ANALYZING THE INFLUENCE OF DEMOGRAPHIC AND STRATEGIC FACTORS ON BEHAVIORAL INTENTION TO USE GREEN TECHNOLOGIES BY DIGITAL ENTREPRENEURS

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Abstract

This study examines how demographic factors (age and gender) and strategic factors (sector and experience) influence digital entrepreneurs' intention to adopt green technologies in the Dakshina Kannada and Udupi districts. A structured questionnaire based on the Technology Acceptance Model (TAM) was used to measure perceived usefulness, perceived ease of use, attitude toward use, and behavioural intention to use, rated on a five-point scale. Data were collected from 122 purposively chosen digital entrepreneurs. Descriptive statistics, t-tests, and ANOVA were applied to analyse demographic and strategic differences, while partial least squares structural equation modelling (PLS-SEM) using SmartPLS 4.0 tested the measurement and structural models, including reliability, validity, and hypotheses. The study found that Perceived Usefulness and Perceived Ease of Use significantly influenced behavioural intention to use green technologies. Age, sector, and experience played key roles, with younger entrepreneurs, those in the tech sector, and those with more digital experience being more likely to adopt green technologies. However, gender did not have a significant impact on adoption. Ethical standards were followed by voluntary participation and confidentiality. This study provides valuable insights into the factors that drive digital entrepreneurs to adopt green technology.

Keywords: Digital Entrepreneurs; Green Technologies; Technology Acceptance Model (TAM); Behavioral Intention to Use; Adoption Factors

INTRODUCTION

Digital Entrepreneurs are growing rapidly, creating new opportunities. There is a need to run businesses that protect the environment through green technologies such as energy-saving tools and clean energy sources. These technologies reduce pollution and resources. For digital entrepreneurs, adopting green practices is vital to building responsible and future-ready businesses. Studies show that demographic factors such as age and gender affect technology acceptance. Younger people often feel more comfortable with modern tools, and men and women may view green technology benefits differently (Dai and Cheng, 2022; Zhang et al., 2022). Strategic factors, such as sector type and experience, matter, with some industries supporting green technologies more due to rules or market needs (Promvongsanon et al., 2024; Anser et al., 2020). This study uses the Technology Acceptance Model (TAM), which explains how people decide to use technology based on perceived usefulness and ease of use, shaping their attitudes and intentions (Khan, 2024). This study focuses on the Dakshina Kannada and Udupi districts in Karnataka, with rising digital entrepreneurs. These areas have digital infrastructure, educated youth, and businesses in IT, services, and agriculture where sustainable practices are encouraged. Through a structured questionnaire and analysis using Smart PLS, Independent Sample T-Test and ANOVA, this study explores how demographic and business factors influence entrepreneurs' adoption of green technologies. The results will help policymakers and entrepreneurs to build a more sustainable business environment in these districts.

OBJECTIVES

[1] To examine the influence of demographic factors on digital entrepreneurs' behavioural intention to adopt green technologies.

[2] To analyse the impact of strategic factors on the adoption of green technologies among digital entrepreneurs.

[3] To identify the factors influencing digital entrepreneurs' behavioural intention to use green technologies.

REVIEW OF LITERATURE

The Technology Acceptance Model (TAM) studies how people accept and use new technologies. It has four main parts: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Use, and Behavioral Intention to Use. Perceived Usefulness refers to how helpful a person thinks a technology will be in improving their work. Indian studies have shown that people use technology if they find it useful. Patnaik et al. (2023) found people accepted digital payments for faster transactions. Gupta and Thammi (2021) found students preferred online platforms that improved their studies. Perceived Ease of Use refers to the ease of use of technology. Systems that are simple to learn are adopted. Chahal and Rani (2022) found that students adopt user-friendly e-learning tools. Thakur (2013) finds that mobile payments are popular when the process is easy. Attitude Toward use refers to a person's positive or negative feelings about technology. Abbas and Mehmood (2021) showed positive opinions increased digital marketing platform usage. Johnpaul and G (2024) found digital literacy training helped tourism technology adoption. Behavioural Intention refers to future technology use decisions. Studies by Ahmad et al. (2022) on Building Information Modelling and Usmanova et al. (2020) in healthcare found PU and PEOU affected adoption intention. These factors help us to understand the adoption of technology. Researchers such as Chakrapani et al. (2017) and Chauhan (2015) have noted that trust, training, social support, and experience influence acceptance.

RESEARCH GAP

Studies using the Technology Acceptance Model (TAM) have focused on sectors such as education, finance, healthcare, and urban populations. However, research on the adoption of green technology by digital entrepreneurs remains limited. Studies in India examining the influence of demographic and strategic factors on TAM constructs, such as perceived usefulness, ease of use, attitude, and behavioural intention, are lacking. The current literature overlooks entrepreneurs' unique decision making, which differs from that of general consumers. This highlights the need for research on the adoption of entrepreneurial green technology.
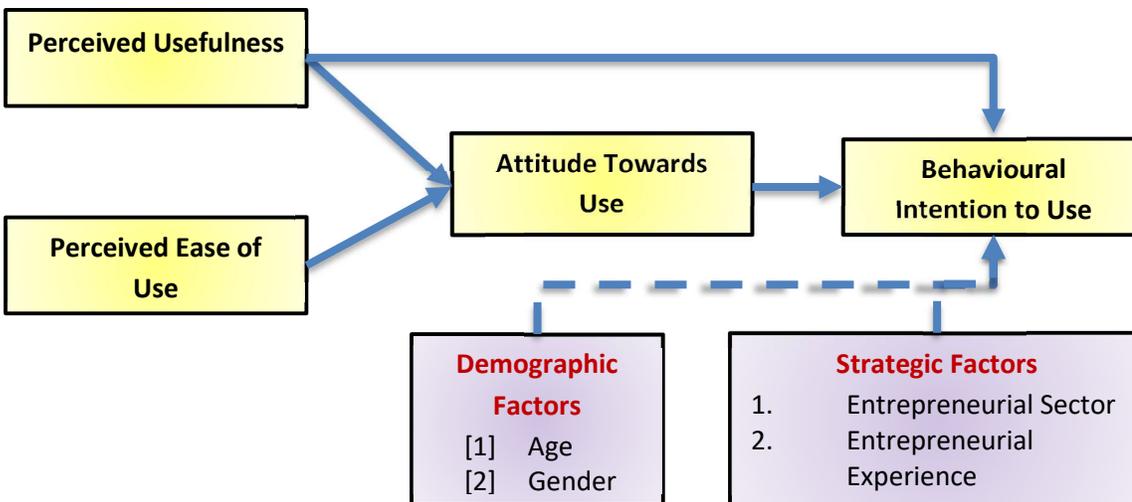
Figure 1: Proposed Conceptual Framework

HYPOTHESES

A. Demographic Grouping-Based Hypotheses

H1: There is a significant difference in Behavioral Intention to Use (BIU) between male and female respondents.

H2: There is a significant difference in the BIU across different age groups.

H3: There is a significant difference in BIU across different work experience levels.

H4: There is a significant difference in BIU across the entrepreneurial sector categories.

B. Hypotheses on Behavioral Intention to Use Green Technologies

H5: Perceived Ease of Use (PEOU) has a significant positive influence on Perceived Usefulness (PU) of green technologies.

H6: Perceived Ease of Use (PEOU) has a significant positive influence on the ((ATU) of green technologies.

H7: Attitude Toward Use (ATU) has a significant positive influence on the Behavioral Intention to Use (BIU) green technologies among digital entrepreneurs.

H8: Perceived Usefulness (PU) has a significant positive influence on the Behavioral Intention to Use (BIU) green technologies

H9: Attitude Toward Use (ATU) mediates the relationship between Perceived Usefulness (PU) and Behavioral Intention to Use (BIU) green technologies among digital entrepreneurs.

METHODOLOGY

This study uses a quantitative, cross-sectional survey design to examine how demographic (age, gender) and strategic factors (sector, experience) influence digital entrepreneurs' intention to adopt green technologies in the Dakshina Kannada and Udupi districts. A structured questionnaire based on the Technology Acceptance Model (TAM) covered perceived usefulness, perceived ease of use, attitude toward use, and behavioural intention to use, rated on a five-point Likert scale. Data was collected from 122 purposively selected digital entrepreneurs. Descriptive statistics, t-tests, and ANOVA analyse the demographic and strategic differences. Partial least squares structural equation modelling (PLS-SEM) using SmartPLS 4.0 tested the measurement and structural models, including reliability, validity, and hypothesis testing. Ethical standards were maintained through voluntary participation and confidentiality.

RESULT

The analysis began with the sample's demographic profile in Table 1, including gender, age, entrepreneurial experience, and sector. The dataset was tested for normality using skewness (± 2) and kurtosis (± 7) thresholds (Hair et al., 2022) to ensure the appropriateness of the parametric test. The descriptive statistics show that the skewness values for all items range from -1.324 to -0.324 and kurtosis values range from -1.324 to 1.557, which are within the acceptable thresholds for parametric analysis, suggesting that the data are appropriately distributed. T-tests were conducted for gender differences in Behavioral Intention to Use Green Technologies (BIU), while ANOVA compared BIU across age groups, experience, and sectors. The measurement model was evaluated using recommended thresholds (Hair et al., 2022; Hair et al., 2024). Reliability requires outer loadings ≥ 0.70, with Cronbach's alpha and Composite Reliability (CR) ≥ 0.70 (Hair et al., 2022). Average Variance Extracted (AVE) was used to assess convergent validity at ≥ 0.50 (Hair et al. 2022). The structural model tested path coefficients at $p \leq 0.05$ (Hair et al., 2022).

Table 1: Demographic Profile of Respondents

Variable	Category	Frequency	Percent
Age Group	18–28	27	22.1%
	28–38	40	32.8%
	38–48	33	27.0%
	48 and above	22	18.0%
	Total	**122**	**100.0%**
Gender	Male	78	63.9%
	Female	44	36.1%
	Total	**122**	**100.0%**
Year of Experience	0–5 years	11	9.0%
	5–10 years	40	32.8%
	10–15 years	51	41.8%
	15 years and above	20	16.4%
	Total	**122**	**100.0%**
Entrepreneurial Sector	Technology	43	35.2%
	Manufacturing	32	26.2%
	Service	47	38.5%
	Total	**122**	**100.0%**

Source: Survey Data

The demographic profile revealed that the majority of respondents fell within the 28–38 age range (32.8%), with a higher proportion of males (63.9%). Most respondents had 10–15 years of entrepreneurial experience (41.8 %), and the service sector (38.5 %) was the most common.

Table 2: Independent Samples t-test Comparing Male and Female Respondents on BIU

Hypotheses	Item	t-value	Mean Difference	p-value (2-tailed)	Decision on Hypotheses
H1	BIU1	0.281	0.051	**0.779**	
	BIU2	0.667	0.112	**0.506**	

	BIU3	-0.212	-0.041	**0.832**	**Not Supported**
	BIU4	0.389	0.074	**0.698**	

Source: Author's Work

Gender does not significantly impact Behavioral Intention to Use (BIU) Green Technologies, as all t-test results for BIU1 to BIU4 show p-values greater than 0.05, indicating no significant differences between male and female respondents.

Table 3: One-Way ANOVA for Differences in BIU Across Age Groups

Hypotheses	Items	Sum of Squares	df	Mean Square	F	Sig.	Decision on Hypotheses
H2	BIU1	5.026	3	1.675	1.842	**<0.05**	**Supported**
	BIU2	7.078	3	2.359	3.124	**<0.05**	
	BIU3	13.294	3	4.431	4.550	**<0.05**	
	BIU4	9.697	3	3.232	3.383	**<0.05**	

Source: Author's Work

One-way ANOVA results for differences in BIU across age groups revealed significant differences for all BIU items (BIU1–BIU4). The p-values for all items were less than 0.05, suggesting that age played a significant role in shaping the behavioural intention to use green technologies.

Table 4: One-Way ANOVA for Differences in BIU Across Year of Experience Groups

Hypotheses	Items	Sum of Squares	df	Mean Square	F	Sig.	Decision on Hypotheses
H3	BIU1	21.280	3	7.093	9.189	**<0.05**	**Supported**
	BIU2	16.121	3	5.374	7.918	**<0.05**	
	BIU3	29.419	3	9.806	11.714	**<0.05**	
	BIU4	13.954	3	4.651	5.060	**<0.05**	

Source: Author's Work

The one-way ANOVA results for differences in BIU across years of entrepreneurial experience showed significant differences for all four BIU items. The p-values were all less than 0.05, indicating that years of entrepreneurial experience significantly affected the BIU.

Table 5: One-Way ANOVA for Differences in BIU Across Entrepreneurial Sector Groups

Hypotheses		Sum of Squares	df	Mean Square	F	Sig.	Decision on Hypotheses

H4	BIU1	36.746	2	18.373	28.911	<0.05	Supported
	BIU2	21.850	2	10.925	17.485	<0.05	
	BIU3	33.695	2	16.848	21.213	<0.05	
	BIU4	47.489	2	23.745	37.706	<0.05	

Source: Author's Work

One-way ANOVA results for differences in BIU across entrepreneurial sectors revealed significant differences for all the BIU items. The p-values were less than 0.05, indicating that the entrepreneurial sector influences behavioural intention to use green technologies.
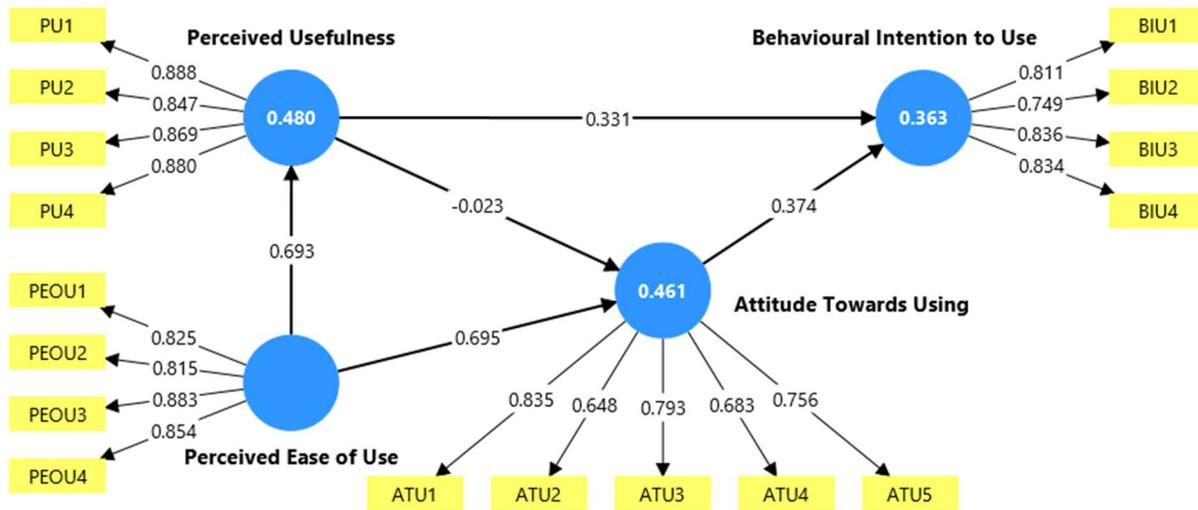

Figure 2: Structural Equation Modelling

Table 7: Construct Reliability and Validity

Construct	Item	Outer Loading	Cronbach's Alpha	Composite Reliability (CR)	AVE
Attitude Towards Using (ATU)	ATU1	0.835	0.799	0.820	0.557
	ATU2	0.648			
	ATU3	0.793			
	ATU4	0.683			
	ATU5	0.756			
Behavioural Intention to Use (BIU)	BIU1	0.811	0.823	0.827	0.653
	BIU2	0.749			

	BIU3	0.836			
	BIU4	0.834			
Perceived Ease of Use (PEOU)	PEOU1	0.825	0.866	0.868	0.714
	PEOU2	0.815			
	PEOU3	0.883			
	PEOU4	0.854			
Perceived Usefulness (PU)	PU1	0.888	0.894	0.897	0.759
	PU2	0.847			
	PU3	0.869			
	PU4	0.880			

Source: Author's Work

The measurement model demonstrated good reliability and validity. The outer loadings for all items exceed the 0.70 threshold, indicating strong indicator reliability. The Cronbach's alpha and composite reliability values for all constructs were greater than 0.70, confirming internal consistency. The Average Variance Extracted (AVE) values for all constructs were above 0.50, indicating convergent validity.

Table 8: Hypotheses Testing

Hypotheses	Relationship	Original sample (O)	Standard Deviation	T statistics	P values	Decision
H5	PEOU -> PU	0.693	0.082	8.415	<0.05	Supported
H6	PEOU -> ATU	0.695	0.074	9.419	<0.05	Supported
H7	ATU -> BIU	0.374	0.135	2.776	<0.05	Supported
H8	PU -> BIU	0.331	0.127	2.608	<0.05	Supported
H9	PU -> ATU	-0.023	0.100	0.232	0.817	No
	ATU -> BIU	0.374	0.135	2.776	<0.05	Mediation

Source: Author's Work

Perceived Ease of Use significantly influenced both Perceived Usefulness (β = 0.693, *p* < .05) and Attitude Toward Use (β = 0.695, *p* < .05), indicating that the ease of using green technologies enhances perceived utility and shapes positive attitudes. Attitude Toward Use positively affected behavioural intention to use (β = 0.374, *p* < .05), and Perceived Usefulness also showed a significant effect on behavioural intention (β = 0.331, *p* < .05). However, Perceived Usefulness did not significantly influence Attitude Toward Use (β = -0.023, *p* = .817), suggesting no mediating role of Attitude in the PU–BIU relationship.

DISCUSSION

Perceived Usefulness is a key driver in the adoption of green technologies. Entrepreneurs who believed that these technologies would improve business performance were more likely to adopt them, aligning with the findings of Patnaik et

al. (2023). Perceived Ease of Use also played a crucial role, with entrepreneurs more inclined to adopt technologies that they found easy to use, supporting Chahal and Rani (2022). Attitude Toward Use was not significant between perceived usefulness and behavioural intention to use but was significant between perceived ease of use and behavioural intention to use. A positive attitude toward sustainability and environmental benefits encourages adoption, as seen in Abbas and Mehmood (2021). Behavioural Intention to Use was influenced by Perceived Usefulness, Perceived Ease of Use, and Attitude Toward Use, confirming the findings of Ahmad et al. (2022). Demographic factors such as age, sector, and experience influenced adoption. Younger entrepreneurs, those in the tech sector, and those with prior digital tool experience are more likely to adopt green technologies, as suggested by Chauhan (2015).

Theoretical Implications and Practical Implications

Theoretically, this study extends the Technology Acceptance Model by emphasising how demographic factors and sector-specific experiences influence adoption. Practically, promoting the business benefits, ease of use, and sector-specific advantages of green technologies can encourage adoption. Future research could focus on the long-term impact of green technology adoption and explore additional factors, such as trust and government support.

Suggestions for Future Research

Future research could explore the long-term impacts of adopting green technologies on business performance and sustainability. A study that tracks these impacts over time provides a deeper understanding of their ongoing benefits. Researchers could also explore other factors such as trust, social influence, and government support, which could play a role in the adoption process.

CONCLUSION

This study helps us understand what factors affect the decision of digital entrepreneurs in Dakshina Kannada and Udupi districts to use green technologies. Based on the Technology Acceptance Model (TAM), the research found that if the technology is useful and easy to use, entrepreneurs are more likely to adopt it. The study also found that younger entrepreneurs, those in the tech sector, and those with more digital experience are more willing to use green technologies. However, gender did not make much difference in their decision. This study adds to the existing theory by showing how age, sector, and experience affect green technology use. Practically, this suggests that if green technologies are shown to be helpful for business and easy to use, more entrepreneurs will be interested in using them. Efforts should be focused on promoting these benefits, especially for younger and tech-savvy entrepreneurs.

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