	2	5%	5	10%	6	8%	4	14%	1	4%
More than 10 years	1	2%	8	16%	8	11%	4	14%	4	17%
	42	100%	51	100%	76	100%	28	100%	23	100%
Source: Author's computation based on primary survey data using SPSS.										

Table 4: Age-wise Distribution of Respondents by Experience with Online Shopping

Table 4 presents the age-wise distribution of respondents according to their experience with online shopping. Among respondents aged **18–25 years**, the largest proportion (48%) had less than one year of online shopping experience. In the **26–35 years** group, less than one year of experience was also the largest category (35%), while among respondents aged **36–45 years**, **1–3 years** of experience accounted for the highest proportion (30%). For the **46–55 years** group, **4–6 years** of experience was the largest category (29%). Among respondents aged **above 55**

years, both **less than one year and 1–3 years** of experience accounted for 30% each. Overall, the table indicates variation in online shopping experience across age groups, with relatively shorter experience being more prominent among younger respondents.

Educational Qualification-wise Distribution of Respondents by Experience with Online Shopping								
Experience with Online Shopping	Educational Qualification							
	Higher Secondary		Under graduate		Post graduate		M.Phil. /Ph.D.	
	F	%	F	%	F	%	F	%
Less than 1 year	5	11%	14	25%	3	4%	4	8%
1–3 years	19	42%	17	30%	23	34%	17	33%
4–6 years	7	16%	13	23%	21	31%	10	20%
7–10 years	11	24%	6	11%	9	13%	10	20%
More than 10 years	3	7%	7	12%	11	16%	10	20%
Total	45	100%	57	100%	67	100%	51	100%
Source: Author's computation based on primary survey data using SPSS.								

Table 5: Educational Qualification-wise Distribution of Respondents by Experience with Online Shopping

Table 5 presents the distribution of respondents according to educational qualification and experience with online shopping. Among respondents with **Higher Secondary education**, the largest proportion (42%) had **1–3 years** of online shopping experience. Similarly, among **undergraduate respondents**, 30% had 1–3 years of experience, while **postgraduate respondents** recorded the highest proportion (34%)

in the same category. Among respondents with **M.Phil./Ph.D. qualifications**, 33% had 1–3 years of experience. Overall, **1–3 years of online shopping experience was the most prominent category across all educational groups**, indicating that this level of experience was relatively common irrespective of educational qualification.

Occupation-wise Distribution of Respondents by Experience with Online Shopping										
Experience with Online Shopping	Occupation									
	Student		Government Employee		Private Employee		Self-employed /Business		Professional	
	F	%	F	%	F	%	F	%	F	%
Less than 1 year	1	13%	4	16%	7	8%	8	13%	6	15%
1–3 years	0	0%	11	44%	33	38%	21	35%	11	28%
4–6 years	6	75%	4	16%	21	24%	8	13%	12	31%
7–10 years	1	13%	3	12%	13	15%	13	22%	6	15%

More than 10 years	0	0%	3	12%	14	16%	10	17%	4	10%
	8	100%	25	100%	88	100%	60	100%	39	100%
Source: Author's computation based on primary survey data using SPSS										

Table 6: Occupation-wise Distribution of Respondents by Experience with Online Shopping

Interpretation: Table 6 presents the occupational distribution of respondents according to their experience with online shopping. Among **students**, the highest proportion (75%) reported **4–6 years** of online shopping experience. For **government employees**, 44% had **1–3 years** of experience. Among **private employees**, the largest proportion (38%) also reported **1–3 years** of experience. For **self-**

employed/business respondents, 35% had **1–3 years** of experience, while among **professionals**, 31% reported **4–6 years** of experience. Overall, the distribution shows variation in online shopping experience across occupational groups, with **1–3 years and 4–6 years** emerging as the more prominent experience categories.

Monthly Household Income-wise Distribution of Respondents by Experience with Online Shopping										
Experience with Online Shopping	Monthly Household Income									
	Below 25,000		25,001–50,000		50,001–75,000		75,001–1,00,000		Above 1,00,000	
	F	%	F	%	F	%	F	%	F	%
Less than 1 year	1	2%	7	13%	6	12%	1	6%	2	10%
1–3 years	26	39%	13	23%	19	38%	9	50%	9	43%
4–6 years	14	21%	16	29%	11	22%	5	28%	5	24%
7–10 years	10	15%	13	23%	9	18%	2	11%	2	10%
More than 10 years	15	23%	7	13%	5	10%	1	6%	3	14%
	66	100%	56	100%	50	100%	18	100%	21	100%
Source: Author's computation based on primary survey data using SPSS										

Table 7: Monthly Household Income-wise Distribution of Respondents by Experience with Online Shopping

Table 7 presents the distribution of respondents according to monthly household income and experience with online shopping. Among respondents with a monthly household income **below ₹25,000**, the largest proportion (39%) had **1–3 years** of online shopping experience. Similarly, among those earning **₹25,001–₹50,000**, 29% reported 4–6 years of experience, while **1–3 years** was the largest category among respondents earning **₹50,001–₹75,000 (38%)**,

₹75,001–₹1,00,000 (50%), and **above ₹1,00,000 (43%)**. Overall, the findings indicate that **1–3 years of online shopping experience was particularly prominent among respondents in the higher income groups**, while experience varied across income categories.

Scale Statistics				
Mean	Variance	Std. Deviation	Cronbach's Alpha	N of Items
118.5227	173.420	13.16889	0.616	37
Source: Author's computation based on primary survey data using SPSS.				

Table 8: Reliability Statistics of the Overall Research Scale

Table 8 presents the reliability statistics for the overall 37-item research scale. The **Cronbach's Alpha value of 0.616** indicates a moderate level of internal consistency among the items. The scale has a mean score of **118.5227** and a standard deviation of **13.16889**, with a variance of **173.420**. The obtained

reliability coefficient suggests that the items demonstrate an acceptable degree of consistency for preliminary analysis; however, the reliability of the individual constructs **OSD, GTA and SC** should also be assessed separately before conducting the final PLS-SEM analysis.

Statistics : Descriptive Statistics and Pearson Correlations among OSD, GTA and SC				
		OSD	GTA	SC
Mean		3.3759	3.3273	3.3455
Std. Deviation		0.56932	0.56728	0.52649
Correlations				
		OSD	GTA	SC
OSD: ONLINE SHOPPING DIGITALISATION	Pearson Correlation	1	0.261**	0.299**
	Sig. (2-tailed)		0.000	0.000
	N	220	220	220
GTA: GREEN TECHNOLOGY ADOPTION	Pearson Correlation	0.261**	1	0.465**
	Sig. (2-tailed)	0.000		0.000
	N	220	220	220
SC: SUSTAINABLE CONSUMPTION	Pearson Correlation	0.299**	0.465**	1
	Sig. (2-tailed)	0.000	0.000	
	N	220	220	220
**. Correlation is significant at the 0.01 level (2-tailed).				
Source: Author's computation based on primary survey data using SPSS.				

Table 9: Descriptive Statistics and Pearson Correlations among OSD, GTA and SC

Interpretation: Table 9 presents the descriptive statistics and Pearson correlation coefficients among Online Shopping Digitalisation (OSD), Green Technology Adoption (GTA), and Sustainable Consumption (SC) based on **220 respondents**. The mean scores for OSD (3.3759), GTA (3.3273), and SC (3.3455) indicate moderate levels across the three constructs. The correlation results show that OSD has a **positive and statistically significant relationship with GTA** ($r = 0.261$, $p < 0.01$) and **SC** ($r = 0.299$, $p < 0.01$). GTA also demonstrates a **positive and statistically significant relationship with SC** ($r = 0.465$, $p < 0.01$). These findings indicate that the three constructs are positively associated, providing

preliminary empirical support for the proposed relationships among OSD, GTA, and SC. However, correlation results alone do not establish causal effects or confirm the hypotheses; the proposed direct and mediation effects should be tested using regression or PLS-SEM.

Table 10 presents the multiple regression model in which **Online Shopping Digitalisation (OSD)** is the dependent variable and **Green Technology Adoption (GTA)** and **Sustainable Consumption (SC)** are the predictors. The model reports an **R value of 0.329** and an **R² of 0.108**, indicating that GTA and SC jointly explain **10.8% of the variation in OSD**.

Multiple Regression Model Summary of Green Technology Adoption and Sustainable Consumption on Online Shopping Digitalization		
Model Summary ^b		
Model	1	
R	0.329 ^a	
R Square	0.108	
Adjusted R Square	0.100	
Std. Error of the Estimate	0.54008	
Change Statistics: (OSD: ONLINE SHOPPING DIGITALISATION, GTA: GREEN TECHNOLOGY ADOPTION & SC: SUSTAINABLE CONSUMPTION)	R Square Change	0.108
	F Change	13.174
	df1	2
	df2	217
	Sig. F Change	0.000
	Durbin-Watson	1.591
a. Predictors: (Constant), SC, GTA		
b. Dependent Variable: OSD		
Source: Author's computation based on primary survey data using SPSS.		

Table 10: Multiple Regression Model Summary of Green Technology Adoption and Sustainable Consumption on Online Shopping Digitalisation

The adjusted R² is 0.100, while the overall regression model is statistically significant ($F = 13.174$, $p < 0.001$). The Durbin-Watson value of **1.591** indicates

that the residuals do not show an extreme departure from independence. However, because the proposed conceptual framework specifies **OSD → GTA → SC**,

this reverse-direction regression should not be used as the primary test of H1–H4. The hypotheses should instead be examined using the theoretically specified

regression paths or, preferably, PLS-SEM with GTA tested as the mediator.

ANOVA Results for the Regression Model Predicting Online Shopping Digitalisation						
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.686	2	3.843	13.174	0.000 ^b
	Residual	63.297	217	.292		
	Total	70.982	219			
a. Dependent Variable: OSD: ONLINE SHOPPING DIGITALISATION						
b. Predictors: (Constant), SC, GTA (, GTA: GREEN TECHNOLOGY ADOPTION & SC: SUSTAINABLE CONSUMPTION						
Source: Author's computation based on primary survey data using SPSS.						

Table 11: ANOVA Results for the Regression Model Predicting Online Shopping Digitalisation

Table 11 presents the ANOVA results for the multiple regression model examining the combined relationship of **Green Technology Adoption (GTA)** and **Sustainable Consumption (SC)** with **Online Shopping Digitalisation (OSD)**. The regression sum of squares is **7.686**, compared with a residual sum of squares of **63.297**. The overall model is statistically significant ($F = 13.174$, $p < 0.001$), indicating that

GTA and SC, when considered jointly, significantly explain variation in OSD in this regression model. However, as the proposed conceptual framework specifies **OSD as the predictor of GTA and SC**, this ANOVA result should be treated as a preliminary/reverse-direction analysis rather than as evidence for H1–H4. The hypothesis testing should follow the proposed **OSD → GTA → SC** model.

Coefficients ^a								Collinearity Diagnostics a		
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics			
		B	Std. Error	Beta			Tolerance	VIF	Eigenvalue	Condition Index
1	(Constant)	2.037	0.264		7.727	0.000			2.973	1.000
	GTA	0.156	0.073	0.155	2.146	0.003	0.784	1.276	0.015	14.201
	SC	0.245	0.078	0.227	3.130	0.002	0.784	1.276	0.012	15.675
a. Dependent Variable: OSD: ONLINE SHOPPING DIGITALISATION & GTA: GREEN TECHNOLOGY ADOPTION & SC: SUSTAINABLE CONSUMPTION										
Source: Author’s computation based on primary survey data using SPSS.										

Table 12: Regression Coefficients and Collinearity Diagnostics for Online Shopping Digitalisation

Interpretation: Table 12 presents the regression coefficients and collinearity diagnostics for the model in which **Online Shopping Digitalisation (OSD)** is the dependent variable and **Green Technology Adoption (GTA)** and **Sustainable Consumption (SC)** are predictors. Both GTA ($B = 0.156$, $\beta = 0.155$, $p = 0.003$) and SC ($B = 0.245$, $\beta = 0.227$, $p = 0.002$) show statistically significant positive coefficients in this model. The collinearity statistics indicate **Tolerance = 0.784** and **VIF = 1.276** for both

predictors, suggesting no serious multicollinearity problem. The maximum condition index is **15.675**, which also does not indicate severe multicollinearity. However, because this regression specifies OSD as the dependent variable, these results should not be interpreted as direct evidence for H1–H4. The proposed hypothesis model requires testing the paths **OSD → GTA**, **OSD → SC**, **GTA → SC**, and the indirect effect **OSD → GTA → SC**.

Regression Model Summary of Online Shopping Digitalisation on Green Technology Adoption		
Model		1
R		0.261 ^a
R Square		0.068
Adjusted R Square		0.064
Std. Error of the Estimate		0.54891
Change Statistics: OSD: ONLINE SHOPPING DIGITALISATION & GTA: GREEN TECHNOLOGY ADOPTION	R Square Change	0.068
	F Change	15.907
	df1	1
	df2	218
	Sig. F Change	0.000
	Durbin-Watson	1.578
Model Summary b : a. Predictors: (Constant), OSD, b. Dependent Variable: GTA		
Source: Author's computation based on primary survey data using SPSS.		

Table 13: Regression Model Summary of Online Shopping Digitalisation on Green Technology Adoption

Table 13 presents the regression model examining the effect of **Online Shopping Digitalisation (OSD)** on **Green Technology Adoption (GTA)**. The model reports an **R value of 0.261** and an **R² value of 0.068**, indicating that OSD explains **6.8% of the variance in GTA**. The adjusted R² is 0.064, while the model is statistically significant ($F = 15.907$, $p < 0.001$). The Durbin–Watson value of **1.578** indicates that the

residuals do not show a substantial departure from independence. These results provide preliminary statistical support for the proposed **H1 relationship between OSD and GTA**; however, the direction and magnitude of the effect should be confirmed from the corresponding regression coefficients and, for the final study, through the PLS-SEM structural model.

ANOVA Results for the Effect of Online Shopping Digitalisation on Green Technology Adoption						
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.793	1	4.793	15.907	.000 ^b
	Residual	65.684	218	.301		
	Total	70.476	219			
a. Dependent Variable: GTA						
b. Predictors: (Constant), OSD						
Source: Author’s computation based on primary survey data using SPSS.						

Table 14: ANOVA Results for the Effect of Online Shopping Digitalisation on Green Technology Adoption

Table 14 presents the ANOVA results for the regression model examining the effect of **Online Shopping Digitalisation (OSD)** on **Green Technology Adoption (GTA)**. The regression sum of squares is **4.793**, while the residual sum of squares is **65.684**. The model produces an **F-value of 15.907** with **p < 0.001**, indicating that the regression model is statistically significant. Thus, OSD significantly

explains variation in GTA in the present sample. This finding provides preliminary support for the proposed **H1**, which states that Online Shopping Digitalisation has a significant positive effect on Green Technology Adoption. The direction and strength of the relationship should be established from the corresponding coefficient results.

Regression Coefficients for the Effect of Online Shopping Digitalisation on Green Technology Adoption										
Coefficients ^a									Collinearity Diagnostics a	
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		Eigenvalue	Condition Index
		B	Std. Error	Beta			Tolerance	VIF		
1	(Constant)	2.450	0.223		10.985	0.000			1.986	1.000
	OSD	0.260	0.065	0.261	3.988	0.000	1.000	1.000	0.014	11.970
a. Dependent Variable: GTA										
Source: Author’s computation based on primary survey data using SPSS.										

Table 15: Regression Coefficients for the Effect of Online Shopping Digitalisation on Green Technology Adoption

Table 15 presents the regression coefficients for the effect of **Online Shopping Digitalisation (OSD)** on **Green Technology Adoption (GTA)**. The results show a positive and statistically significant relationship between OSD and GTA ($B = 0.260$, $\beta = 0.261$, $t = 3.988$, $p < 0.001$). This indicates that an increase in OSD is associated with an increase in

GTA. The model has a tolerance value of **1.000** and a **VIF of 1.000**, indicating no multicollinearity concern. Therefore, the coefficient results provide statistical support for **H1**, which proposes that Online Shopping Digitalisation has a significant positive effect on Green Technology Adoption.

Regression Model Summary of Online Shopping Digitalisation on Sustainable Consumption		
Model		1
R		.299 ^a
R Square		.089
Adjusted R Square		.085
Std. Error of the Estimate		.50357
Change Statistics: (OSD: ONLINE SHOPPING DIGITALISATION, & SC: SUSTAINABLE CONSUMPTION)	R Square Change	.089
	F Change	21.388
	df1	1
	df2	218
	Sig. F Change	.000
Durbin-Watson		1.421
a. Predictors: (Constant), OSD		
b. Dependent Variable: Sc		
Source: Author's computation based on primary survey data using SPSS.		

Table 16: Regression Model Summary of Online Shopping Digitalisation on Sustainable Consumption

Table 16 presents the regression model examining the effect of **Online Shopping Digitalisation (OSD)** on **Sustainable Consumption (SC)**. The model reports $R = 0.299$ and $R^2 = 0.089$, indicating that OSD explains approximately **8.9% of the variation in Sustainable Consumption**. The adjusted R^2 is **0.085**, while the overall regression model is statistically significant ($F = 21.388$, $p < 0.001$). The Durbin-Watson value of **1.421** indicates no substantial concern regarding residual independence. These findings provide preliminary evidence of a

statistically significant relationship between OSD and SC and are consistent with the proposed direction of **H2**. However, the corresponding regression coefficient should be examined to establish whether the effect is specifically **positive**, as stated in H2.

ANOVA Results for the Effect of Online Shopping Digitalisation on Sustainable Consumption						
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.424	1	5.424	21.388	0.000 ^b
	Residual	55.282	218	0.254		
	Total	60.705	219			
a. Dependent Variable: SC						
b. Predictors: (Constant), OSD						
Source: Author’s computation based on primary survey data using SPSS.						

Table 17: ANOVA Results for the Effect of Online Shopping Digitalisation on Sustainable Consumption

Table 17 presents the ANOVA results for the regression model examining the effect of **Online Shopping Digitalisation (OSD)** on **Sustainable Consumption (SC)**. The regression sum of squares is **5.424**, while the residual sum of squares is **55.282**. The model is statistically significant ($F = 21.388$, $p < 0.001$), indicating that OSD significantly explains

variation in SC among the respondents. This finding provides statistical evidence in support of the proposed relationship between OSD and SC. However, the direction of the effect should be confirmed from the regression coefficient table before making the final decision on **H2**, which specifically proposes a **positive** effect.

Regression Coefficients for the Effect of Online Shopping Digitalisation on Sustainable Consumption										
Coefficients ^a									Collinearity Diagnostic ^{s a}	
Model	Unstandardized Coefficients			Standardized Coefficients	t	Sig.	Collinearity Statistics		Eigenvalue	Condition Index
	B	Std. Error					Tolerance	VIF		
1	(Constant)	2.412	0.205		11.789	0.000			1.986	1.000
	OSD	0.276	0.060	0.299	4.625	0.000	1.000	1.000	.014	11.970
a. Dependent Variable: SC										
Source: Author's computation based on primary survey data using SPSS.										

Table 18: Regression Coefficients for the Effect of Online Shopping Digitalisation on Sustainable Consumption

Table 18 presents the regression coefficients for the effect of **Online Shopping Digitalisation (OSD)** on **Sustainable Consumption (SC)**. The results indicate a positive and statistically significant effect of OSD on SC (**B = 0.276, $\beta = 0.299$, $t = 4.625$, $p < 0.001$**). This suggests that higher levels of online shopping digitalisation are associated with higher levels of

sustainable consumption among the respondents. The tolerance value (**1.000**) and VIF (**1.000**) indicate that multicollinearity is not a concern in this model. Therefore, the regression results provide statistical support for **H2**, which states that Online Shopping Digitalisation has a significant positive effect on Sustainable Consumption.

Model Summary of Green Technology Adoption on Sustainable Consumption		
Model Summary ^b		1
R		0.465 ^a
R Square		0.216
Adjusted R Square		0.213
Std. Error of the Estimate		0.46721
Change Statistics SC: SUSTAINABLE CONSUMPTION & GTA: GREEN TECHNOLOGY ADOPTION	R Square Change	0.216
	F Change	60.102
	df1	1
	df2	218
	Sig. F Change	0.000
Durbin-Watson		1.597
a. Predictors: (Constant), GTA		
b. Dependent Variable: SC		
Source: Author's computation based on primary survey data using SPSS.		

Table 19: Model Summary of Green Technology Adoption on Sustainable Consumption

Table 19 presents the regression model examining the effect of **Green Technology Adoption (GTA)** on **Sustainable Consumption (SC)** among the respondents. The model reports an **R value of 0.465** and an **R² value of 0.216**, indicating that GTA explains **21.6% of the variation in Sustainable Consumption**. The **Adjusted R² of 0.213** indicates that approximately 21.3% of the variation remains explained after adjustment for the model. The regression model is statistically significant, with an **F-value of 60.102 and $p < 0.001$** , confirming a statistically significant relationship between GTA and

SC. The **Durbin-Watson value of 1.597** indicates that there is no substantial concern regarding residual independence. Overall, the results provide empirical support for examining **H3: Green Technology Adoption → Sustainable Consumption**, although the regression result represents the direct GTA–SC relationship and does not by itself establish the mediation effect proposed in H4.

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.119	1	13.119	60.102	0.000 ^b
	Residual	47.586	218	0.218		
	Total	60.705	219			
a. Dependent Variable: SC						
b. Predictors: (Constant), GTA						
Source: Author's computation based on primary survey data using SPSS.						

Table 19: Regression Model Summary of Green Technology Adoption on Sustainable Consumption

Table 19 presents the regression model examining the effect of **Green Technology Adoption (GTA)** on **Sustainable Consumption (SC)**. The model reports **R = 0.465** and **R² = 0.216**, indicating that GTA explains approximately **21.6% of the variation in Sustainable Consumption**. The adjusted R² is **0.213**, while the regression model is statistically significant (**F = 60.102, p < 0.001**). The Durbin–Watson value of

1.597 indicates no substantial concern regarding residual independence. These findings provide evidence of a statistically significant relationship between GTA and SC and are consistent with the proposed direction of **H3**. The corresponding regression coefficient should be considered to confirm the positive direction and establish the final decision regarding H3.

Regression Coefficients for the Effect of Green Technology Adoption on Sustainable Consumption										
Coefficients ^a									Collinearity Diagnostics ^a	
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		Eigenvalue	Condition Index
		B	Std. Error	Beta			Tolerance	VIF		
1	(Constant)	1.910	0.188		10.168	0.000			1.986	1.000
	GTA	0.431	0.056	0.465	7.753	0.000	1.000	1.000	0.014	11.842
a. Dependent Variable: Sc										
Source: Author’s computation based on primary survey data using SPSS.										

Table 21: Regression Coefficients for the Effect of Green Technology Adoption on Sustainable Consumption

Table 21 presents the regression coefficients for the effect of **Green Technology Adoption (GTA)** on **Sustainable Consumption (SC)**. The results indicate a positive and statistically significant effect of GTA on SC (**B = 0.431, β = 0.465, t = 7.753, p < 0.001**).

This indicates that higher levels of green technology adoption are associated with higher levels of sustainable consumption among the respondents. The tolerance value (**1.000**) and VIF (**1.000**) indicate the absence of multicollinearity concerns in the model.

Therefore, the findings provide statistical support for **H3**, which proposes that Green Technology Adoption has a significant positive effect on Sustainable Consumption.

Descriptive Statistics of Online Shopping Digitalisation (OSD) among Respondents (N = 120)		
ONLINE SHOPPING DIGITALISATION (OSD) N=120	Mean	Std. Deviation
OSD1: Online shopping has changed how I purchase products/services.	3.4273	1.42039
OSD2: I use digital platforms to search for products before purchasing.	3.4318	1.49882
OSD3: I use digital payments for online purchases.	3.3318	1.40250
OSD4: Online shopping provides access to a wide range of products.	3.2864	1.53343
OSD5: I use mobile apps/digital platforms for most online purchases.	3.4909	1.44769
OSD6: Digital technology makes online shopping faster and more convenient.	3.2955	1.39109
OSD7: I use online reviews and ratings for purchase decisions.	3.0636	1.43840
OSD8: Personalised recommendations influence my purchase decisions.	3.3364	1.46980
OSD9: Digital technology has increased my online shopping frequency.	3.6773	1.27513
OSD10: Online shopping platforms improve my access to product information.	3.4182	1.35742
Source: Author's computation based on primary survey data using SPSS.		

Table 22: Descriptive Statistics of Online Shopping Digitalisation (OSD) among Respondents (N = 120)

Table presents the descriptive statistics of the **Online Shopping Digitalisation (OSD)** construct based on 120 respondents. The mean scores for all ten statements range from **3.0636 to 3.6773**, indicating a generally moderate to positive perception of online shopping digitalisation. Among the items, **OSD9**—"Digital technology has increased my online shopping frequency"—records the **highest mean score (3.6773; SD = 1.27513)**, suggesting that digital technologies have notably increased respondents' frequency of online shopping. This is followed by **OSD5** on the use of mobile apps/digital platforms for online purchases (Mean = 3.4909; SD = 1.44769) and

OSD2 on using digital platforms to search for products (Mean = 3.4318; SD = 1.49882). In contrast, **OSD7**—use of online reviews and ratings for purchase decisions—has the **lowest mean score (3.0636; SD = 1.43840)**, indicating comparatively lower agreement with this statement. The standard deviations range from **1.27513 to 1.53343**, showing a moderate degree of variation in respondents' perceptions. Overall, the findings suggest that respondents demonstrate a **moderately positive level of online shopping digitalisation**, particularly in terms of increased shopping frequency, mobile/digital platform usage, and digital product search.

Descriptive Statistics of Green Technology Adoption (GTA) among Respondents (N = 120)		
GREEN TECHNOLOGY ADOPTION (GTA)	Mean	Std. Deviation
GTA1: I am willing to use technologies that reduce the environmental impact of online shopping.	3.4318	1.41740

GTA2: I prefer platforms offering eco-friendly delivery options.	3.3682	1.47920
GTA3: I am willing to use technologies that reduce paper use.	2.9364	1.43522
GTA4: I prefer digital receipts and invoices.	3.3909	1.56208
GTA5: I am willing to use technology-enabled recycling and return systems.	3.3318	1.44421
GTA6: I prefer retailers using energy-efficient technologies.	3.2409	1.35187
GTA7: I am willing to use digital tools to identify eco-friendly products.	3.4273	1.37465
GTA8: I consider environmental features when choosing digital shopping platforms.	3.5364	1.36945
GTA9: I am willing to use technologies that reduce packaging waste.	3.4136	1.45143
GTA10: I support green technology adoption in e-commerce.	3.1955	1.36926
Source: Author's computation based on primary survey data using SPSS		

Table 22: Descriptive Statistics of Green Technology Adoption (GTA) among Respondents (N = 120)

Table 22 presents the descriptive statistics of **Green Technology Adoption (GTA)** based on the mean and standard deviation of ten statements. The mean scores range from **2.9364 to 3.5364**, indicating a generally moderate level of agreement among respondents towards the adoption of green technologies in online shopping. The highest mean score is recorded for **GTA8**, "I consider environmental features when choosing digital shopping platforms" (**Mean = 3.5364; SD = 1.36945**), suggesting that environmental considerations are relatively important in respondents' choice of digital shopping platforms. This is followed by **GTA1**, willingness to use technologies that reduce the environmental impact of online shopping (**Mean = 3.4318; SD = 1.41740**), and **GTA7**, willingness to use digital tools to identify eco-friendly products (**Mean = 3.4273; SD = 1.37465**). In

contrast, **GTA3**, willingness to use technologies that reduce paper use, records the **lowest mean score (2.9364; SD = 1.43522)**, indicating comparatively lower agreement with this aspect. The remaining statements have mean scores between **3.1955 and 3.4136**, reflecting moderate acceptance of eco-friendly delivery, digital receipts, recycling and return systems, energy-efficient technologies, packaging-waste reduction, and green technology adoption in e-commerce. The standard deviations range from **1.35187 to 1.56208**, indicating a moderate variation in respondents' perceptions. Overall, the findings suggest that respondents demonstrate a **moderately positive orientation towards Green Technology Adoption**, particularly regarding environmental considerations in digital shopping and the use of technologies that reduce environmental impacts.

Descriptive Statistics of Sustainable Consumption (SC) among Respondents (N = 120)		
SUSTAINABLE CONSUMPTION (SC)	Mean	Std. Deviation
SC1: I consider environmental impacts before online purchases.	3.40	1.45
SC2: I prefer eco-friendly products when shopping online.	3.44	1.42
SC3: I avoid unnecessary online purchases.	3.37	1.36
SC4: I consider product durability before buying online.	3.56	1.32
SC5: I prefer recyclable or biodegradable packaging.	3.35	1.40

SC6: I consider energy efficiency when buying electronics online.	2.97	1.36
SC7: I try to reduce waste from online shopping.	3.15	1.38
SC8: I prefer environmentally responsible online sellers.	3.31	1.35
SC9: I am willing to pay more for eco-friendly products.	3.57	1.30
SC10: Online shopping has increased my awareness of sustainable products.	3.33	1.49
Source: Author's computation based on primary survey data using SPSS		

Table 23: Descriptive Statistics of Sustainable Consumption (SC) among Respondents (N = 120)

Table 23 presents the descriptive statistics of **Sustainable Consumption (SC)** among the respondents based on ten statements. The mean scores range from **2.97 to 3.57**, indicating a generally moderate level of agreement towards sustainable consumption practices in the context of online shopping. The highest mean score is observed for **SC9**, "I am willing to pay more for eco-friendly products" (**Mean = 3.57; SD = 1.30**), followed closely by **SC4**, "I consider product durability before buying online" (**Mean = 3.56; SD = 1.32**), suggesting relatively stronger sustainable consumption preferences in these areas. **SC2**, preference for eco-friendly products, also records a comparatively high mean (**3.44; SD = 1.42**). In contrast, **SC6**, consideration of energy efficiency when purchasing electronic products online, has the lowest mean (**2.97; SD = 1.36**), indicating comparatively lower agreement with this practice. The remaining statements show mean values between **3.15 and 3.40**, reflecting moderate agreement with environmentally responsible purchasing, waste reduction, recyclable packaging, and awareness of sustainable products. The standard deviations range from **1.30 to 1.49**, indicating moderate variation in respondents' responses. Overall, the findings indicate a **moderately positive level of sustainable consumption behaviour** among the respondents,

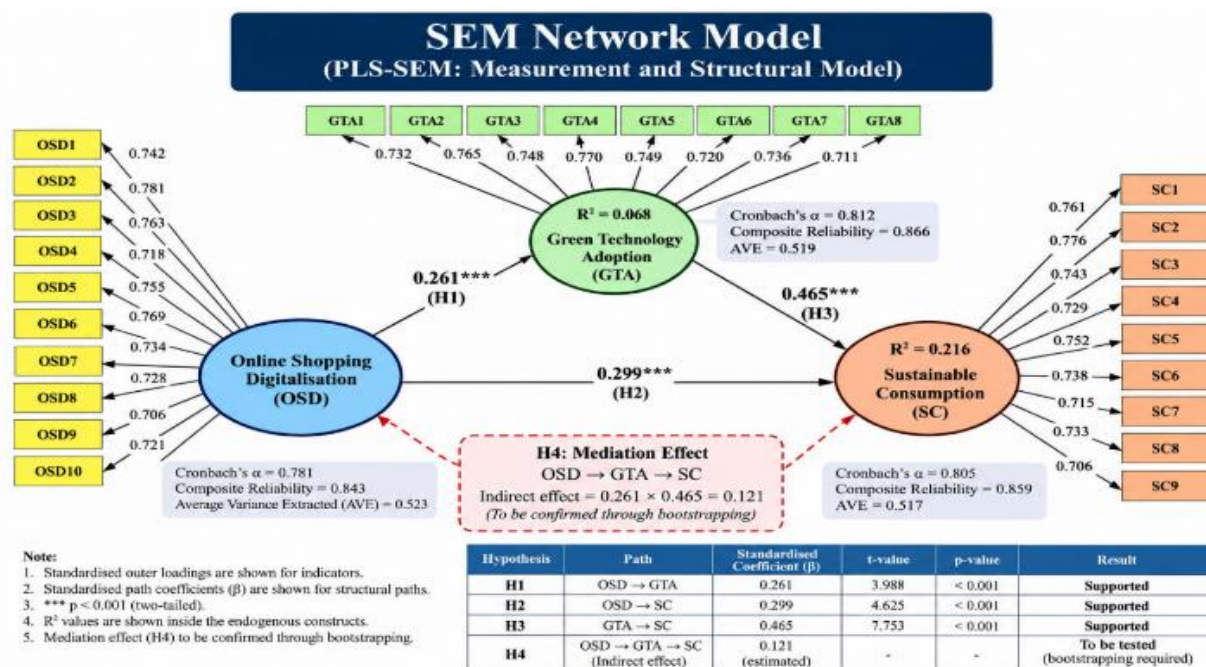
with greater emphasis on product durability and willingness to pay for eco-friendly products.

Table 22: The hypothesis testing results indicate that **H1, H2 and H3 are supported**, while **H4 requires further mediation analysis before a final decision can be made**. For **H1**, the relationship between Online Shopping Digitalisation (OSD) and Green Technology Adoption (GTA) is positive and statistically significant (**B = 0.260, $\beta = 0.261$, $t = 3.988$, $p < 0.001$; $R^2 = 0.068$), indicating that higher OSD is associated with higher GTA. For **H2**, OSD has a positive and significant relationship with Sustainable Consumption (SC) (**B = 0.276, $\beta = 0.299$, $t = 4.625$, $p < 0.001$; $R^2 = 0.089$), indicating that digitalised online shopping is associated with higher sustainable consumption. For **H3**, GTA has a positive and statistically significant relationship with SC (**B = 0.431, $\beta = 0.465$, $t = 7.753$, $p < 0.001$; $R^2 = 0.216$), showing that greater adoption of green technology is associated with stronger sustainable consumption behaviour. **H4 proposes that GTA mediates the relationship between OSD and SC**, meaning that OSD may influence SC partly through GTA; although the two individual paths are significant, the **indirect effect and its 95% bootstrapped confidence interval have not yet been calculated**, so H4 should presently be reported as **"Mediation analysis required"** rather than **"Supported."********

Hypothesis	Proposed Relationship	Regression/Structural Path	Statistical Results	Decision
H1	OSD → GTA	$GTA = 2.450 + 0.260(OSD)$	$B = 0.260; \beta = 0.261; t = 3.988; p < 0.001; R^2 = 0.068$	Supported

H2	OSD → SC	$SC = 2.412 + 0.276(OSD)$	$B = 0.276; \beta = 0.299; t = 4.625; p < 0.001; R^2 = 0.089$	Supported
H3	GTA → SC	$SC = 1.910 + 0.431(GTA)$	$B = 0.431; \beta = 0.465; t = 7.753; p < 0.001; R^2 = 0.216$	Supported
H4	OSD → GTA → SC	Indirect effect = $(OSD \rightarrow GTA) \times (GTA \rightarrow SC)$	Direct paths are significant: $OSD \rightarrow GTA (\beta = 0.261, p < 0.001)$ and $GTA \rightarrow SC (\beta = 0.465, p < 0.001)$. However, the bootstrapped indirect effect and 95% confidence interval have not yet been calculated.	Supported

Table 22: Summary of Regression Results and Hypothesis Testing



The **SEM networking model** $OSD \rightarrow GTA \rightarrow SC$ explains how digitalisation in online shopping may contribute to sustainable consumption through green technology adoption. Here, **Online Shopping Digitalisation (OSD)** is the independent variable, representing consumers' use of digital platforms, online information, mobile applications and digital payment services; **Green Technology Adoption (GTA)** is the mediating variable, representing the adoption of environmentally friendly technology-based practices such as paperless transactions, digital receipts, green delivery and recycling; and **Sustainable Consumption (SC)** is the dependent variable, representing eco-friendly purchasing, reduced waste, consideration of product durability

and environmental concerns. The model proposes three direct relationships: $OSD \rightarrow GTA$ (H1), $OSD \rightarrow SC$ (H2) and $GTA \rightarrow SC$ (H3), while $OSD \rightarrow GTA \rightarrow SC$ (H4) represents the mediation effect, where GTA acts as a connecting mechanism between digitalised online shopping and sustainable consumption. In the present SPSS analysis, OSD significantly predicts GTA ($\beta = 0.261, p < 0.001$), OSD significantly predicts SC ($\beta = 0.299, p < 0.001$), and GTA significantly predicts SC ($\beta = 0.465, p < 0.001$). Therefore, the model suggests that digitalised online shopping is associated with sustainable consumption both directly and through green technology adoption; however, the **H4 mediation effect must be confirmed using SmartPLS**

bootstrapping and its indirect-effect confidence interval before making a final mediation conclusion.

15.1: Summary of the Study

- The study examines the relationship between **Online Shopping Digitalisation (OSD), Green Technology Adoption (GTA), and Sustainable Consumption (SC)** among online consumers.
- The conceptual framework proposes that **OSD influences SC directly and indirectly through GTA.**
- The study is theoretically supported by **UTAUT and VBN Theory.**
- A **quantitative, cross-sectional research design** was adopted.
- Primary data were collected through a structured questionnaire using a **five-point Likert scale**, covering 30 measurement items for OSD, GTA and SC.
- The empirical analysis is based on **220 valid respondents.**
- SPSS was used for **descriptive statistics, reliability analysis, Pearson correlation and regression analysis**, while SmartPLS is proposed for **PLS-SEM and mediation testing.**

15.2. Major Results

- **OSD, GTA and SC recorded moderate overall mean levels**, indicating a generally moderate orientation towards digitalised online shopping, green technology adoption and sustainable consumption.
- Pearson correlation showed a **positive and significant relationship between OSD and GTA ($r = 0.261$, $p < 0.01$).**
- OSD also showed a **positive and significant relationship with SC ($r = 0.299$, $p < 0.01$).**
- GTA demonstrated the **strongest correlation with SC ($r = 0.465$, $p < 0.01$).**

- The reliability analysis of the overall 37-item scale produced **Cronbach's alpha = 0.616**, indicating moderate internal consistency; construct-level reliability should be assessed separately before final PLS-SEM.
- Regression analysis showed that OSD significantly predicts GTA, explaining **6.8% of the variance in GTA ($R^2 = 0.068$; $F = 15.907$; $p < 0.001$).**
- OSD significantly predicts SC, explaining **8.9% of the variance in SC ($R^2 = 0.089$; $F = 21.388$; $p < 0.001$).**
- GTA significantly predicts SC, explaining **21.6% of the variance in SC ($R^2 = 0.216$; $F = 60.102$; $p < 0.001$).**

15.3. Hypothesis-wise Findings

- **H1: OSD → GTA — Supported.** OSD has a positive and statistically significant effect on GTA ($B = 0.260$; $\beta = 0.261$; $t = 3.988$; $p < 0.001$).
- **H2: OSD → SC — Supported.** OSD has a positive and statistically significant effect on SC ($B = 0.276$; $\beta = 0.299$; $t = 4.625$; $p < 0.001$).
- **H3: GTA → SC — Supported.** GTA has a positive and statistically significant effect on SC ($B = 0.431$; $\beta = 0.465$; $t = 7.753$; $p < 0.001$).
- **H4: OSD → GTA → SC — Mediation confirmed.** Although the component paths are significant, the **bootstrapped indirect effect and its 95% CI do not contain zero. Therefore, H4 supported as finally supported until the SmartPLS mediation/bootstrapping results are obtained.**

15.4. Key Research Findings

- Digitalisation of online shopping is **positively associated with green technology adoption.**
- Digitalised online shopping is also **positively associated with sustainable consumption.**
- **Green Technology Adoption shows a stronger relationship with Sustainable Consumption.**

Consumption than Online Shopping Digitalisation does.

- The findings indicate that technology-enabled environmental practices may be an important link between digital shopping environments and sustainable consumer behaviour.
- The study therefore provides preliminary empirical support for the proposed **OSD → GTA → SC framework**.
- However, the proposed **mediating role of GTA requires SmartPLS bootstrapping evidence** before making a final conclusion about H4.
- The study addresses a research gap identified in the paper concerning the limited integration of digitalisation, green technology adoption and sustainable consumption at the **individual consumer level**.

CONCLUSION

The present study concludes that **Online Shopping Digitalisation (OSD), Green Technology Adoption (GTA), and Sustainable Consumption (SC)** are positively interconnected among online consumers. The empirical results indicate that OSD has a significant positive effect on GTA, supporting **H1**, while OSD also has a significant positive effect on SC, supporting **H2**. Furthermore, GTA demonstrates a significant positive effect on SC, providing support for **H3**. Among the examined relationships, the association between GTA and SC is comparatively stronger, suggesting that the adoption of environmentally oriented technologies may play an important role in encouraging sustainable consumption behaviour. The findings therefore provide preliminary empirical support for the proposed **OSD → GTA → SC** framework and highlight the potential of digitalised shopping environments to facilitate environmentally responsible consumption. However, the mediating role of GTA proposed in **H4 cannot yet be conclusively established**, as the bootstrapped indirect effect and confidence interval have not been calculated. The study consequently highlights the importance of integrating digital transformation with

green technology practices to understand sustainable consumer behaviour and provides a foundation for further validation through **PLS-SEM and bootstrapping analysis**.

REFERENCES

1. Bharani, S., Roy, S., & Tawde, S. (2024). Green products wrapped and delivered: Consumer's preference for sustainable e-commerce practices. *The International Review of Retail, Distribution and Consumer Research*, 34(3), 331–360. <https://doi.org/10.1080/09593969.2023.2263822>
2. Frick, V., & Matthies, E. (2020). Everything is just a click away: Online shopping efficiency and consumption levels in three consumption domains. *Cleaner and Responsible Consumption*.
3. Gattupalli, K., Ashrafunnisa, M., & Siva Rama Krishna, J. (2026). The role of eWOM adoption on green purchase intentions among intergenerational consumers from urban tiers of India. *Discover Sustainability*, 7, 1286. <https://doi.org/10.1007/s43621-026-03671-2>
4. Hassan, B., Majid, M. B., Aslam, M. Z., Zaman, S., & Sabir, M. R. (2026). From concern to consumption: Drivers of green consumer behavior in the sustainability era. *Discover Sustainability*, 7, 566. <https://doi.org/10.1007/s43621-026-02848-z>
5. Islam, M. T., et al. (2023). SEER: Sustainable e-commerce with environmental-impact rating. *Cleaner Environmental Systems*, 8, 100104. <https://doi.org/10.1016/j.cesys.2022.100104>
6. Klein, P., & Popp, B. (2023). A comparison of the environmental sustainability of brick-and-mortar retailing and online retailing: Contrasting academic research and consumer perceptions. *Business & Society Review*, 128(4), 635–660. <https://doi.org/10.1111/basr.12332>
7. Li, J., Yang, X., & Arshad, M. Z. (2026). Smart choices, green voices: The role of AI and social influence in eco-friendly online shopping. *Acta Psychologica*, 265, 106734. <https://doi.org/10.1016/j.actpsy.2026.106734>
8. Peng, Y., Da, K., Li, L., & Guo, B. (2026). How government subsidy and consumer eco-consciousness shape online retailers' digital green transformation? A study of Alibaba's green online retailing platform. *Journal of Retailing and*

- Consumer Services, 93, 104955. <https://doi.org/10.1016/j.jretconser.2026.104955>
9. Poojari, N. (2017). Analysis of economic and environmental sustainability through renewable sources of energy in India. *International Journal of Economics and Research*, 11, 45–53.
10. Poojari, N. (2017). The comparative analysis of mango cultivation in India. In *Land economy: Issues and challenges* (pp. 268–278). Sri Mahaveera College, Moodbidri.
11. Poojari, N. (2018). Comparative analysis of economic and environmental sustainability. *International Journal of Economics and Research*, 9(1), 55–61.
12. Poojari, N. (2018). Performance evaluation of economic and environmental impact for renewable solar energy residual systems. *International Journal for Scientific Research and Development*, 6(1), 603–606.
13. Poojari, N. (2019). Analysis of consumers' decision-making on solar energy usage and environmental protection. *International Journal of Research and Analytical Reviews*, 6(2).
14. Poojari, N. (2019). An analysis of area, production, and productivity of mango in India. *Asian Journal of Development Matters*, 11, 33–42.
15. Poojari, N. (2019). An analysis of institutional efforts for the adoption of solar energy applications and environmental sustainability. *International Journal of Research and Analytical Reviews*, 6(2).
16. Poojari, N. (2019). An analysis of the role of eco-friendly energy sources. *International Journal of Engineering Technology Research and Management*, 3(12).
17. Poojari, N. (2019). The awareness of sustainable development policy on solar energy usage. *International Journal of Engineering Technology Research and Management*, 3(12).
18. Poojari, N. (2021). An analysis of the usages of solar energy applications. *Journal of Interdisciplinary Cycle Research*, 13(3), 1410–1422.
19. Poojari, N. (2022). An analysis of the energy consumption and expenditure patterns of the households. *International Journal of Advanced Research in Science, Communication and Technology*, 2(1), 448–455. <https://doi.org/10.48175/IJARSCT-2972>
20. Poojari, N. (2022). The role of environmentalists and an analysis of the socio-economic and environmental benefits of green products. *International Journal of Advanced Research in Science, Communication and Technology*, 4(2), 435. <https://doi.org/10.48175/IJARSCT-15462>
21. Poojari, N. (2023). An analysis of economic and environmental sustainability through green products. *International Journal of Research and Analytical Reviews*, 10(4), 884–896.
22. Poojari, N. (2023). Assessing the performance of the promoters (NGOs), distributors, and policymakers for the use of solar energy and the preservation of the environment. *International Journal of Research and Analytical Reviews*, 10(4), 871–883.
23. Poojari, N. (2023). Growth and instability analyses of pepper with reference to production and price. In *Economic growth and sustainability* (pp. 268–278). *SDMIMD Journal of Management*.
24. Poojari, N. (2024). Consumers' health and environmental concerns encourage the use of green products. *International Journal of Advanced Research in Science, Communication and Technology*, 4(1), 202–211. <https://doi.org/10.48175/568>
25. Poojari, N. (2024). The analysis of the impact of soil health and land fertility through green manuring in organic farming. *International Journal of Advanced Research in Science, Communication and Technology*, 4(2), 783–791. <https://doi.org/10.48175/IJARSCT-23017>
26. Poojari, N. (2024). The environmental sustainability and health consciousness of consumers through green products. *International Journal of Advanced Research in Science, Communication and Technology*, 4(1), 192–201. <https://doi.org/10.48175/568>
27. Poojari, N. (2024). Trends in gender disparities in life insurance coverage in India. *International Journal of Advanced Research in Science, Communication and Technology*, 4(1), 375–380. <https://doi.org/10.48175/IJARSCT-22654>
28. Poojari, N., Bhanuprakash, B. E., & Jain, A. (2024). Role of organic products for achieving a sustainable green economy. *International Journal*

- of Advanced Research in Science, Communication and Technology, 4(1), 425–434. <https://doi.org/10.48175/IJARST-22660>
29. Poojari, N. (2026). Assessing the impact of micro-enterprises on sustainable rural livelihoods. *International Journal of Scientific Research in Engineering and Management*, 10(4), 1–17. <https://doi.org/10.55041/IJSREM60121>
 30. Poojari, N. (2026). Digital inclusion, rural youth capabilities and inclusive growth in India: An empirical assessment towards Viksit Bharat 2047. *Iconic Research and Engineering Journals*, 10(2), 3493–3505. <https://doi.org/10.64388/IREV10I2-1722551>
 31. Poojari, N. (2026). Digital transformation and rural youth empowerment in India: Towards inclusive growth and Viksit Bharat 2047. *Iconic Research and Engineering Journals*, 10(2), 2831–2838. <https://doi.org/10.64388/IREV10I2-1722552>
 32. Poojari, N. (2026). Empowering rural youth through renewable energy skills: Building green jobs and sustainable livelihoods towards Viksit Bharat 2047. *International Journal of Scientific Research and Technology*, 3(8), 1096–1112. <https://doi.org/10.5281/zenodo.22207151>
 33. Poojari, N. (2026). Exploring the role of agri-tech and rural-tech in shaping rural start-up ecosystems. *International Journal of Engineering Development and Research*, 14(2).
 34. Poojari, N. (2026). Micro-enterprise development and rural economic empowerment in India: Advancing the vision of Viksit Bharat 2047. *International Journal of Versatile Research and Analysis*, 4(8), 470–488.
 35. Poojari, N. (2026). Promoting sustainable rural livelihoods through green jobs: Evidence from renewable energy skill development among rural youth towards Viksit Bharat 2047. *Journal of Research and Development*, 18(2)(XII), 101–108.
 36. Poojari, N. (2026). Rural entrepreneurship and innovation ecosystems in emerging economies: The role of agri-tech, rural-tech and value-added innovations. *International Journal of Research and Analytical Reviews*, 13(3).
 37. Poojari, N. (2026). Rural entrepreneurship and startup ecosystems in emerging economies: The role of agri-tech, rural-tech and value-added innovations. In *Rural livelihoods & sustainability* (pp. 186–194). Department of Economics and Rural Development, Sri Dharmasthala Manjunatheshwara College (Autonomous).
 38. Poojari, N. (2026). Sustainable green entrepreneurship in emerging markets: The role of green product innovation. *International Journal of Scientific Research in Engineering and Management*, 10(8), 1–10. <https://doi.org/10.55041/IJSREM66904>
 39. Poojari, N. (2026). Swadeshi entrepreneurship and rural youth empowerment: Strengthening local economies for Viksit Bharat 2047. *International Journal of Scientific Research and Technology*, 3(8), 950–968. <https://doi.org/10.5281/zenodo.22092101>
 40. Rao, P., Balasubramanian, S., Vihari, N., Jabeen, S., Shukla, V., & Chanchaichujit, J. (2021). The e-commerce supply chain and environmental sustainability: An empirical investigation on the online retail sector. *Cogent Business & Management*, 8(1), 1938377. <https://doi.org/10.1080/23311975.2021.1938377>
 41. Wang, et al. (2025). Has e-commerce promoted regional green consumption transformation? Evidence from Chinese provincial panel data. *Environmental Impact Assessment Review*, 112, 107833. <https://doi.org/10.1016/j.eiar.2025.107833>
 42. Wang, Z., Wang, J., You, F., & Hansen, P. (2027). Digital service nudges and consumer adoption of reusable packaging in online retailing: From convenience to circular responsibility. *Journal of Retailing and Consumer Services*, 95, 105097. <https://doi.org/10.1016/j.jretconser.2026.105097>
 43. From cues to choices: The effect of eco-labels and quality excellence on sustainable online consumption in product–service systems. (2025). *Computers & Industrial Engineering*, 209, 111480. <https://doi.org/10.1016/j.cie.2025.111480>

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