

DIGITALIZING ACADEMIC GOVERNANCE FOR SUSTAINABILITY: A CONCEPTUAL FRAMEWORK FOR PAPERLESS SYSTEMS AND GREEN ENVIRONMENTAL OUTCOMES

Muhammad Shahid Khan

College of Innovation and Management, Suan Sunandha Rajabhat University, Bangkok, Thailand,

E-Mail: Shahid.kh@ssru.ac.th

ABSTRACT

Urban air pollution has emerged as a critical sustainability and public health challenge in metropolitan regions such as Bangkok, where recurrent PM_{2.5} pollution episodes continue to threaten environmental quality and human well-being. While policy interventions predominantly focus on transportation and industrial emissions, institutional consumption practices, particularly paper-intensive academic governance, remain underexplored as contributory factors and mitigation opportunities. The specific objectives of this study are: 1) To examine the influence of attitudes toward paperless governance, perceived digital behavioral control, and digital trust on paperless intention in the context of public university academic governance 2) To analyze the effect of paperless intention on green environmental outcomes, particularly in terms of reducing paper consumption and promoting environmentally sustainable academic practices. 3) To develop a theoretically grounded conceptual framework that explains how behavioral determinants drive paperless intention and contribute to green environmental sustainability within higher education institutions. This conceptual paper examines paperless academic governance in public universities as a sustainability-oriented approach to fostering a green environment. Drawing on the Theory of Planned Behavior and green workplace behavior literature, the paper develops a conceptual framework that explains how attitudes toward paperless governance, perceived digital behavioral control, and digital trust influence paperless intention, which subsequently contributes to green environmental outcomes. By emphasizing the role of individual intentions enabled through digital readiness and trust, the study advances a set of theoretically grounded propositions to guide future empirical investigation. The paper contributes to sustainability in higher education by positioning paperless academic governance as a practical, institution-level strategy for promoting environmentally responsible behavior and supporting broader urban environmental sustainability efforts.

Keywords: paperless workplace; conceptual framework; sustainability in higher education; institutional theory; urban pollution; academic governance

INTRODUCTION

Urban air pollution has reached alarming levels in many Asian megacities, including Bangkok, where recurrent PM_{2.5} episodes pose serious risks to public health and environmental sustainability (United Nations, 2015; UNESCO Bangkok, 2021). While transportation and industrial emissions are frequently identified as primary contributors, institutional consumption practices—such as paper use, printing, and document processing—also contribute indirectly to urban pollution through upstream manufacturing emissions and downstream waste disposal (EPA, 2018).

Public universities represent influential institutional actors within urban environments. As large public sector organizations, universities generate substantial paper consumption through administrative and academic governance processes (Findler et al., 2019). Despite widespread digital readiness, mandatory paper-based academic procedures—particularly the requirement for postgraduate students to print multiple hard copies of theses—remain common. These practices contribute to unnecessary resource consumption, energy use, and pollution, contradicting universities' stated sustainability commitments (Lozano et al., 2015; UNESCO, 2020).

This conceptual paper argues that transitioning toward paperless academic governance constitutes a practical, low-cost, and scalable sustainability intervention. Rather than focusing solely on individual behavior, the paper emphasizes the role of institutional rules, legitimacy, and governance structures in shaping environmental outcomes (DiMaggio & Powell, 1983; Scott, 2014). By developing a conceptual framework and propositions, this study lays the foundation for future empirical research and policy reform in sustainability-oriented higher education. For focuses on sustainable cities. (Chuwichain, P., et al., 2025)

OBJECTIVE

- 1) To examine the influence of attitudes toward paperless governance, perceived digital behavioral control, and digital trust on paperless intention in the context of public university academic governance
- 2) To analyze the effect of paperless intention on green environmental outcomes, particularly in terms of reducing paper consumption and promoting environmentally sustainable academic practices.
- 3) To develop a theoretically grounded conceptual framework that explains how behavioral determinants drive paperless intention and contribute to green environmental sustainability within higher education institutions.

2. Critical Literature Review

2.1 Paperless Working as Institutional Transformation

The literature consistently demonstrates that paperless working is not primarily a technological challenge but an institutional and governance transformation (van Meel, 2011). Historical analyses show that paper-reduced office concepts were proposed as early as the 1970s; however, paper persisted due to its symbolic role in legitimacy, accountability, and organizational control (van Meel, 2011). This historical persistence highlights that paper-based practices are deeply embedded in institutional norms rather than driven by functional necessity (Du et al., 2023). Contemporary studies reinforce this institutional explanation. Research in public sector contexts shows that paper-based documentation continues despite adequate digital systems due to regulatory requirements, audit expectations, and risk-avoidance cultures (Iljaz et al., 2014; Byström, 2022). Hybrid paper-digital systems, where paper remains mandatory alongside electronic records, frequently increase workload and resistance rather than facilitating digital transition (Yousufi, 2023). These findings suggest that paperless initiatives fail when institutions adopt digital tools without reforming underlying governance rules (Scott, 2014).

2.2 Environmental Rationale and the Limits of Awareness

Paper production and disposal are well-documented contributors to environmental degradation, including deforestation, greenhouse gas emissions, and landfill pollution (EPA, 2018). Paperless working

is therefore widely promoted as a sustainability strategy aligned with responsible consumption and climate action (United Nations, 2015; UNESCO, 2020). In urban contexts experiencing severe air pollution, reducing institutional paper consumption represents a demand-side intervention that complements broader pollution control efforts (Findler et al., 2019). However, prior studies caution that environmental awareness alone does not drive institutional change. Organizations frequently adopt sustainability rhetoric while maintaining paper-intensive workflows, resulting in symbolic rather than substantive environmental gains (Uzcátegui, 2019; Norton et al., 2015). This highlights a critical limitation of awareness-based approaches: without enforcement mechanisms and governance reform, environmental intentions remain disconnected from operational practice (Ones & Dilchert, 2012).

2.3 Trust, Legitimacy, and Governance Constraints

Trust in digital systems and the perceived legitimacy of electronic documents emerge as central determinants of paperless adoption (Venkatesh et al., 2003; Byström, 2022). Studies show that professionals resist abandoning paper when digital records are not universally recognized as authoritative or legally secure (Iljaz et al., 2014). Paper is often perceived as safer, more reliable, and less contestable in audit and evaluation contexts (Scott, 2014). In higher education, theses function as formal academic and legal artifacts, making legitimacy concerns particularly salient. Mandatory thesis printing can therefore be understood as a governance response to perceived digital risk rather than a pedagogical requirement (DiMaggio & Powell, 1983; Scott, 2014). These governance constraints suppress pro-environmental behavior even among individuals with strong sustainability values (Ajzen, 1991, 2020).

2.4 Synthesis and Implications for Higher Education

Synthesizing the literature reveals that successful paperless workplaces require: (1) formal institutional recognition of digital documents, (2) elimination of paper-digital duplication, (3) governance reform, (4) cultural alignment, and (5) leadership-driven legitimacy (Iljaz et al., 2014; Yousufi, 2023; Byström, 2022). Notably, existing research rarely examines institutionally enforced paper-based academic governance, particularly within public universities in Southeast Asia (Findler et al., 2019; UNESCO Bangkok, 2021). This gap underscores the need for a conceptual framework that integrates behavioral motivation with institutional constraint (Li & Khan, n.d.).

METHODOLOGY

3. Conceptual Framework Development

Integrating pro-environmental behavior theory (Ajzen, 1991, 2020), green workplace behavior (Norton et al., 2015; Ones & Dilchert, 2012), and institutional theory (DiMaggio & Powell, 1983; Scott, 2014), this paper proposes a conceptual framework explaining the persistence of paper-based academic practices. The framework positions paperless intention as shaped by attitudes toward paperless governance, perceived behavioral control over digital systems, environmental concern, and trust in digital documentation (Ajzen, 1991; Venkatesh et al., 2003). Simultaneously, institutional printing requirements and perceived institutional rigidity function as constraining forces that suppress paperless adoption and weaken the translation of intention into behavior (Iljaz et al., 2014; Yousufi, 2023). Within metropolitan contexts such as Bangkok, this framework highlights how institutional reform toward paperless academic governance can contribute to pollution mitigation by reducing paper consumption, printing-related energy use, and waste generation (EPA, 2018; UNESCO Bangkok, 2021).

4. Propositions Development

Grounded in the Theory of Planned Behavior and institutional theory, the following propositions are advanced (Ajzen, 1991; DiMaggio & Powell, 1983):

P1: Positive attitudes toward paperless academic governance are associated with stronger paperless intention.

P2: Greater perceived behavioral control over digital systems enhances paperless intention.

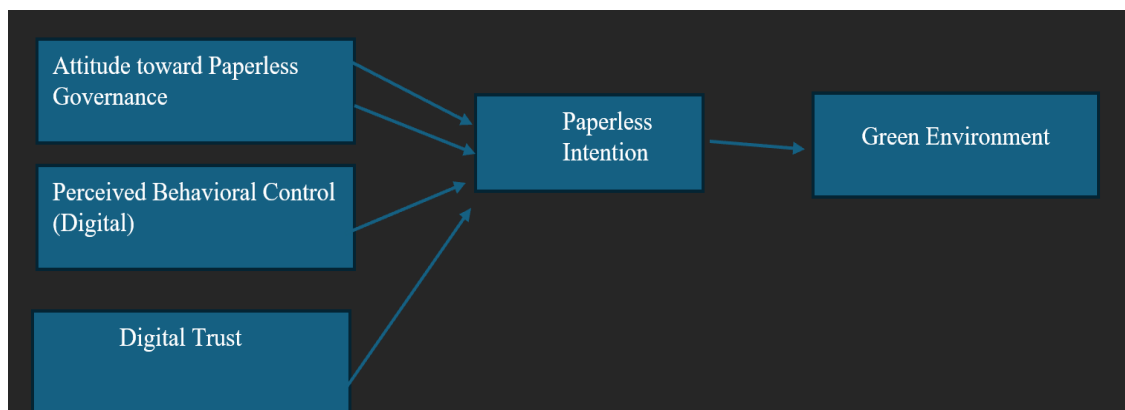
P3: Higher environmental concern strengthens paperless intention.

P4: Trust in the legitimacy and reliability of digital documents positively influences paperless intention.

P5: Institutional printing requirements negatively influence paperless intention regardless of individual environmental values.

P6: Stronger paperless intention is associated with reduced paper-based academic behavior when institutional constraints are minimal.

P7: Perceived institutional rigidity weakens the relationship between paperless intention and paper reduction behavior.



RESULT

5. Implications for Urban Pollution and Sustainability in Higher Education

Paperless academic governance represents an underutilized institutional strategy for mitigating urban pollution. By reducing paper demand, universities can lower emissions associated with paper production, printing, transportation, and waste disposal (EPA, 2018). In cities such as Bangkok, where air pollution has reached critical levels, such demand-side interventions provide immediate and scalable benefits (United Nations, 2015; UNESCO Bangkok, 2021).

Positioning paperless working as a pollution mitigation strategy reframes sustainability from a long-term aspiration to an institutional responsibility. Public universities, as knowledge leaders and public sector exemplars, are uniquely positioned to model environmentally responsible governance and influence broader societal practices (Findler et al., 2019; UNESCO, 2020).

CONCLUSION AND FUTURE RESEARCH DIRECTIONS

This conceptual paper advances understanding of paper-based persistence in public university governance by proposing a theoretically grounded framework that links individual behavioral factors with sustainability-oriented governance outcomes. Drawing on the Theory of Planned Behavior and green workplace behavior literature, the study positions attitudes toward paperless governance, perceived digital behavioral control, and digital trust as key antecedents of paperless intention, which in turn contributes to green environmental outcomes. In doing so, the paper reframes paperless academic governance not merely as an operational efficiency initiative, but as a strategic institutional response to urban environmental challenges such as PM_{2.5} pollution. By shifting attention from conventional pollution sources to everyday institutional consumption practices, the study highlights the role of higher education institutions as active agents in advancing sustainability and environmental responsibility. The proposed framework contributes to sustainability in higher education by emphasizing intentional, digitally enabled governance reform as an immediate and actionable pathway toward greener academic ecosystems (Ajzen, 2020; Scott, 2014).

Limitations

Despite its theoretical contributions, this study is subject to several limitations. First, as a conceptual paper, the framework has not been empirically tested, and the proposed relationships remain theoretically inferred rather than statistically validated. Second, the model focuses primarily on individual-level behavioral determinants and does not explicitly incorporate organizational-level factors such as leadership commitment, regulatory enforcement, or resource availability, which may also influence paperless governance adoption. Third, the framework is contextualized within public universities in urban settings, particularly in developing or middle-income countries, which may limit the generalizability of the findings to private institutions or non-urban contexts. Finally, the outcome variable is framed broadly as a green environment, without directly quantifying environmental impacts such as emissions reduction or cost savings, which warrants further empirical refinement.

Future Research Directions

Future research should empirically test the proposed framework using quantitative methods such as structural equation modeling to validate the relationships between behavioral antecedents, paperless intention, and environmental outcomes. Longitudinal studies could further examine how paperless intentions translate into sustained behavioral change over time. Additionally, future studies may extend the model by incorporating institutional or policy-level variables, such as governance mandates, digital infrastructure readiness, or leadership support, to better capture multilevel dynamics in paperless transformation. Comparative studies across universities, countries, or governance systems would also provide valuable insights into contextual differences in digital trust and behavioral control. Finally, future research should integrate objective environmental indicators, such as paper consumption reduction or carbon footprint estimates, to strengthen the linkage between paperless governance and measurable environmental sustainability outcomes (Zhang & Khan, 2024).

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