Integrating Green Finance and Digital Payment Systems for Sustainable Consumption: A Systematic Review in Emerging Economies

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Abstract – In the era of digital intelligence, organizations and policymakers are increasingly challenged to navigate complexity while balancing economic growth with environmental sustainability. Green finance has emerged as a strategic mechanism to channel financial resources toward environmentally responsible activities, while digital payment systems enable transparency, efficiency, and data-driven decision-making across financial ecosystems. This paper presents a systematic and critical review of peer-reviewed literature examining the integration of green finance mechanisms and digital payment systems as an adaptive and sustainable management practice, with a particular focus on emerging economies.

Adopting a structured systematic literature review methodology, the study synthesizes research spanning management, finance, information systems, and sustainability domains. The review analyses how digitally enabled payment infrastructures support green finance objectives by improving traceability of financial flows, enabling micro-level green incentives, strengthening ESG monitoring, and influencing sustainable consumer and organizational behavior. The findings indicate that digital intelligence embedded within payment platforms enhances adaptive management capabilities, institutional accountability, and policy responsiveness, thereby accelerating sustainable consumption and investment transitions. The paper also identifies key challenges related to regulatory alignment, data governance, behavioral resistance, and impact measurement. By consolidating fragmented literature and proposing an integrative conceptual framework, the study contributes to sustainable management scholarship and provides actionable insights for policymakers, financial institutions, and digital platform designers.

Keywords: Green Finance, Digital Payments, Sustainable Management, Digital Intelligence

1. INTRODUCTION:

Global economic growth has intensified environmental challenges, including climate change, resource depletion, and ecological degradation. In response, green finance has emerged as a strategic approach to channel financial resources toward environmentally sustainable projects and low-carbon development pathways [1], [2]. Green finance encompasses a broad range of instruments, including green bonds, climate finance, ESG investments, and sustainability-linked financial products that align economic incentives with environmental objectives [3].

Parallel to this development, rapid advancements in digital technologies have transformed financial systems worldwide. Digital payment systems—such as mobile wallets, real-time payment platforms, QR-code payments, and blockchain-enabled transactions—have reduced transaction costs, enhanced financial inclusion, and increased transparency [4], [5]. In emerging economies, digital payment platforms play a pivotal role in formalizing economic activity and enabling data-driven financial decision-making [6].

The integration of green finance and digital payment systems represents a promising yet underexplored pathway for promoting sustainable consumption and production. Digital payments can operationalize green finance by enabling traceable fund flows, facilitating green incentives at the consumer level, and supporting data-driven monitoring of environmental impact [7], [8]. For example, digital platforms can reward eco-friendly purchases, enable carbon footprint tracking, and support micro-investments in green assets [9].

Emerging economies face unique sustainability challenges due to rapid urbanization, rising consumption, and infrastructural constraints. At the same time, these economies are witnessing accelerated adoption of digital payments driven by mobile penetration and supportive public policy [10]. This creates a unique opportunity to embed sustainability objectives directly into digital financial ecosystems.

Despite growing interest, existing academic literature remains fragmented across disciplines, with limited synthesis on how digital payment systems support green finance objectives, particularly in emerging market contexts. This paper addresses this gap by systematically reviewing and synthesizing existing research on green finance and digital payment integration. The study aims to identify key drivers, barriers, and outcomes, and to propose a conceptual framework guiding future research and policy interventions.

2. LITERATURE SURVEY METHODOLOGY

2.1 Systematic Review Approach

This study adopts a **Systematic Literature Review (SLR)** methodology to ensure methodological rigor, transparency, and replicability in synthesizing prior research [11]. The SLR approach is particularly appropriate for interdisciplinary domains such as green finance and digital payments, where literature is dispersed across management, finance, information systems, and sustainability journals. By following a systematic and predefined review protocol, the study minimizes selection bias and enhances the credibility of the findings.

The review is guided by established principles of **evidence-based management research**, which emphasize structured identification, evaluation, and synthesis of existing knowledge to inform theory development and policy decision-making [12]. This approach enables the consolidation of fragmented empirical and conceptual insights into a coherent understanding of how digital payment systems and green finance mechanisms jointly contribute to adaptive and sustainable management practices in the digital intelligence era.

2.2 Data Sources and Search Strategy

Academic literature was sourced from major peer-reviewed databases, including **Scopus, Web of Science, ScienceDirect, and Emerald Insight**. These databases were selected due to their extensive coverage of high-quality research in finance, sustainability, management, and information systems, as well as their strong indexing of Scopus-ranked journals [13]. Scopus served as the primary database because of its multidisciplinary scope and citation-tracking capabilities.

A comprehensive search strategy was developed using Boolean operators to capture relevant studies addressing both green finance and digital payment systems. The following keyword combinations were employed:

- "Green finance" OR "Sustainable finance"
- "Digital payments" OR "FinTech" OR "Mobile payments"
- "Sustainable consumption" OR "ESG" OR "Climate finance"
- "Emerging economies"

The search was limited to **English-language publications published between 2012 and 2025**, reflecting the period during which green finance instruments and digital financial technologies experienced rapid global expansion. This timeframe also captures the evolution of sustainability-oriented financial regulation and digital payment ecosystems in emerging markets.

2.3 Inclusion and Exclusion Criteria

To ensure relevance and quality, clearly defined inclusion and exclusion criteria were applied. The inclusion criteria comprised **peer-reviewed journal articles and high-quality conference papers** that explicitly examined green finance instruments, digital payment systems, or their integration from managerial, technological, behavioral, or policy perspectives. Studies focusing on sustainability outcomes, ESG performance, financial inclusion, or adaptive management implications were also included.

Exclusion criteria eliminated editorials, practitioner reports, working papers, and purely technical or engineering-focused studies that lacked sustainability or financial relevance. Articles that did not demonstrate theoretical grounding or empirical rigor were also excluded [14]. This filtering process ensured that the final sample reflected robust academic contributions aligned with the objectives of the review.

2.4 Study Selection and Data Extraction

The study selection process involved multiple stages. Initially, titles and abstracts were screened to remove irrelevant and duplicate records. This was followed by full-text assessment to ensure compliance with the inclusion criteria. After this systematic screening process, a final set of 23 studies as per table 1 was selected for detailed analysis.

The review primarily focused on empirical and applied studies published between 2012 and 2025, reflecting the period of rapid growth in green finance and digital payment systems. Seminal theoretical works published prior to 2012 were selectively included to provide foundational grounding for behavioral and technology adoption constructs where no

contemporary substitutes exist, consistent with systematic review best practices [11], [12].

A structured data extraction template was used to capture key information from each study, including publication details, theoretical frameworks, research methodology, key variables, contextual focus, and principal findings. This systematic extraction enabled consistent comparison across studies and facilitated thematic synthesis in subsequent sections.

3. THEMATIC REVIEW OF GREEN FINANCE AND DIGITAL PAYMENTS

3.1 Green Finance Instruments and Sustainability Outcomes

The reviewed literature identifies **green bonds, ESG-linked investments, and climate finance mechanisms** as the primary instruments driving environmental sustainability and low-carbon economic transitions [1], [3]. Empirical studies consistently report that green finance contributes to improved environmental performance, enhanced corporate accountability, and reductions in carbon intensity across industries [15].

However, the literature also highlights persistent challenges, including **greenwashing risks, inconsistencies in sustainability reporting, and lack of standardized impact measurement frameworks** [16]. These limitations constrain the effectiveness of green finance initiatives and underscore the need for transparent monitoring mechanisms and stronger institutional oversight.

3.2 Role of Digital Payment Systems in Enabling Green Finance

Digital payment systems play a critical enabling role in operationalizing green finance objectives. The literature indicates that digitally enabled payment platforms enhance transaction transparency, reduce information asymmetry, and facilitate real-time monitoring of financial flows linked to green investments [7], [17]. By digitizing payment records, these platforms support traceability and accountability, which are essential for ensuring the credibility of green finance initiatives.

Moreover, **blockchain-based payment systems** further strengthen trust and traceability by providing immutable transaction records and decentralized verification mechanisms [18]. These technological features are increasingly viewed as critical enablers for scaling green finance in complex and multi-stakeholder ecosystems.

3.3 Behavioral and Consumer-Level Implications

At the consumer level, digital payment platforms facilitate **behavioral nudges** toward sustainable consumption through mechanisms such as cashback incentives, eco-labeling, and gamified reward systems [9], [19]. These features leverage insights from behavioral economics to influence consumer decision-making without restricting choice.

Studies grounded in behavioral theory demonstrate that such nudges positively affect consumer attitudes, adoption intentions, and actual purchase behavior related to green products and services [20]. As a result, digital payments act not only as transaction tools but also as instruments for shaping sustainable consumption patterns.

3.4 Institutional and Policy Dimensions

Institutional and policy environments significantly influence the successful integration of green finance and digital payment systems. Government policies, regulatory frameworks, and public digital infrastructure investments create enabling conditions for adoption and scale [21]. Coordinated policy support enhances trust, interoperability, and stakeholder participation, while fragmented or inconsistent regulations constrain scalability and cross-platform integration [22].

The literature emphasizes the importance of regulatory alignment across financial, digital, and environmental domains to ensure long-term sustainability and adaptive management outcomes.

4. CONCEPTUAL FRAMEWORK

Based on the thematic synthesis, this paper proposes a **conceptual framework** that links digital payment capabilities—such as transparency, data analytics, and interoperability—with green finance mechanisms, including green investments, incentive structures, and sustainability monitoring. These interactions collectively contribute to sustainable consumption outcomes and adaptive management performance.

Institutional support and consumer behavior are conceptualized as moderating variables that influence the effectiveness of this integration, highlighting the socio-technical nature of sustainable financial ecosystems.

5. FUTURE RESEARCH PROPOSAL

The review identifies several critical research gaps. These include the limited number of empirical studies focused on emerging economies, the scarcity of longitudinal research designs, and insufficient integration of behavioral and technological theories. Future research should explore **AI-driven green payment systems**, advanced impact measurement tools, and inclusive platform designs that address the needs of underserved populations [23].

Addressing these gaps will strengthen theoretical development and provide actionable insights for sustainable management practices.

6. CONCLUSION AND POLICY IMPLICATIONS

This review demonstrates that digital payment systems can significantly enhance the reach and effectiveness of green finance initiatives by enabling transparency, inclusion, and behaviorally informed decision-making. For policymakers, aligning digital finance strategies with sustainability objectives is essential for navigating complexity in the digital intelligence era. Financial institutions and FinTech firms should embed green incentives and sustainability metrics into payment platforms to promote sustainable consumption and long-term adaptive management outcomes at scale.

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Table 1: Consistent comparison across studies

Ref. No.	Authors (Year)	Domain Focus	Research Type	Methodology	Theoretical Lens	Key Variables / Constructs	Context	Key Contribution
[1]	OECD (2017)	Green Finance	Conceptual / Policy	Policy analysis	Institutional Theory	Capital mobilization, sustainability finance	Global	Framework for sustainable capital allocation
[2]	UNEP (2016)	Sustainable Finance	Conceptual	Framework analysis	Sustainability Governance	ESG integration, climate finance	Global	Defines sustainable finance architecture
[3]	Flammer (2021)	Green Bonds	Empirical	Econometric analysis	Stakeholder Theory	Green bonds, firm value, ESG	Global	Links green bonds to firm performance
[4]	Dahlberg et al. (2015)	Digital Payments	Systematic Review	Literature review	Technology Adoption	Adoption drivers, payment systems	Global	Synthesizes mobile payment research
[5]	Venkatesh et al. (2012)	Digital Technology	Empirical	Survey (SEM)	UTAUT2	Performance expectancy, usage intention	Global	Explains consumer tech adoption
[6]	World Bank (2018)	Digital Finance	Policy / Empirical	Secondary data analysis	Financial Inclusion	Access, inclusion, DFS	Emerging economies	Digital payments & inclusion linkage
[7]	Arner et al. (2017)	FinTech Regulation	Conceptual	Regulatory analysis	Institutional Theory	Regulation, innovation, trust	Global	FinTech-regulation interaction
[8]	Lee & Shin (2018)	FinTech Ecosystem	Conceptual	Ecosystem mapping	Innovation Systems	Platforms, innovation models	Global	FinTech ecosystem structure
[9]	Thaler & Sunstein (2008)	Behavioral Economics	Conceptual	Theory development	Nudge Theory	Incentives, behavior change	Global	Behavioral nudges for sustainability
[10]	GSMA (2020)	Mobile Economy	Empirical	Industry data analysis	Digital Diffusion	Mobile access, digital adoption	Emerging markets	Mobile-driven digital finance growth
[11]	Tranfield et al. (2003)	Review Methodology	Methodological	Systematic review	Evidence-based Management	Review rigor, synthesis	Global	Foundation of SLR methodology
[12]	Snyder (2019)	Review Methods	Methodological	Method synthesis	Research Methodology	Review design, synthesis	Global	Guidelines for literature reviews
[13]	Falagas et al. (2008)	Databases	Methodological	Comparative analysis	Information Retrieval	Database coverage	Global	Validates database selection
[14]	Denyer & Tranfield (2009)	Review Protocol	Methodological	Framework development	Research Governance	Selection criteria	Global	Review protocol design
[15]	Zhang et al. (2021)	Green Growth	Empirical	Panel regression	Environmental Economics	Green spending, growth	Emerging economies	Green finance improves growth
[16]	Lyon & Montgomery (2015)	Greenwashing	Conceptual / Empirical	Case analysis	Corporate Ethics	Disclosure, credibility	Global	Identifies greenwashing risks
[17]	Ketterer (2014)	Digital Climate Finance	Conceptual	Policy analysis	Climate Finance	Digital tools, climate funding	Emerging economies	Digital finance for climate action
[18]	Kouhizadeh et al. (2021)	Blockchain	Empirical	Conceptual + cases	Socio-technical Theory	Traceability, trust	Global	Blockchain enables sustainability
[19]	White et al. (2019)	Sustainable Consumption	Review	Literature synthesis	Behavioral Theory	Attitudes, nudges	Global	Drivers of sustainable behavior
[20]	Ajzen (1991)	Consumer Behavior	Theoretical	Theory development	TPB	Attitude, intention	Global	Foundation of behavioral studies
[21]	RBI (2021)	Digital Payments Policy	Policy Report	Secondary analysis	Regulatory Economics	Payment infrastructure	India	Institutional support for digital finance
[22]	European Commission (2020)	Digital Finance Policy	Policy Framework	Strategy analysis	Governance Theory	Regulation, integration	EU	Policy alignment importance
[23]	Dwivedi et al. (2020)	Technology Adoption	Meta-analysis	Quantitative synthesis	UTAUT	Adoption predictors	Global	Consolidates adoption determinants