

From Digital Wallets to Sustainable Choices: Understanding Consumer Behavior in the Cashless Economy

Avinash C. ^{1,*}, J. Jayavel^{1,2}, Ashwini N.³, Charan N. S. ⁴, and Lakshminarayana K. ⁴

¹Department of Business Administration, Annamalai University, Chidambaram, Tamil Nadu, India

²Dharmapuram Gnanambigai Government Arts College for Women, Mayiladuthurai, Tamil Nadu, India

³Department of Management, BGS Institute of Management Studies, Chikkaballapur, Karnataka, India

⁴Department of Management Studies, Visvesvaraya Technological University, Belagavi, Karnataka, India

*Corresponding author: avinashauphd@gmail.com

Abstract. The rise of digital wallets and cashless systems has rapidly changed how consumers manage their finances, and interest is growing in the capacity of these systems to offer sustainable solutions. This research examines whether cashless systems mediate the relationship between the innovative value of technology (IVT) and environmentally responsible consumer behavior (ERCB). The value-action gap model, together with technology adoption frameworks drawn from big data analytics, was used to design primary data collection through structured questionnaires administered to digital wallet users. The data were analyzed in JASP with reliability tests, confirmatory factor analysis, and structural equation modeling. IVT was positively related to both cashless system use and ERCB. Cashless systems did not, however, mediate the relationship between IVT and ERCB. The findings suggest that payment systems alone will not close the gap between concern for the environment and actual behavior. The study offers theoretical insights and practical implications for sustainability-oriented policymakers, financial technology (fintech) designers and developers, and sustainability advocates.

Keywords. Green consumer behavior; FinTech adoption; mobile payments; pro-environmental consumption; sustainable finance

I. INTRODUCTION

Digital payment systems and digital wallets dominate modern financial transactions. They are fast, secure, and convenient, which has created a preference for cashless transactions in online and offline markets [1]. Rapid climate change, pollution, and resource depletion have recently increased awareness of the need to shift consumer behavior toward sustainability. While many consumers are willing to act more sustainably, an attitude-behavior gap persists in sustainable consumption [2]. This research examines digital payment methods and the impact of digital wallets. Specifically, it investigates how cashless payment methods affect consumer behavior and whether they help sustain environmentally responsible behavior.

A. Theoretical Background

This research draws on theories of sustainable consumer behavior and the value-action gap, which seek to explain why eco-friendly attitudes do not always lead to matching behavior. Earlier research shows that a lack of information, price concerns, habits, the availability of eco-friendly options, and other situational limitations keep consumers from eco-friendly consumption even when such behavior is called for [3]. Similarly, environmental attitudes may not translate into eco-friendly purchasing because of habits, social

influence, situational factors, and perceived behavioral control [2]. The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) indicates that performance and effort expectancy, social influence, facilitating conditions, habit, and hedonic motivation significantly influence the adoption of digital wallets and mobile payment systems [4]. Taken together, these theories suggest that digital payments may provide a link between innovative technologies and sustainable consumer behavior.

B. Problem Statement

Digital payment systems and mobile wallets have gained popularity because of their convenience, speed, and security. Digital payment systems appear to reduce the use of paper and cash because they simplify financial processes [5]. Digital and cashless systems may, however, encourage more spending: electronic transactions feel more abstract than cash, so they may dull the psychological “pain of paying” [6]. It is therefore essential to investigate both the possible benefits and the adverse effects of digital wallet adoption on eco-friendly consumer behavior.

C. Trends, Issues, and Challenges

The shift toward cashless economies has been driven by the adoption of digital payment systems and electronic transactions. Because of convenience, efficiency, and improved

technology, consumers increasingly prefer digital and mobile payments to cash [7]. Although cashless payments are growing, consumers remain wary about security, trust, privacy, and dependence on technology. Automated payment systems have also been shown to make consumers more likely to buy more by easing the “pain of paying.” In research on sustainable consumption, the attitude-behavior gap refers to consumers who hold favorable environmental attitudes but do not act on them when purchasing [8].

D. Significance of the Study

This research contributes to theory and practice in several ways. It combines the UTAUT2 theory of technology adoption with environmental behavior theories (the value-action gap and the attitude-behavior-context, or A-B-C, model) to examine whether the use of digital wallets can help consumers make more sustainable decisions. Treating cashless payment systems as an intervening variable may prompt policymakers and business leaders to create digital options with built-in eco-rewards and sustainability tracking, and so encourage further pro-environmental outcomes. Addressing behavioral and structural constraints also helps bridge the gap between environmental concern and action and gives consumers simple levers for change.

E. Scope and Organization

This paper uses three constructs. The first is the innovative value of technology (IVT), the perceived innovativeness and usefulness of the digital wallet. The second is cashless payment adoption (MVT), the proposed mediator. The third is environmentally responsible consumer behavior (DVT), which represents sustainability. The study uses a quantitative research design and tests the direct and indirect paths among the constructs with structural equation modeling in JASP. It focuses on present-day consumers and offers insights for policymakers and stakeholders in fintech and sustainability. The remaining sections present the literature review, hypotheses, methods, findings, and the contribution of the study.

II. LITERATURE REVIEW

A. Digital Wallets

Digital wallets have rapidly changed how consumers make purchases and manage their finances. Payments are more convenient, faster, and safer. Research shows that usefulness, ease of use, trust, security, and social influence are the most important factors in digital wallet adoption [9]. Digital wallets also help reduce the paper used in financial transactions.

B. Cashless Payments

The evolution of cashless payment systems has simplified transactions and altered consumer behavior. The ease of digital transactions has made spending harder to control. Impulsive purchases tend to increase because digital transactions, the least tangible form of payment, ease the “pain of spending” [10]. Digital payments promote electronic transactions and extend sustainability to financial practices. Greater dependence on digital and electronic systems can, however, increase electronic waste and the energy these systems consume [11]. A thorough understanding of these

issues is needed to encourage responsible consumption in the digital world.

C. Ecologically Conscious Consumerism

Environmentally responsible consumer behavior (ERCB) is behavior that maximizes resource efficiency and minimizes environmental impact, through actions such as recycling and buying environmentally friendly products. The literature identifies several factors that explain sustainable consumer behavior, including environmental knowledge, social norms, and personal values [12]. Consumer behavior is also changing with rapid digitization and cashless payment systems, which consumers perceive as highly convenient and fast. Environmentally conscious consumers may also value paperless transactions as consistent with sustainability [13]. Understanding the impact of cashless payments on ERCB is therefore important to the discussion of responsible consumption in the digital era.

D. Research Gap

Literature on digital wallets and cashless payment systems tends to emphasize adoption factors such as perceived usefulness, convenience, trust, security, and social influence [14]. Little attention has been paid to their association with ERCB. Digital payments may encourage paperless and sustainable financial practices. Evidence also suggests, though, that electronic payments lessen the “pain of paying” and may prompt impulse buying, which complicates the relationship between digital payments and sustainability [15]. The combined relationship among technological innovation, cashless payment adoption, and sustainable consumer behavior has yet to be studied, particularly in developing countries. This research examines these relationships using structural equation modeling (SEM).

III. RESEARCH METHODOLOGY

The study used a quantitative research design to investigate the connection between digital wallets and cashless payments and their effect on environmentally sustainable consumer behavior, with particular interest in the mediating effect of cashless payments. Primary data were collected through a structured, closed-ended questionnaire distributed to 150 users of digital wallets and cashless payment systems selected by convenience sampling. The questionnaire combined items from previously validated research, with responses measured on a 5-point Likert scale. The data were analyzed in JASP with descriptive analysis, reliability analysis (Cronbach’s alpha and composite reliability), confirmatory factor analysis (CFA), and SEM. The study followed ethical practices: participation was voluntary, current data protection regulations were upheld, and the confidentiality and anonymity of the participants and their personal data were protected.

A. Conceptual Model

The conceptual model in Fig. 1 shows how digital wallets and cashless payments fit within the framework of environmentally friendly consumer behavior. The attributes of digital wallets (accessibility, security, and transaction speed) act as the independent variables influencing the adoption of cashless payment systems. Cashless payments, specifically

ease of use, trust in the payment system, and payment choice, act as a mediating variable linking the attributes of digital wallets to consumer outcomes. The model shows that the use of cashless payments affects sustainable consumer behavior through direct and indirect effects, in the form of purchase intention and confidence in eco-friendly purchases, the convenience and frequency of green payments, customer satisfaction, and post-purchase trust.

B. Research Objectives

The study had four objectives: to assess the innovative value of technology and its contribution to the growth of cashless payments; to examine how IVT affects ERCB; to analyze the influence of cashless payments on ERCB; and to understand the role of cashless payments as a mediator between the acceptance of innovative technology and ERCB.

C. Hypotheses

H1: IVT is positively related to the adoption of cashless payments.

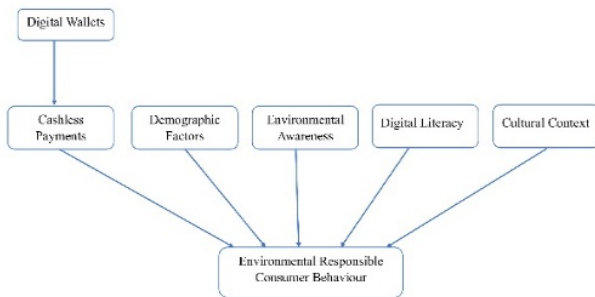


Fig. 1. Conceptual model: digital wallets, cashless payments, and other factors influencing environmentally responsible consumer behavior.

H2: IVT is positively related to ERCB.

H3: Cashless payment adoption is positively related to ERCB.

H4: Cashless payment adoption mediates the relationship between IVT and ERCB.

IV. FINDINGS AND DISCUSSION

Table 1 gives the results of the CFA. The measurement model results show that the indicators represent their constructs adequately and that the factor loadings indicate good convergent validity. Digital Wallets had loadings from 0.735 to 1.000 and high R^2 values (0.667 to 0.795). Cashless Payments had loadings from 0.705 to 1.000 and moderate R^2 values (0.361 to 0.523). ER Consumer Behavior had high loadings (1.000 to 1.293) and R^2 values from 0.487 to 0.860, which support the reliability of the construct. The overall model fit was acceptable ($\chi^2/df = 2.44$, comparative fit index (CFI) = 0.936, Tucker-Lewis index (TLI) = 0.907, standardized root mean square residual (SRMR) = 0.058, goodness-of-fit index (GFI) = 0.902), and the root mean square error of approximation (RMSEA) of 0.097 was marginal, which suggests that the fit could be improved with some modification. The CFA path diagram is shown in Fig. 2.

The SEM results in Table 2 show that IVT had a significant positive effect on MVT (cashless payments), with a standardized path coefficient of $\beta = 0.135$ ($z = 3.441$,

$p < 0.001$) and a 95% confidence interval (CI) of 0.058 to 0.211. IVT also had a positive but smaller effect on DVT (ERCB), with $\beta = 0.112$ ($z = 2.095$, $p = 0.036$) and a 95% CI of 0.007 to 0.217. The path from MVT to DVT was not statistically significant ($\beta = 0.058$, $z = 0.845$, $p = 0.398$, 95% CI -0.076 to 0.192). In the observed model, therefore, cashless payment behavior did not go on to affect environmentally responsible consumer behavior. The adoption of innovative technologies had a direct effect on both the use of cashless payments and consumer behavior, and cashless payments did not mediate the effect on environmentally responsible behavior. The structural model is shown in Fig. 3.

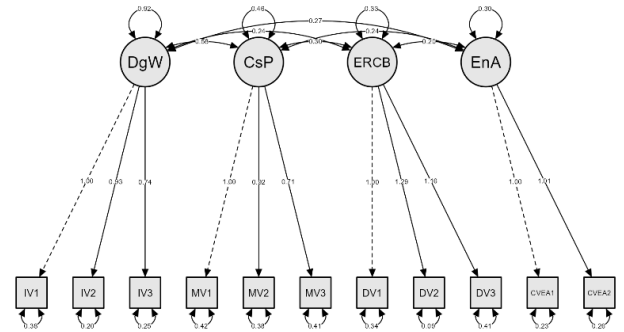


Fig. 2. CFA path diagram of the Digital Wallets (DgW), Cashless Payments (CsP), ERCB, and Environmental Awareness (EnA) constructs with their indicators.

TABLE 1. CONFIRMATORY FACTOR ANALYSIS

Construct	Indicator	Loading	R^2
Digital Wallets	IV1	1.000	0.710
	IV2	0.928	0.795
	IV3	0.735	0.667
Cashless Payments	MV1	1.000	0.523
	MV2	0.922	0.508
	MV3	0.705	0.361
ER Consumer Behavior	DV1	1.000	0.487
	DV2	1.293	0.860
	DV3	1.158	0.518

Note: IV1 = daily purchases; IV2 = making payments; IV3 = payment method; MV1 = physical cash; MV2 = financial transactions; MV3 = online and offline purchases; DV1 = environmentally sustainable; DV2 = digital receipts; DV3 = responsible practices. Model fit: $\chi^2/df = 2.44$ (acceptable), CFI = 0.936 (good), TLI = 0.907 (good), SRMR = 0.058 (good), RMSEA = 0.097 (marginal), GFI = 0.902 (acceptable).

TABLE 2. STRUCTURAL EQUATION MODEL

Path	β	z	p	95% CI	Result
IVT → MVT	0.135	3.441	<0.001	0.058 to 0.211	Significant
IVT → DVT	0.112	2.095	0.036	0.007 to 0.217	Significant
MVT → DVT	0.058	0.845	0.398	-0.076 to 0.192	Not significant

Note: All paths are direct effects. IVT = digital wallets (innovative value of technology); MVT = cashless payments; DVT = ER consumer behavior.

The scale reliability analysis in Table 3 indicates satisfactory internal consistency for all constructs. Digital Wallets had the highest value ($\alpha = 0.885$). Cashless Payments ($\alpha = 0.708$, 95% CI 0.594 to 0.821) and Environmental Awareness ($\alpha = 0.703$) were lower but above the minimum acceptable level of 0.70. The reliability of Environmentally

Responsible Consumer Behavior was also high ($\alpha = 0.795$, 95% CI 0.678 to 0.912). Standard errors and confidence intervals were not computed for Digital Wallets and Environmental Awareness, but their alpha values support their reliability. The constructs are therefore valid and suitable for further analysis of the model.

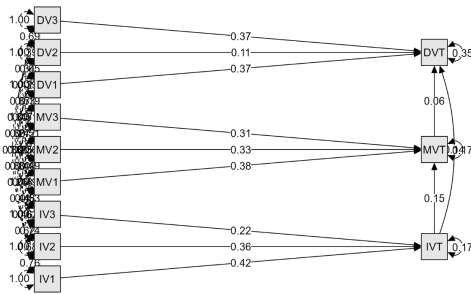


Fig. 3. Structural model linking the indicators to IVT, MVT, and DVT, with the estimated paths among the three constructs.

TABLE 3. SCALE RELIABILITY ANALYSIS

Construct	Cronbach's α	SE	95% CI
Digital Wallets	0.885		
Cashless Payments	0.708	0.058	0.594 to 0.821
ER Consumer Behavior	0.795	0.060	0.678 to 0.912
Environmental Awareness	0.703		

V. IMPLICATIONS

A. Managerial Implications

The findings show the role of advanced technologies in changing consumer payment behavior and behavior toward sustainable consumption. Digital payment and fintech managers should focus on digital wallets that are easy to use, safe, and fast, since more convenient payment systems build customer trust. Because cashless payment systems played no significant mediating role in environmentally conscious consumer behavior, these systems should include sustainability features such as eco-rewards, tracking of green purchases, and discounts on environmentally friendly goods. Digital wallets integrated with loyalty programs can also promote responsible consumption.

B. Societal Implications

The findings show that the use of cashless payments was not significantly related to environmentally conscious behavior. For cashless payments and environmentally conscious behavior to align, awareness campaigns and policy action are needed. Governments and nongovernmental organizations should consider eco-incentives, such as tax rebates, cash-back offers, and recognition of green purchases, to widen financial inclusion, reduce paper use, and encourage low-carbon lifestyles.

C. Future Scope

Future studies should include the mediating roles of psychological and cultural variables, such as environmental consciousness, consumer values, and social pressure, to better explain sustainable behavior. Longitudinal and cross-cultural studies can improve the understanding of payment behavior linked to sustainability. Qualitative methods should complement the quantitative approach to capture

perceptions of digital payment and the practice of sustainable consumption.

VI. CONCLUSION

The study examined the relationship among digital wallet adoption, cashless payment use, and eco-friendly consumer behavior. The mediating role of cashless payments in sustainable behavior was negligible. The study points to sustainability-oriented digital payment features, awareness initiatives, policy frameworks, and incentives as ways to address the value-action gap and to encourage eco-sustainable practices and financial inclusion.

AUTHOR CONTRIBUTIONS

All authors contributed to the conception and preparation of this work and approved the final version of the manuscript.

FUNDING

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

DECLARATION OF GENERATIVE AI USE

The authors declare that no generative artificial intelligence tools were used in the preparation of this manuscript. The authors take full responsibility for the content of the publication.

DATA AVAILABILITY

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- [1] Imdadullah Hidayat-ur-Rehman, Saeed Alzahrani, Mohd Ziaur Rehman, and Fahim Akhter, "Determining the factors of m-wallets adoption. A twofold SEM-ANN approach," *PLOS ONE*, vol. 17, no. 1, Art. no. e0262954, 2022, doi: 10.1371/journal.pone.0262954.
- [2] Michal J. Carrington, Benjamin A. Neville, and Gregory J. Whitwell, "Why ethical consumers don't walk their talk: Towards a framework for understanding the gap between the ethical purchase intentions and actual buying behaviour of ethically minded consumers," *J. Bus. Ethics*, vol. 97, no. 1, pp. 139-158, 2010, doi: 10.1007/s10551-010-0501-6.
- [3] Iris Vermeir and Wim Verbeke, "Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values," *Ecol. Econ.*, vol. 64, no. 3, pp. 542-553, 2008, doi: 10.1016/j.ecolecon.2007.03.007.
- [4] Viswanath Venkatesh, James Y. L. Thong, and Xin Xu, "Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology," *MIS Q.*, vol. 36, no. 1, pp. 157-178, 2012, doi: 10.2307/41410412.
- [5] Lukman O. Oyelami, Sulaimon O. Adebisi, and Babatunde S. Adekunle, "Electronic payment adoption and consumers' spending growth: Empirical evidence from Nigeria," *Future Bus. J.*, vol. 6, no. 1, Art. no. 14, 2020, doi: 10.1186/s43093-020-00022-z.
- [6] Farnoush Reshadi and M. Paula Fitzgerald, "The pain of payment: A review and research agenda," *Psychol. Mark.*, vol. 40, no. 8, pp. 1672-1688, 2023, doi: 10.1002/mar.21825.
- [7] Bappaditya Mukhopadhyay, "Understanding cashless payments in India," *Financ. Innov.*, vol. 2, no. 1, Art. no. 27, 2016, doi: 10.1186/s40854-016-0047-4.
- [8] Ghina ElHaffar, Fabien Durif, and Laurette Dubé, "Towards closing the attitude-intention-behavior gap in green consumption: A narrative review of the literature and an overview of future research directions," *J. Clean. Prod.*, vol. 275, Art. no. 122556, 2020, doi: 10.1016/j.jclepro.2020.122556.

- [9] Dong-Hee Shin, "Towards an understanding of the consumer acceptance of mobile wallet," *Comput. Hum. Behav.*, vol. 25, no. 6, pp. 1343-1354, 2009, doi: 10.1016/j.chb.2009.06.001.
- [10] Yunxin Liu and Siegfried Dewitte, "A replication study of the credit card effect on spending behavior and an extension to mobile payments," *J. Retail. Consum. Serv.*, vol. 60, Art. no. 102472, 2021, doi: 10.1016/j.jretconser.2021.102472.
- [11] Lotfi Belkhir and Ahmed Elmeligi, "Assessing ICT global emissions footprint: Trends to 2040 & recommendations," *J. Clean. Prod.*, vol. 177, pp. 448-463, 2018, doi: 10.1016/j.jclepro.2017.12.239.
- [12] Gerald E. Fryxell and Carlos W. H. Lo, "The influence of environmental knowledge and values on managerial behaviours on behalf of the environment: An empirical examination of managers in China," *J. Bus. Ethics*, vol. 46, no. 1, pp. 45-69, 2003, doi: 10.1023/A:1024773012398.
- [13] Andris Saulītis, Vineta Silkāne, and Anna Karolīna Ozola, "Enhancing sustainable consumer behaviour through nudging: Insights from a field experiment on adoption of electronic receipts," *Electron. Commer. Res. Appl.*, vol. 74, Art. no. 101548, 2025, doi: 10.1016/j.elerap.2025.101548.
- [14] Emma L. Slade, Yogesh K. Dwivedi, Niall C. Piercy, and Michael D. Williams, "Modeling consumers' adoption intentions of remote mobile payments in the United Kingdom: Extending UTAUT with innovativeness, risk, and trust," *Psychol. Mark.*, vol. 32, no. 8, pp. 860-873, 2015, doi: 10.1002/mar.20823.
- [15] Joe Boden, Erik Maier, and Robert Wilken, "The effect of credit card versus mobile payment on convenience and consumers' willingness to pay," *J. Retail. Consum. Serv.*, vol. 52, Art. no. 101910, 2020, doi: 10.1016/j.jretconser.2019.101910.