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Original Article

# Fiscal Incentives and Digital Transformation in Emerging Economies: A Systematic Review and Research Agenda

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**Abstract.** This study presents a systematic review of the literature on the role of fiscal incentives in promoting digital transformation within emerging economies. While digitalization is increasingly recognized as a catalyst for productivity, innovation, and inclusive development, there remains a limited synthesis of how fiscal tools—such as tax credits, accelerated depreciation, and innovation subsidies—facilitate this transition. The review draws on peer-reviewed empirical studies from major academic databases and employs thematic content analysis to identify patterns, gaps, and conceptual linkages across contexts. Findings suggest that fiscal incentives can reduce financial barriers, encourage technological adoption, and stimulate organizational innovation. However, the literature is often fragmented, geographically skewed, and lacking in theoretical and methodological consistency. In particular, there is a need for deeper insights into firm-level behavioral mechanisms, sectoral differences, and long-term policy impacts. This review consolidates current evidence and offers a structured research agenda to guide future inquiries. It also underscores the importance of integrating fiscal tools into broader digital development strategies to ensure equitable and effective transformation in emerging economies.

***Keywords***: *Digital transformation; Emerging economies; Fiscal incentives; Innovation policy; Accelerated depreciation.*

Digital transformation has emerged as a critical driver of economic growth, innovation, and sustainability worldwide (Murthy et al., 2021; Xu et al., 2023; Van Dinh, 2024). In emerging markets in particular, it holds the potential to reshape productivity dynamics, modernize industrial structures, and improve global competitiveness (Gomez-Trujillo & Gonzalez-Perez, 2022). Enterprises are increasingly under pressure to digitize not only to enhance operational efficiency but also to remain relevant in rapidly evolving digital ecosystems. However, the transition toward digitalization often entails significant financial, technical, and organizational challenges— especially for small and medium-sized enterprises (SMEs) with limited resources and capabilities (Tian et al., 2022).

In response to these challenges, governments have increasingly relied on fiscal policy instruments—such as tax incentives, accelerated depreciation schemes, and targeted subsidies—to encourage private investment in digital technologies (d'Andria & Savin, 2018; Fan & Liu, 2020). Recent firm-level evidence suggests that such instruments

can play a significant role in shaping trajectories of digital upgrading. For instance, accelerated depreciation policies for digital and intelligent equipment have been shown to lower the user cost of capital and stimulate corporate digital investment (Feng et al., 2024), while broader tax incentive schemes appear to promote digital transformation more strongly in regions with higher marketization and institutional quality (Fu et al., 2025). Complementary fiscal instruments—such as innovation subsidies—may further reinforce these effects by easing financial constraints and supporting organizational change (He et al., 2025). Most existing empirical evidence on the relationship between fiscal incentives and digital transformation is drawn from China, reflecting both data availability and extensive policy experimentation. This geographic concentration may limit the generalizability of findings to other emerging economies with different institutional and fiscal contexts.

Despite these emerging insights, the academic literature remains fragmented. Existing studies often focus on specific instruments, sectors, or national contexts—most notably a single-country setting—while offering a limited synthesis of how fiscal incentives operate across different institutional settings in emerging economies. Moreover, although a growing number of empirical papers document positive associations between fiscal support and digital investment, there is still insufficient understanding of the underlying firm-level mechanisms, sectoral heterogeneity, and long-term policy impacts. This gap is particularly striking given the increasing reliance on fiscal levers as tools of digital development strategy in emerging markets, where public policy frequently compensates for market failures related to financing constraints, risk, and capability gaps. A systematic synthesis of the literature is therefore needed to clarify how fiscal incentives influence digital transformation, under what conditions they are most effective, and where evidence remains inconclusive.

To address this gap, this paper conducts a systematic literature review of peer-reviewed academic studies examining the role of fiscal incentives in supporting digital transformation in emerging economies. By applying a thematic synthesis approach, the review identifies key empirical patterns, conceptual frameworks, and methodological trends, while highlighting persistent blind spots. In doing so, the study consolidates current knowledge and proposes a structured research agenda to guide future inquiry and policy design. The remainder of the paper is structured as follows. Section 2 reviews the existing literature on enterprise digitalization and fiscal incentives. Section 3 outlines the review methodology. Section 4 presents and analyzes the key findings. Section 5 proposes a research agenda. Finally, Section 6 concludes with implications for scholars and policymakers.

**Fiscal Incentives in Emerging Economies**

Fiscal incentives refer to preferential tax measures designed to lower the effective cost of investment and encourage firms to engage in activities such as technological upgrading, innovation, and digital adoption (Klemm, 2010; Klemm & Van Parys, 2012). In the policy literature, these instruments are typically framed as part of a broader policy mix that also includes direct subsidies and regulatory taxation. Their primary objective is to correct structural market failures that discourage firms from investing in innovation due to high upfront costs and uncertainty.

Governments rely on a wide range of fiscal mechanisms to stimulate private investment. These include tax holidays, reduced corporate income tax rates, accelerated depreciation schemes, investment tax credits, and targeted R&D deductions. A commonly used distinction is between profit-based incentives—such as tax holidays and preferential tax rates—and cost-based incentives, including investment tax credits and accelerated depreciation. The latter are often considered more effective in supporting technology-related investments (Klemm, 2010).

In emerging economies, fiscal incentives play a strategic role in alleviating financing constraints, institutional weaknesses, and technological gaps that limit firms' innovative capacity. By reducing investment risks and compensating for structural deficiencies, these instruments can help attract capital, foster productivity gains, and support economic modernization (Klemm & Van Parys, 2012). However, their effectiveness depends critically on programme design, including the generosity of the incentive, eligibility criteria, and the scope of supported activities. Poorly designed schemes may generate opportunistic behavior or lead to resource misallocation (Klemm, 2010). Overall, fiscal incentives represent key policy tools for emerging economies seeking to accelerate innovation and digital transformation while addressing persistent structural limitations.

**Digital Transformation in Emerging Economies**

Digital transformation has become a critical driver of structural change in emerging economies, particularly as the

diffusion of advanced technologies accelerates. Recent breakthroughs—most notably in artificial intelligence—have expanded opportunities to redesign organizational processes and reshape business models, capabilities, and routines. Digital transformation refers to a profound shift in how firms create, organize, and capture value through the adoption of advanced digital technologies (Vial, 2019; Bharadwaj et al., 2013). It goes beyond the simple digitization of existing processes by altering coordination mechanisms and strategic decision-making. Digital technologies reduce information frictions, enable real-time coordination across geographic distances, and foster new organizational forms, including "born-digital" firms that operate globally from inception (Luo, 2021; Monaghan et al., 2020). These developments illustrate how digital technologies can relax traditional constraints related to location, coordination, and market access.

In emerging economies, digital transformation unfolds in contexts marked by limited digital infrastructure, skills shortages, regulatory uncertainty, and financing constraints (David et al., 2025). At the same time, these technologies offer opportunities to overcome structural barriers. Enhanced connectivity and data-driven decision-making can improve efficiency and support broader economic and societal outcomes (Tsakalerou, 2025; Xiao et al., 2025). Consequently, digital transformation is increasingly viewed not only as a technological shift but also as a strategic pathway for strengthening firm performance and promoting broader socio-economic development in emerging economies (Karikari et al., 2025).

The literature highlights the multidimensional nature of digital transformation. A technological dimension concerns the adoption of tools such as cloud computing, artificial intelligence, and the Internet of Things (Shonubi, 2025). Innovation-oriented studies further suggest that digital transformation can enhance innovation outcomes through channels such as factor reallocation and improved governance mechanisms (Cui & Liu, 2025; Yu et al., 2025). An institutional dimension reflects the role of digital infrastructure, regulatory frameworks, and market conditions in shaping technology adoption. Uneven diffusion across firms may therefore widen gaps between digital frontrunners and the rest of the economy (Muhammad et al., 2025).

Despite its transformative potential, digital transformation remains uneven across firms and sectors in emerging economies. While some firms can leverage digital technologies to circumvent structural weaknesses, diffusion remains limited for others, thereby reinforcing digital divides. This unevenness underscores the importance of public policies in building capabilities, expanding infrastructure, and fostering a regulatory environment conducive to innovation. Overall, digital transformation presents both opportunities and challenges for emerging economies, reshaping competitive dynamics and redefining the conditions under which firms operate and innovate.

**Linking Fiscal Incentives and Digital Transformation**

Digital transformation requires substantial, risky, and often intangible investments in digital infrastructure, data capabilities, software, artificial intelligence, and organizational change. As with R&D activities, firms may underinvest in these areas because adjustment costs are high, returns are uncertain, and a significant share of the benefits spills over to competitors and the broader economy. This creates a clear rationale for using fiscal policy to reduce the private cost of digital investment and to better align firms' incentives with broader development objectives.

Recent studies explicitly examine how tax policy shapes corporate digital transformation. Using Chinese firm-level data, Fu et al. (2025) show that tax incentives significantly promote digital upgrading, with stronger effects in regions characterized by deeper marketization and higher institutional quality. Similarly, Feng et al. (2024) find that accelerated depreciation rules for digital and intelligent equipment lower the user cost of capital and encourage firms to expand digital investment, thereby accelerating digital transformation. He et al. (2025) further highlight the complementary role of fiscal instruments, demonstrating that tax incentives and targeted innovation subsidies can exert synergistic effects on firms' digitalization strategies.

Beyond general tax incentives, other fiscal and quasi-fiscal measures also interact with digital transformation. Capital-biased incentives designed to steer investment toward energy-efficient or intelligent equipment may indirectly support digital upgrading while simultaneously reducing energy intensity. In parallel, the digitalization of tax administration—through e-filing systems, electronic invoicing, or real-time reporting—can itself drive corporate digital transformation by compelling firms to adopt digital systems and standardized data practices.

Overall, this growing body of research suggests that well-designed fiscal incentives can alleviate financial constraints, reduce adoption risks, and accelerate firms' transition to data-intensive, technology-enabled business models. However, the existing evidence remains fragmented, heavily concentrated on the Chinese context, and often focused on specific instruments. As a result, there is still limited understanding of how different types of fiscal incentives interact with institutional conditions and firm-level digital capabilities in other emerging economies. The present review addresses this gap by systematically examining how fiscal policy tools have been used to support digital transformation and under which conditions they are most effective.

Beyond the digital domain, recent studies on fiscal incentives for manufacturing and green innovation offer additional insights highly relevant to digital transformation. These studies suggest that fiscal support may exhibit nonlinear effects, stimulating innovation at moderate levels while generating inefficiencies, rent-seeking behavior, or diminishing returns when incentives are excessively generous. Evidence from equipment manufacturing also indicates that fiscal incentives operate not only through direct cost reductions but also by strengthening firms' dynamic capabilities—absorptive, adaptive, and innovative—which mediate policy impacts on performance. Research on new quality productive forces further shows that fiscal incentives can enhance firms' ability to integrate emerging technologies, while organizational characteristics, such as top management heterogeneity, shape the effectiveness of digital and green upgrading. Collectively, these findings underscore that fiscal incentives influence digital transformation not merely by lowering investment costs, but through complex interactions with firm capabilities, institutional environments, and managerial structures. This highlights the importance of analyzing the effects of fiscal policy within a broader, capability- and context-dependent framework.

**Overview of Prior Reviews on Fiscal Policy, Innovation, and Digitalization**

Existing systematic reviews in adjacent fields—such as health taxation, environmental regulation, and green innovation—offer valuable insights into how fiscal instruments shape economic behavior. Evidence from health-related taxes shows that policy effectiveness depends strongly on tax-rate calibration, behavioral responses, income-group heterogeneity, and the presence of complementary subsidies. Similar patterns emerge in environmental and climate-related reviews. Meta-analyses of carbon taxes and emissions trading systems (ETSs) consistently demonstrate emission-reducing effects, moderated by economic structure, technological capacity, and regulatory quality. Reviews of green innovation further reveal that fiscal incentives operate through both cost-reduction channels and capability-building mechanisms, although excessively generous incentives may yield diminishing returns. Collectively, this literature highlights the mechanisms through which fiscal tools influence investment decisions and technological change.

Despite the richness of these adjacent literatures, existing syntheses remain largely sector-specific and do not address the technological or organizational dimensions of digital transformation. Current reviews of fiscal policy rarely examine how similar instruments—such as tax credits, accelerated depreciation, or digital-specific incentives—operate to promote digital adoption, digital infrastructure investment, or firm-level technological upgrading. This omission underscores the need for an integrative review that explicitly focuses on the intersection of fiscal incentives and digital transformation in emerging economies.

Over the past decade, a growing body of review studies has synthesized evidence on how environmental taxes shape broader development outcomes, including energy poverty, clean energy transitions, and industrial restructuring. A consistent conclusion emerging from this literature is that environmental taxation cannot be understood as a purely fiscal instrument. Carbon taxes affect household budgets, firms' cost structures, and political acceptability long before measurable emission reductions materialize. As a result, scholars emphasize that environmental taxes are most effective when embedded within broader systems of incentives, compensatory mechanisms, and institutional safeguards (Pigou, 1920; Berry, 2019).

Empirical evidence further indicates that environmental taxation may indirectly improve access to clean energy in low-income countries when combined with complementary policy measures. Studies show that such taxation can influence energy transitions through multiple channels, including increased renewable energy use, changes in industrial employment, reductions in $CO_2$ intensity, and distributional effects on household welfare (Bukari et al., 2021; Pan et al., 2021; Acheampong et al., 2021). These mechanisms are particularly salient in fragile economic contexts, where households face severe income constraints and limited capacity to absorb energy price shocks.

At the same time, the literature emphasizes that even well-designed environmental taxes may generate unintended adverse effects when compensation mechanisms are insufficient or poorly targeted. Several studies document that rising energy prices can exacerbate energy poverty and prompt households to revert to traditional and polluting energy sources, particularly in low-income settings (Berry, 2019; Oum, 2019). These findings reinforce the importance of embedding environmental taxation within broader policy frameworks that include adequate redistribution and social protection measures.

Another often-underestimated dimension concerns the structural realities of developing economies, including fossil-fuel dependence, weak infrastructure, high inequality, and rapid urbanization (Ahlborg et al., 2015; Domguia et al., 2024). In such contexts, even theoretically optimal taxes may perform very differently in practice. Collectively, these reviews show that fiscal instruments generate both winners and losers, with outcomes depending less on abstract economic theory and more on political capacity and the quality of implementation.

However, despite the sophistication of this body of work, a striking omission remains: it rarely engages with the literature on digital transformation. These reviews seldom ask whether environmental fiscal tools might indirectly encourage firms to adopt digital technologies—for emissions monitoring, energy efficiency, process automation, or managerial upgrading. This silence reflects the limited interaction between research on environmental taxation and studies of digitalization.

A separate stream of research examines how fiscal instruments—particularly environmental protection taxes—shape firms' technological and organizational responses. Empirical evidence suggests that increasing tax pressure may initially induce cost-cutting behavior but, over time, can stimulate innovation as firms adapt to regulatory constraints. Studies confirm that environmental taxes can encourage green innovation and cleaner production, especially in emission-intensive sectors (Gao et al., 2022; Zhao et al., 2022).

However, firm responses to fiscal pressure are far from uniform. Larger firms and state-owned enterprises often possess financial, managerial, and political buffers that allow them to convert tax pressure into innovation and technological upgrading (Cai et al., 2020; Zhang et al., 2019; Liu et al., 2021). By contrast, smaller firms frequently face tighter resource constraints, limiting their capacity to respond through innovation. Recent studies also highlight the role of managerial characteristics and leadership orientation in shaping strategic responses to taxation, with heterogeneity in managerial attitudes influencing whether tax pressure is perceived as an incentive or a constraint (Bai & Lyu, 2023).

Although these insights deepen understanding of how fiscal instruments shape innovation and organizational capabilities, they remain largely anchored in environmental and green-innovation domains. None of these reviews extends the underlying mechanisms to digital transformation, despite parallels in cost pressures, compliance requirements, competitiveness, and transparency. To date, no review has synthesized evidence at the intersection of fiscal incentives and digital capabilities, nor examined how tax pressures interact with digital readiness, managerial structures, or institutional constraints. This blind spot provides a strong justification for undertaking a systematic review that explicitly bridges fiscal policy and digitalization, particularly in emerging economies where these domains increasingly intersect.

Recent research in international business further highlights that digital technologies are not merely operational tools but also structural forces that reshape how firms create value across borders. Real-time data flows, collaborative digital platforms, and cloud-based architectures have reduced coordination costs and increased strategic flexibility, enabling "born-digital" firms to internationalize rapidly (Bharadwaj et al., 2013; Monaghan et al., 2020; Luo, 2021). A major review emphasizes that digital transformation generates both opportunities—such as agility, learning, and rapid scaling—and risks related to cybersecurity, regulatory fragmentation, and geopolitics (Luo & Van Assche, 2023).

Despite these advances, the literature remains fragmented. Existing reviews often focus on individual dimensions—such as multinational enterprise strategy, digital platforms, Industry 4.0 ecosystems, or digital-born ventures—without revisiting foundational international business theories under conditions of algorithmic competition, data-driven value creation, and digital infrastructure dependence (Autio et al., 2018; Nambisan et al., 2019; Stallkamp & Schotter, 2021; Birkinshaw, 2022). Notably, fiscal instruments and tax incentives remain absent from this theoretical landscape, despite their growing importance in shaping digital investment, data

infrastructure financing, and the geography of digital capabilities.

To visualize the intellectual structure of this field, Figure 1 presents a scientometric keyword co-occurrence map based on 152 articles published between 1990 and 2024, following the conceptual and bibliometric approach proposed by Schmeisser, Saebi, and Gooderham (2026). The map confirms the fragmentation identified in narrative reviews. While clusters form around high-frequency themes—such as digitalization, platforms, Industry 4.0, ecosystems, and global value chains—they reveal limited interaction across subfields. Importantly, the absence of fiscal policy, tax incentives, and regulatory levers underscores a major conceptual blind spot, reinforcing the need for a review that explicitly links fiscal incentives and digital transformation in emerging economies.

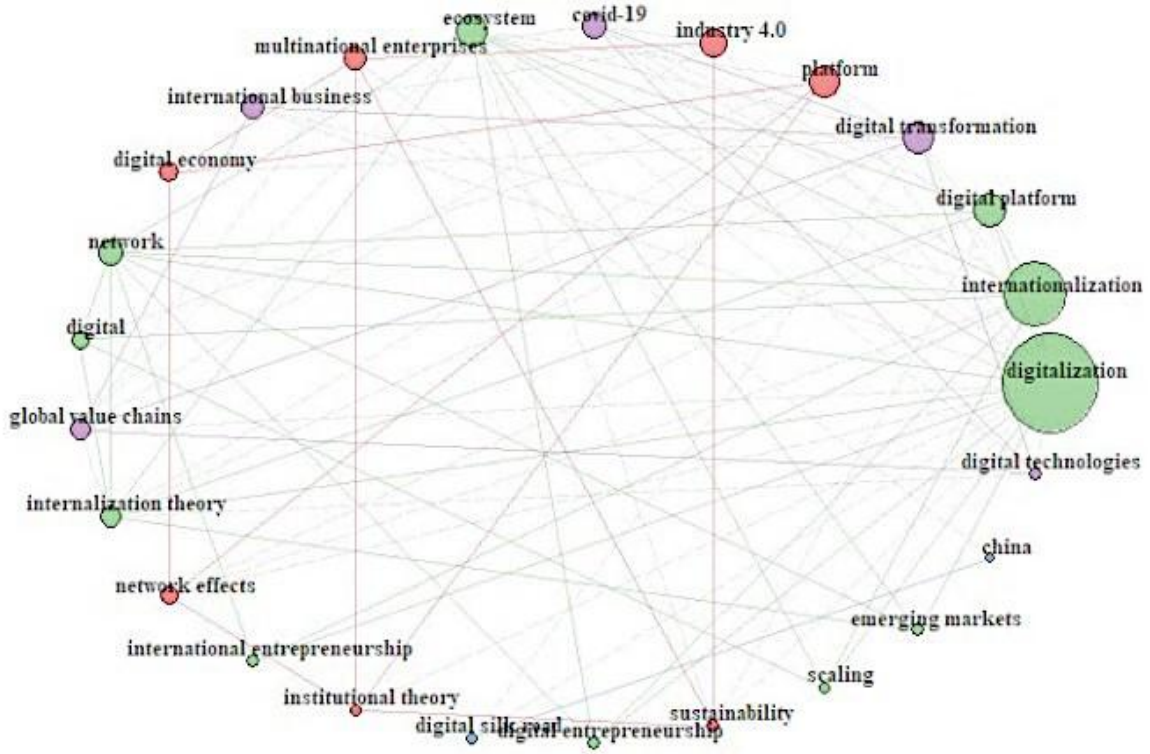


**Figure 1.** *Keyword Co-occurrence Map of Digital Transformation Research in International Business (1990–2024)*

## Methodology

### Research Design and Search Strategy

To enhance transparency and reproducibility, the review procedures are described in detail below. This study adopts a systematic literature review (SLR) design because research on fiscal incentives and digital transformation is dispersed across multiple disciplines, including public finance, innovation studies, information systems, and development economics. In such fragmented research domains, narrative reviews may be insufficient to ensure analytical coherence and transparency. Accordingly, this review follows the evidence-based systematic review protocols proposed by Tranfield et al. (2003), which are widely recognized as a standard framework for producing transparent and replicable syntheses in management and applied economics.

The search strategy was developed through an iterative process rather than a single, fixed keyword list. Previous research shows that initial keyword sets often fail to capture the conceptual heterogeneity of interdisciplinary fields such as fiscal policy and digital transformation. Therefore, broad fiscal and digital terms were first applied, preliminary results were reviewed, and the search query was refined iteratively until the retrieved articles achieved thematic coherence and conceptual saturation. The literature search was conducted across major multidisciplinary databases, including Scopus, Web of Science, ScienceDirect, SpringerLink, and Wiley Online Library. Relying on multiple databases reduces the risk of bias toward dominant journals. It helps capture relevant contributions from development and public-policy outlets that may be underrepresented in single-source searches. The selected timeframe (1990–2024) reflects the period during which digitalization and modern fiscal incentive instruments began to co-evolve in developing and emerging economies.

The final search string combined fiscal and digital concepts using Boolean operators and included the following terms: "tax incentives," "fiscal policy," "corporate taxation," "tax credits," "accelerated depreciation," "digital transformation," "digitalisation," "digital capabilities," "Industry 4.0," and "emerging economies." To enhance rigor, the search was restricted to peer-reviewed journal articles published in English, thereby capturing the core of relevant scholarly output while maintaining methodological rigor. Overall, this search strategy enabled the identification of a broad, interdisciplinary body of literature spanning public finance, innovation and technology studies, and international business—fields that rarely intersect but are essential for understanding how fiscal incentives shape trajectories of digital transformation in emerging economies.

***Inclusion and Exclusion Criteria***

In line with established systematic review protocols, explicit inclusion and exclusion criteria were defined to balance comprehensive coverage with analytical focus. These criteria were refined iteratively to ensure consistency and thematic relevance throughout the review process. In practice, a wide-ranging search was implemented across Scopus, Web of Science, and Google Scholar, combining keywords related to fiscal instruments (e.g., "tax incentive," "accelerated depreciation," "corporate tax policy") and digital transformation (e.g., "technology adoption," "ICT infrastructure," "digital capabilities") within developing and emerging economy contexts. The inclusion and exclusion criteria were then applied consistently at both the abstract screening and full-text review stages.

***Language***

Only English-language studies were included. While this choice inevitably excludes some non-English scholarship, it ensures analytical consistency and aligns with standard practice in systematic reviews. It also reduces the risk of misinterpretation arising from translation ambiguity.

***Publication Type***

The review was restricted to peer-reviewed academic journal articles. Non-refereed materials—including book chapters, conference proceedings, white papers, reports, dissertations, editorials, and commentaries—were excluded. This decision prioritizes methodological rigor, as policy briefs or working papers, although informative, often lack the consistency and transparency required for inclusion in a systematic review of this nature.

***Thematic Relevance***

Eligible studies were required to engage meaningfully with both fiscal and digital dimensions. Specifically, they needed to examine how fiscal instruments (e.g., tax incentives, subsidies, depreciation allowances) influence digital outcomes, such as ICT adoption, digital infrastructure investment, and capability building, in the context of a developing or emerging economy. Studies analyzing the effects of tax regimes on firm-level technology adoption or public-sector digitalization initiatives supported through fiscal levers were therefore included. In contrast, studies focusing exclusively on consumer platforms, gaming ecosystems, or generic e-commerce trends without an explicit policy or incentive framework were excluded.

***Contextual Scope***

The review focuses explicitly on emerging and developing economies. Studies that focused solely on high-income or advanced economies were excluded because of fundamental differences in fiscal architectures and institutional constraints. Cross-country studies were retained only when results were disaggregated by development level or when implications for emerging economies were explicitly discussed.

***Methodological Clarity***

Both empirical and conceptual studies were considered eligible, provided that their methods were transparent. Empirical studies were required to describe data sources and analytical techniques clearly. Conceptual or theoretical contributions were included only when they offered coherent frameworks or arguments explicitly linking fiscal incentives to digitalization outcomes. Studies lacking methodological grounding or relying solely on anecdotal evidence were excluded.

***Practical Challenges and Judgment Calls***

Several boundary cases emerged during the screening process and required careful judgment. In multinational studies, articles were retained only when findings were disaggregated by development level or were clearly

applicable to emerging economies. Similarly, given the broad scope of digitalisation, a pragmatic approach was adopted. Studies focusing on ICT or technology adoption were included when they demonstrated explicit links to fiscal mechanisms, even if they did not explicitly use the term "digital transformation." Following the database search, titles and abstracts were screened using the predefined inclusion and exclusion criteria. Potentially eligible studies were then reviewed in full. At least two reviewers independently applied the screening rules, with disagreements resolved through discussion. In addition, backward citation chaining was conducted to identify relevant studies that may not have been captured during the initial keyword search.

***Summary of Inclusion and Screening Decisions***

The inclusion criteria targeted peer-reviewed English-language journal articles that addressed the intersection of fiscal instruments and digital transformation in emerging economies. Exclusion criteria removed studies focusing on high-income contexts, grey literature, or digital topics lacking explicit policy relevance. While no screening process is without limitations—and some region-specific or practitioner-oriented insights may have been excluded—this approach maximized scholarly rigor and thematic coherence.

**Screening and Selection Process (PRISMA)**

To ensure methodological transparency, consistency, and replicability, the screening and selection process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework, which is widely used in interdisciplinary systematic reviews across economics, management, and development research.

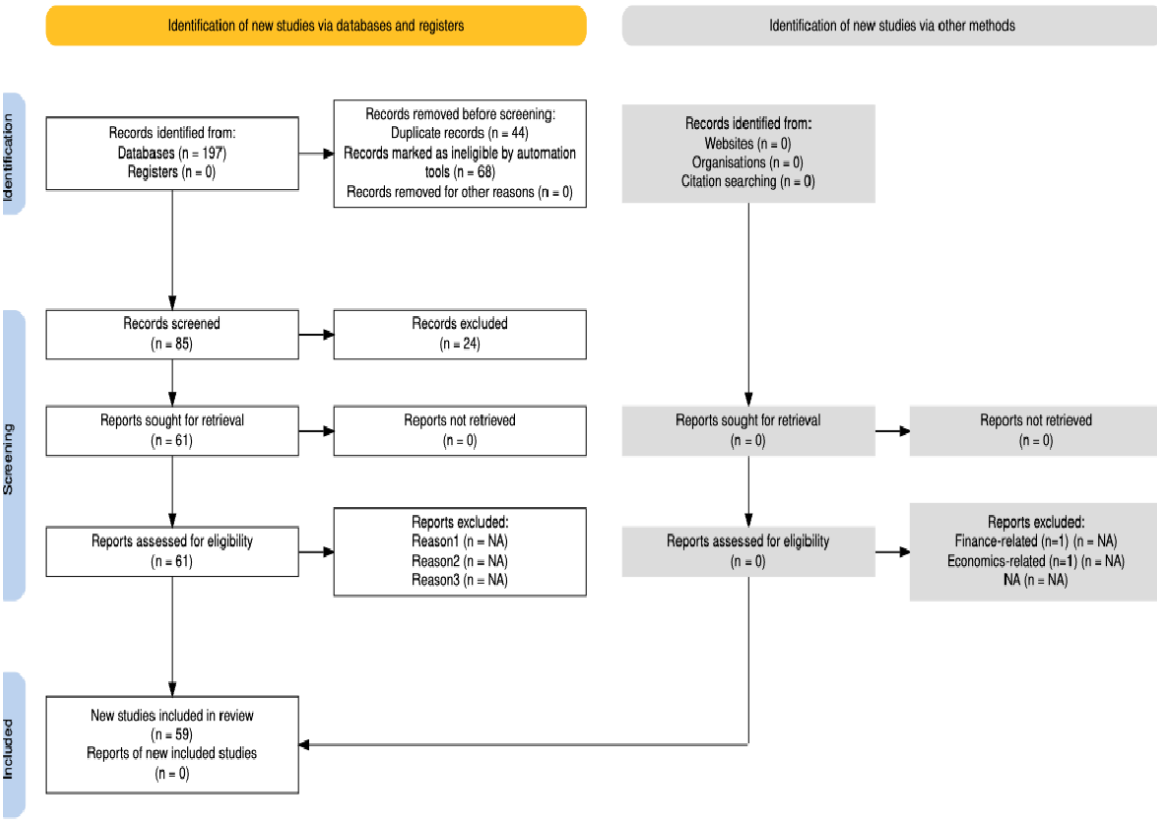


**Figure 2.** *PRISMA 2020 flow diagram illustrating the study selection process. Records were screened based on thematic alignment with fiscal instruments and digital transformation. Peer-reviewed English-language articles indexed in Scopus were included, while duplicates, automated records, and studies outside the fiscal–digital nexus were excluded. A total of 59 studies were retained for full review. The diagram was generated using the PRISMA2020 Shiny App (Haddaway et al., 2022).*

A total of 197 records were initially retrieved from Scopus using an iteratively refined Boolean search strategy targeting fiscal incentives and digital transformation. Prior to abstract screening, 44 duplicate records and 68 entries flagged by automated tools—due to metadata inconsistencies or indexing anomalies—were removed. This process resulted in 85 articles eligible for abstract-level screening. Two independent reviewers assessed all

abstracts against the inclusion criteria described in the methodology section. Discrepancies were resolved through discussion to ensure inter-rater reliability. Twenty-four articles were excluded at this stage due to thematic misalignment, most commonly because they lacked either a fiscal policy component or a digital transformation dimension.

Sixty-one articles subsequently underwent full-text review. Of these, two were excluded: one focused narrowly on corporate finance without a digital dimension, and the other addressed general macroeconomic theory without policy or digital relevance. In total, 59 studies met all eligibility criteria and were retained for in-depth analysis. The study selection process is summarized in Figure 2, following PRISMA's four-stage model: identification, screening, eligibility, and inclusion. In line with PRISMA 2020 standards, the flow diagram was generated using the PRISMA2020 Shiny App developed by Haddaway et al. (2022).

**Final Search String**

To enhance transparency and reproducibility, the final search query applied in Scopus is reported below. Minor adaptations were made across databases to account for platform-specific syntax requirements.

("tax incentives" OR "tax credits" OR "accelerated depreciation" OR "corporate taxation")
and
("digital transformation" OR "digitalization" OR "digital capabilities" OR "Industry 4.0")
and
("emerging economies" OR "developing countries")

**Data Extraction and Analytical Approach**

Following the PRISMA-guided screening process, data were systematically extracted from the 59 retained studies using a standardized coding scheme. In line with best-practice guidelines for systematic literature reviews (SLRs), a tailored data extraction form was developed to capture all study attributes relevant to the research questions. The form recorded bibliographic information (authors, year, journal) as well as key analytical dimensions, including geographical focus, data collection period, type of fiscal incentive (e.g., tax credit, subsidy, tax exemption), domain of digital transformation (e.g., ICT adoption, e-government, fintech), sectoral context, research methodology, and reported findings or themes. These variables were selected to align with the overarching research objectives. The extraction form was defined and piloted early in the review process. It was tested on a random subset of five articles and refined accordingly to ensure clarity and completeness. An overview of the extraction variables and coding categories is provided in Table 1.

**Table 1.** *Key Dimensions and Variables Coded during Data Extraction and Analysis*

| Category / Coded Dimension | Description / Example Values |
|---|---|
| Study Metadata | Authors, Year of Publication, Journal Name |
| Country / Region | Country of Case Study or Multi-country Region |
| Time Frame | Year(s) of Data Collection or Analysis Period |
| Fiscal Incentive Type | R&D Tax Credit, ICT Subsidy, Tax Exemption |
| Digital Transformation Focus | Broadband Infrastructure, Digital Skills, E-government |
| Sector / Industry | Public, Private, SME, Manufacturing, Services |
| Research Methodology | Qualitative, Quantitative, Mixed-Method; Survey, Case Study |
| Theoretical Framework (if any) | Theory or Conceptual Lens Applied |
| Key Findings/Themes | Main Results or Thematic Insights |

**Source(s):** *Authors' own work.*

Data extraction was conducted independently by two reviewers. Each article was coded in parallel, with entries documented to ensure traceability. Discrepancies in coding were resolved through discussion and consensus, with input from a third researcher when necessary. Ambiguities in the source material were annotated to enhance transparency and maintain the dataset's robustness. Coding was performed manually using a structured Excel spreadsheet developed specifically for this review. The coding scheme included analytical dimensions such as fiscal incentive type, digital transformation focus (e.g., adoption, infrastructure), unit of analysis (firm, sector, macro), geographic region, and methodological design. This structure facilitated systematic comparison across studies. The selected categories reflected both their relevance to the research objectives and their recurrence in the reviewed literature.

The analytical strategy combined deductive and inductive thematic synthesis. Initially, data were coded according to pre-established categories derived from the research objectives (e.g., country, incentive type, outcomes). In parallel, open coding allowed novel themes to emerge from the data. Extracted codes were then grouped into broader thematic categories using established qualitative synthesis techniques, including comparative matrices to identify patterns across regions, publication periods, and types of fiscal incentives.

Higher-order themes—such as clusters of policy contexts or digital transformation outcomes—were developed iteratively. Comparative tables were used to reveal regional and temporal patterns in the application of fiscal incentives. Given the heterogeneity of study designs and reported outcomes, no statistical meta-analysis was conducted. Instead, a rigorous narrative synthesis was adopted in accordance with established SLR standards. All stages of data extraction and analysis were fully documented to ensure methodological transparency. The resulting thematic clusters are discussed in Section 4.

A notable feature of the reviewed literature is its strong geographic concentration. A large proportion of the retained studies focus on China, reflecting the country's empirical prominence in fiscal policy research related to digital transformation. China's extensive tax incentive programs, availability of firm-level data, and dynamic institutional environment make it a frequent subject of empirical analysis. This concentration does not result from an a priori selection bias but rather from the relative maturity and data availability of research on fiscal digitalization in China compared with other contexts. While this focus enhances analytical depth for a single-country setting, it may limit the generalizability of the findings to other regions. Future reviews could extend coverage to a more diverse set of geographic contexts to broaden comparative insights.

## Results and Discussion

### Descriptive Overview of the Literature

An examination of the 59 selected articles reveals several descriptive patterns that illuminate the evolving research landscape on fiscal incentives and digital transformation in emerging economies. The reviewed studies were published between 2010 and 2025, reflecting a growing scholarly interest in this intersection over the past fifteen years. Notably, most publications appeared in the past five years, indicating a recent acceleration in academic attention to digital fiscal policy instruments. The selected articles appear in 27 academic journals, underscoring the topic's interdisciplinary nature. A substantial concentration is observed in journals focusing on Chinese economic reforms, digital innovation, and sustainable development. This pattern reflects the empirical prominence of China as a research setting in this domain. Indeed, more than 80% of the reviewed studies focus on China, supported by the availability of granular firm-level data, a diverse policy environment, and the country's rapid digitalization initiatives. This geographic concentration does not result from selection bias but rather from the empirical maturity and accessibility of the Chinese context for studying fiscal digitalization.

Regarding methodological approaches, the literature is dominated by quantitative studies, which account for over 90% of the reviewed articles. Econometric analyses using firm-level panel data are the most common research designs. By contrast, only a limited number of studies adopt mixed or qualitative approaches, highlighting an opportunity for greater methodological diversity in future research. Among fiscal policy instruments, tax credits, digital subsidies, and accelerated depreciation mechanisms are the most frequently analyzed tools. These instruments are commonly associated with outcomes such as ICT adoption, digital capability development, and productivity gains, particularly in manufacturing and SME sectors. While most studies focus on firm-level effects, a smaller subset extends the analysis to sectoral or macroeconomic implications. Across the reviewed literature, digital transformation is examined across multiple domains, including digital infrastructure development, e-government initiatives, the adoption of artificial intelligence, and internal business process automation. Beyond innovation and R&D support, several studies also emphasize the role of fiscal incentives in shaping managerial digital awareness and strengthening organizational learning capacities.

Taken together, these findings suggest that fiscal incentives are increasingly recognized not only as tools for stimulating investment but also as mechanisms for influencing the trajectory of digital modernization in emerging economies. However, the strong geographic and methodological concentration of the existing literature may constrain the generalizability of results, underscoring the need for comparative research across diverse institutional settings. A total of 59 articles published between 2017 and 2025 were ultimately retained for analysis. As illustrated in Figure 3, the number of publications has increased markedly over time, particularly since 2020. The years 2023, 2024, and 2025 recorded the highest outputs, with 23, 24, and 25 publications, respectively. This

upward trend highlights both the timeliness of the topic and its growing relevance within contemporary scholarly discourse.

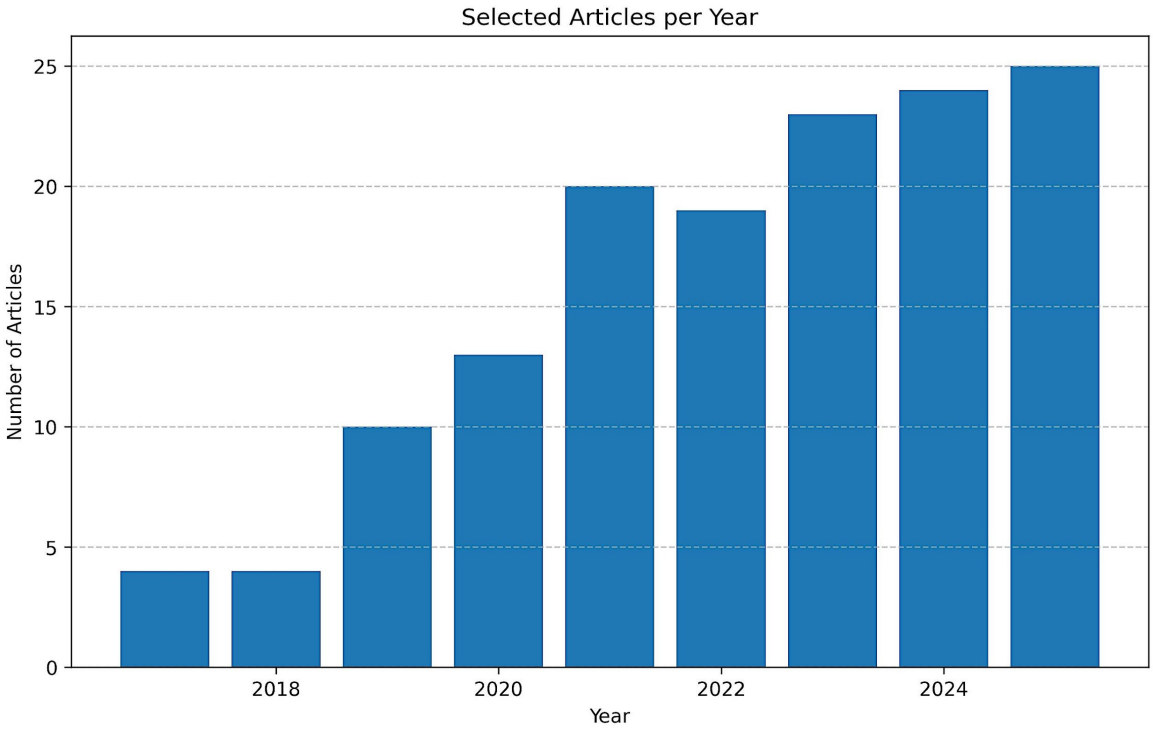


**Figure 3.** *Publications per Year of Selected Articles (n = 59)*

**Types of Fiscal Incentives**

The reviewed literature highlights a diverse set of fiscal instruments designed to promote digital transformation in emerging economies. Across the 59 selected studies, three main categories of fiscal incentives consistently emerge.

***Tax Credits and Deductions*** represent the most frequently analyzed instruments. These include, in particular, R&D tax credits and accelerated depreciation schemes for digital assets. Such measures are widely used to lower the cost of investment in ICT infrastructure and innovation-related activities, thereby encouraging firms to engage in digital upgrading.

***Direct Subsidies and Grants*** constitute a second major category. Several studies document the use of direct public funding to support digital adoption, especially among small and medium-sized enterprises (SMEs). These subsidies often target specific technologies, such as cloud computing, artificial intelligence, or digital skills development, and are designed to ease financial constraints associated with digital investments.

***Preferential Tax Regimes*** form a third group of instruments. In some countries, reduced tax rates or temporary tax exemptions are granted to firms engaged in digital upgrading or smart manufacturing activities. These measures are typically aimed at accelerating digital transition in strategic sectors, including manufacturing and logistics.

Beyond these core categories, a smaller number of studies identify hybrid schemes that combine multiple policy tools. Examples include public–private co-financing arrangements or tax incentives bundled with technical assistance. Such integrated approaches are increasingly adopted in contexts where barriers to digital adoption are both financial and operational.

In most cases, fiscal incentives are embedded within broader industrial or innovation strategies, underscoring the instrumental role of tax policy in steering national digital modernization agendas. However, the reviewed evidence also reveals a significant limitation in the existing literature. While short-term gains in digital adoption

are frequently documented, far fewer studies assess long-term effectiveness, innovation outcomes, or potential unintended effects, such as firm dependency or resource misallocation.

**Digital Transformation Domains**

The reviewed studies examine a wide range of digital transformation domains, reflecting the multifaceted nature of technological modernization in emerging economies. These domains can be grouped into five main categories.

***ICT Infrastructure and Connectivity***

Many studies emphasize government efforts to incentivize the expansion of broadband networks, cloud computing infrastructure, and digital platforms. Fiscal instruments in this domain are primarily designed to reduce the digital divide and to support the foundational capabilities required for digital operations.

***E-government and Digital Public Services***

Several articles analyze fiscal incentives aimed at the digitalization of public service delivery. These include support for e-taxation systems, digital identity frameworks, and online government platforms. Such measures are generally intended to improve administrative efficiency, transparency, and citizen engagement.

***Smart Manufacturing and Industry 4.0***

A substantial body of the literature focuses on fiscal support for digital technologies in manufacturing. Tax benefits and subsidies are frequently used to promote the adoption of the Internet of Things, artificial intelligence, robotics, and data analytics within production systems, often within the framework of national strategies such as "Made in China 2025."

***Enterprise Digitalization and Business Process Automation***

Many fiscal incentives target firm-level digital transformation through investments in enterprise resource planning (ERP) systems, customer relationship management (CRM) platforms, and digital accounting or logistics solutions. These technologies enhance internal efficiency, reduce transaction costs, and facilitate real-time decision-making.

***Digital Skills Development and Human Capital***

Although less frequently addressed, some studies examine fiscal support for digital skills development. Examples include tax relief for training expenditures and subsidies for digital certification programs. Such measures are critical for ensuring workforce readiness and sustaining digital transformation over time.

Overall, the literature indicates that fiscal policy supports not only technological acquisition but also the strategic orientation of digital development. While infrastructure- and industry-focused incentives remain dominant, emerging themes—such as platform-economy regulation and artificial-intelligence governance—are beginning to emerge. This evolution suggests a policy landscape that increasingly aligns digital transformation with broader socio-economic objectives.

**Key Findings and Thematic Patterns**

This section identifies five recurring thematic patterns emerging from the analysis of the 59 selected studies, highlighting how fiscal incentives shape digital transformation processes in emerging economies.

***Fiscal Incentives as Catalysts for ICT Adoption***

Many studies emphasize that fiscal instruments—especially tax credits and subsidies—are critical enablers of ICT adoption. These incentives lower entry barriers for firms, particularly SMEs, to invest in hardware, software, and cloud-based infrastructure.

***Link Between Fiscal Support and Innovation Outcomes***

A recurrent theme is the positive association between fiscal tools and firm-level innovation. Several studies demonstrate that targeted incentives (e.g., R&D tax deductions, smart manufacturing subsidies) correlate with increased digital innovation, including AI deployment, automation, and new product development.

***Uneven Sectoral and Regional Effects***

Research indicates disparities in how fiscal incentives influence digital transformation across sectors and regions.

Manufacturing and tech-intensive industries benefit more than traditional sectors. Geographically, China dominates the literature due to its proactive fiscal strategies and robust data availability, while other emerging economies remain underrepresented.

***Institutional and Organizational Mediators***

Some studies explore how institutional quality, regulatory frameworks, and firm-level characteristics (e.g., absorptive capacity, digital readiness) mediate the effectiveness of fiscal incentives. These contextual factors shape the extent to which firms can translate fiscal benefits into sustainable digital transformation.

***Short-Term Gains vs. Long-Term Sustainability***

While short-term improvements (e.g., digital adoption rates) are well documented, long-term impacts on competitiveness, productivity, and resilience are less studied. This suggests a research gap around the durability and systemic effects of fiscal digitalization policies. These thematic patterns are synthesized into a conceptual framework that illustrates the pathways through which fiscal incentives influence digital transformation outcomes (Figure 4).

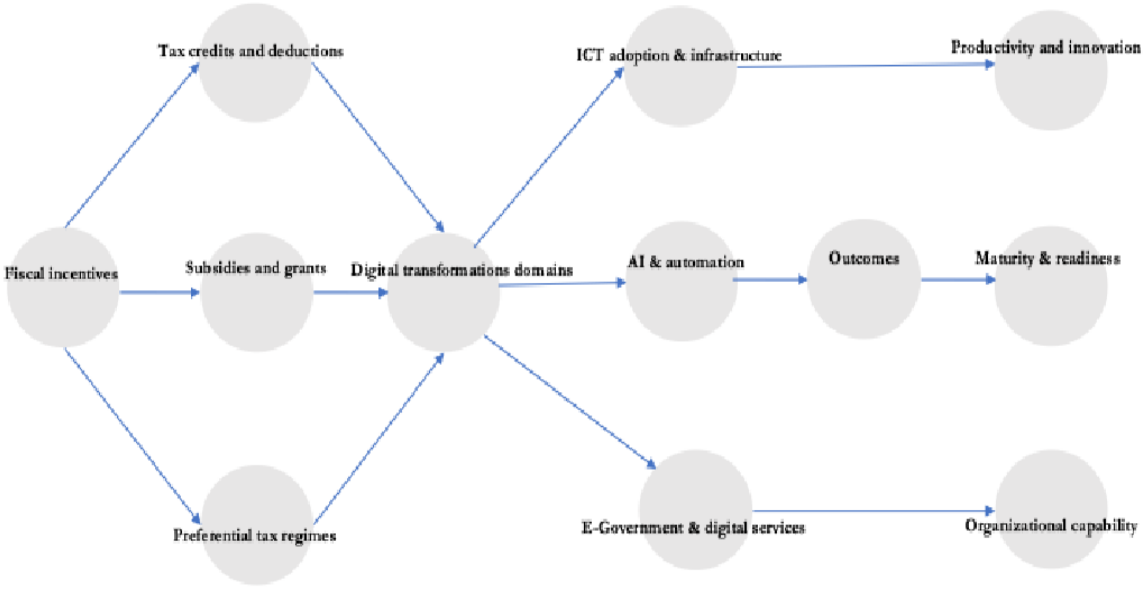


**Figure 4**. *Conceptual Pathways Linking Fiscal Incentives, Digital Transformation Domains, and Organizational Outcomes in Emerging Economies*
***Source(s)**: Authors' own elaboration.*

**Future Research Agenda, Limitations, and Conclusion**

***Gaps and Limitations in the Literature***

Despite growing scholarly interest in the nexus between fiscal incentives and digital transformation in emerging economies, the existing literature exhibits several persistent limitations.

- A first limitation concerns the geographic concentration of studies. Most research focuses disproportionately on China and, to a lesser extent, India. While these contexts offer robust data and dynamic policy environments, this overrepresentation limits the generalizability of findings to other emerging economies—particularly in Africa, Latin America, Southeast Asia, and Eastern Europe—where institutional, technological, and fiscal conditions differ substantially.

- Methodologically, the literature relies predominantly on cross-sectional designs. These studies provide useful snapshots of short-term effects but lack longitudinal depth, restricting insights into how fiscal incentives influence digital maturity, innovation capacity, and productivity over time. In addition, comparative analyses across countries or policy regimes remain scarce, limiting the identification of contextual patterns and best practices.

- Sectoral bias also persists. The reviewed studies concentrate mainly on manufacturing and ICT-intensive industries, with limited attention to sectors such as agriculture, healthcare, education, or public administration— areas where digital transformation raises distinct and underexplored challenges.

- Theoretical engagement across the corpus remains weak. Many empirical studies document policy outcomes without anchoring their analyses in structured theoretical frameworks, constraining theory-building around the mechanisms and boundary conditions of fiscal digitalization.

- Another limitation relates to policy evaluation. Although many papers describe fiscal instruments and their objectives, few employ rigorous counterfactual designs or impact evaluation methods, limiting causal inference and evidence-based policymaking.

- Finally, organizational and behavioral dimensions are frequently overlooked. Most studies adopt a macro- or policy-level perspective, leaving firm-level capabilities—such as leadership, digital readiness, and internal innovation processes—underexplored. This omission reduces explanatory depth and obscures why similar incentives may produce heterogeneous outcomes across firms and contexts.

**Future Research Directions**

Building on the identified gaps, this review highlights several promising avenues for future research at the intersection of fiscal policy and digital transformation in emerging economies. While the existing literature offers valuable descriptive insights, it remains conceptually and methodologically fragmented. There is a clear need for more theoretically grounded studies that connect fiscal incentives to digital transformation outcomes through robust analytical frameworks. Specifically, future work could benefit from integrating theories of innovation adoption, institutional change, or resource-based views to explain how different fiscal tools (e.g., tax credits, subsidies) catalyze the development of digital capabilities across diverse sectors and contexts.

Moreover, the current evidence base remains largely concentrated in a few countries, such as China and India. As a result, future research should explore underrepresented regions—particularly in Africa, Latin America, and Southeast Asia—where institutional structures, fiscal capacities, and digital readiness differ substantially. Similarly, more attention is needed to understand the sectoral heterogeneity in fiscal-digital linkages beyond ICT-intensive industries. Exploring how incentives function in sectors such as agriculture, education, and health technology could broaden understanding of context-specific challenges and opportunities.

From a methodological standpoint, the field would benefit from more longitudinal and mixed-method studies that evaluate the sustained effects of fiscal incentives over time. Experimental designs, counterfactual evaluations, and simulations could also help assess the effectiveness and unintended consequences of digital fiscal policies. The table below outlines a structured research agenda synthesizing these priorities.

**Table 2.** *Future Research Agenda*

| Theme | Future Research Directions / Exemplary Questions |
|---|---|
| Theoretical Development | How can institutional theory or dynamic capabilities theory explain the varying effectiveness of fiscal incentives in driving digital transformation across contexts? What role does absorptive capacity play in mediating the impact of fiscal tools on digital maturity? |
| Geographic Diversity | How do fiscal incentives for digitalization function in underrepresented regions such as Sub-Saharan Africa or Southeast Asia? What contextual factors explain the limited diffusion of incentive schemes in low-governance settings? |
| Sectoral Extension | How do fiscal incentives affect digital innovation in non-ICT sectors such as healthcare, agriculture, or public services? What differences emerge in incentive responsiveness across capital-intensive vs. labor-intensive industries? |
| Longitudinal Evidence | What are the long-term impacts of fiscal incentives on firm productivity, digital capabilities, and innovation ecosystems? How do organizations sustain digital investments after initial policy-driven adoption? |
| Policy Effectiveness | What methods can be used to rigorously evaluate the causal impact of fiscal instruments (e.g., R&D tax credits, subsidies) on digital transformation outcomes? How can impact evaluations inform better policy targeting and design? |
| Micro-Level and Behavioral Dimensions | How do firm-level characteristics (e.g., digital literacy, leadership orientation) influence the uptake and effective use of fiscal incentives? How do behavioral biases or risk perceptions affect firms' responses to tax and grant programs? |

**Source(s):** Authors' own work.

To complement these directions, further work should also examine the micro-foundations of digital readiness, including how firm-level capabilities, leadership commitment, and behavioral factors mediate the relationship between policy instruments and digital transformation. Additionally, examining how governments design, implement, and coordinate fiscal and digital strategies—particularly through public-private partnerships—could uncover institutional mechanisms that accelerate or hinder digital progress in emerging contexts. A more holistic and context-sensitive research agenda will thus not only bridge theoretical and empirical gaps but also inform more inclusive and effective policymaking.

## Conclusion

In an era where digital transformation is increasingly central to economic resilience and competitiveness, especially in emerging economies, understanding the role of fiscal incentives is more critical than ever. This systematic review has explored the intersection between fiscal policy tools and enterprise digitalization, synthesizing empirical evidence from diverse contexts. The findings suggest that fiscal instruments—such as tax credits, accelerated depreciation schemes, and innovation subsidies—can play a pivotal role in reducing investment barriers, fostering digital capabilities, and supporting firm-level transformation. However, the literature remains fragmented: it is heavily concentrated in a few geographic areas, lacks theoretical coherence, and often overlooks behavioral mechanisms and sectoral nuances.

By identifying these gaps, this review not only consolidates the existing body of knowledge but also outlines a forward-looking research agenda. Future studies should aim to broaden empirical coverage, particularly in underrepresented regions and industries, adopt longitudinal or mixed-method approaches, and build stronger conceptual frameworks. Advancing a more nuanced and context-sensitive understanding of how fiscal levers influence digitalization is essential—not only for academic progress but also for informing more effective and equitable policymaking in the digital age.

From a policy perspective, the findings suggest that fiscal incentives should be designed as targeted and conditional instruments rather than broad, untargeted tax relief. Policymakers in emerging economies may enhance the effectiveness of digital fiscal tools by aligning tax incentives with specific digital objectives, such as technology upgrading, skills development, or process automation, and by embedding these instruments within broader industrial and innovation strategies.

For practitioners and firm managers, the review highlights that fiscal incentives can serve as enabling mechanisms for digital investment but are insufficient on their own. Firms' internal capabilities, absorptive capacity, and strategic orientation toward digitalization play a crucial mediating role. This implies that firms should combine fiscal support with organizational change, workforce training, and long-term digital planning to achieve sustainable transformation outcomes.

From an educational and capacity-building standpoint, the results point to the importance of integrating fiscal policy literacy and digital strategy into management and economics curricula. Strengthening awareness of how fiscal instruments interact with digital transformation may help future managers, policymakers, and entrepreneurs better leverage public support mechanisms in emerging economies. Overall, aligning fiscal policy design with digital transformation objectives represents a strategic lever for fostering inclusive and sustainable development in emerging economies.

## Contributions of Authors

The author solely contributed to the conceptualization, literature review, methodology design, data collection, analysis, and writing of the manuscript.


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