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Digital Financial Inclusion In Micro, Small and Medium Enterprises: The Case of Developing and Emerging Economies.

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Abstract

Digital financial inclusion is transforming the way in which micro, small, and medium enterprises (MSMEs) interact with the financial system in modern economies. Enabled by digital tools, businesses are now able to collect and store payments, record transactions, and access credit beyond the reach of traditional banks. This paper examines the relationship between digital financial inclusion and MSME growth by reviewing recent studies that provide evidence on the nature of this link. This analysis focuses on twenty-two empirical studies published between 2020 and 2025. Evidence from China, India, southeast Asia, Middle East and North Africa (MENA) countries and other international samples were put together. Sixteen studies found a direct positive link while four identified positive but conditional relationships between digital financial inclusion and MSME performance, One study found mixed impacts while another revealed indirect disciplining effects through reduced financialisation. Overall, the most common positive associations were for increased access to finance, sales growth, entrepreneurship, and business continuity while employment and productivity effects were mixed. Reduced financing constraints, transaction costs and digital literacy were common issues. The paper therefore recommends that an integrated capacity-building and financial inclusion approach is critical in promoting MSME growth.

Keywords: Digital Financial Inclusion; Enterprise Growth; Developing Economies; Financial literacy

1.0 Introduction

Micro, small, and medium enterprises are key drivers of livelihoods in developing economies as they embody a critical nexus between households and enterprise as well as a multiplier of economic activity at the local level. At the same time, their ability to grow is often constrained by a number of factors including limited working capital, insufficient formal credit histories, transaction costs and limited

bookkeeping know-how. For micro and informal firms, these are particularly acute as a liquidity shock or inability to receive remote payments can disrupt daily operations. Therefore, digital finance plays an important role by enabling these businesses to collect and store value, record transactions, purchase inputs, and access credit beyond the reach of traditional financial institutions.

The current digital finance expansion reflects a more extensive trend, both in terms of account ownership and the use of digital payments. The Global Findex 2021 database shows that the pandemic has accelerated a pre-existing digital revolution with remote transactions accounting for a significant portion of all financial operations in 2020 (Demirguc-Kunt et al., 2022). More recently, the Findex 2025 reports show that digital connectivity is now at the forefront of financial inclusion considerations with mobile money, account use, payments, and savings all playing a critical role in financial inclusion strategies for low- and middle-income countries (Klapper et al., 2025). For MSMEs, such considerations are of utmost importance as a digital transaction can serve a multipurpose function, ranging from settling a payment to facilitating financial inclusion by enabling record-keeping and credit access.

While digital financial inclusion often builds on existing financial relationships – for example, a business may have a bank account and use mobile deposits to record funds – the concept goes beyond individual accounts or even the banking sector. For enterprises that were previously excluded, underserved, or too small and remote to be served, digital financial inclusion is about accessing and using a range of financial services provided through digital means. According to Malladi et al. (2021), the next frontier of digital financial inclusion involves connecting individuals and businesses with appropriate financial services rather than focusing on mere access, hence Tay et al. (2022) highlighted similar challenges with regard to digital financial access and development outcomes. At the same time, Suryono et al. (2020) describe the FinTech landscape as one that is both innovative and complex with a number of regulatory, security, and adoption-related challenges. These are especially pertinent to MSMEs as their ability to benefit from the opportunities afforded by digital finance often depends on connectivity, merchant acceptance, skills, and the capacity to utilise the services with a view to turning them into growth-enhancing opportunities. However, as a number of researchers have noted, digital financial inclusion can have a range of benefits for MSMEs, including supporting their sustainable development.

Recent articles that examined the implications of digital financial inclusion for MSMEs include Yang and Zhang (2020) who study the growth-sustaining potential of digital finance for small businesses in China. Lu et al. (2022) examined the ways in which digital financial inclusion can reduce the financing constraints facing small and medium sized enterprises. In turn, Yao and Yang (2022) studied the relationship between digital finance and innovation with regard to small and medium sized enterprises and found that the former can alleviate financing constraints, thus promoting the latter. In another article, Frimpong et al. (2022) studied the role of financial literacy in Ghana and found that it promotes both access to digital finance and overall SME performance. Johri et al. (2024) studied micro-enterprises in India and found that their digital inclusion is associated with their ability to overcome business challenges. Verma et al. (2024) reported on the impact of digital financial inclusion on MSME sales, employment, and productivity with regard to India. While sales growth was positively associated

with the adoption of digital finance, employment growth was not and productivity being a more informative indicator as it warned against excessive optimism regarding the impacts of digital finance. Additionally, Umar et al. (2024) studied the impact of digital finance on financial inclusion and found that it has a positive association with regard to several African countries. Ahodode and Okala Eloundou (2024) examined electronic financial services and enterprise performance in Cameroon and found a positive association with productivity and export performance. Finally, Sanga and Aziakpono (2025) studied FinTech, financial inclusion, and entrepreneurial growth in Africa. Their findings suggest that the former two are positively associated with MSMEs but that the relationships are conditional on institutional quality.

1.2 Objectives of the study

The study seeks to:

1. Examine the conceptual relationships between digital financial inclusion and MSME growth;
2. Identify the main channels through which digital financial services affect MSME performance;
3. Assess and compare recent empirical findings on the role of digital financial inclusion in promoting MSME growth across developing and emerging economies;
4. Develop an integrated view of the evidence, with a focus on the factors that moderate digital finance's role in MSME growth.

Conceptual Review

Conceptually, there are several ways in which digital finance can promote MSME growth, with regard to both formal and informal enterprises. First of all, digital financial inclusion typically entails expanded access to and the use of financial services provided through digital channels. Therefore, it is critical to distinguish between the availability of such services and their usage. In terms of channels, Digital payments seems to play a pivotal role, as their adoption can facilitate transactions, reduce the costs of cash handling, enable remote purchases and sales, and provide a transaction record. Secondly, digital credit can enable MSMEs to utilise transaction data as collateral and alleviate some of the financing constraints they face. Thirdly, digital accounts can offer a range of services from savings to transfers and balance management. Fourthly, FinTech can play an important role by providing financial intermediation services, with a focus on MSMEs.

In terms of growth, there are multiple indicators that can be used, including sales, employment, assets, productivity, market reach, and innovation capacity, among others. While aggregate measures such as the rate of employment or sales growth may be used for analysis, disaggregated data may provide more insight, as different dimensions of growth may be affected to varying degrees and require different institutional responses. For instance, Verma et al. (2024) found out that digital finance is positively associated with MSME sales growth in India but has little impact on employment, growth and labour productivity. Therefore, while an increase in sales can be a hallmark of digital finance adoption, it may be driven by utilisation rather than increased headcount, which has implications for labour-productivity dynamics.

The central link between digital financial inclusion and MSME growth concerns the resource and transactional advantages that the former can provide over conventional channels. As such, digital finance can reduce the costs and difficulties associated with cash transactions and broaden the scope of financial services available to MSMEs. Enhanced access to credit, in particular, can alleviate the financing constraints that many such enterprises face thus promoting their innovation and productivity. Lu et al. (2022) explicitly examined this relationship and found that digital financial inclusion reduces the financing constraints faced by Chinese SMEs. In turn, Yao and Yang (2022) found out that reduced financing constraints can facilitate innovation which is corroborated by Wang et al. (2025) who found a positive association between digital inclusive finance and SME innovation. With regard to the mechanisms, financial and digital literacy appear to contribute to the overall impact as does the general level of institutional quality.

In terms of MSME access to and use of digital finance, financial literacy is a critical determinant. Frimpong et al. (2022) examined the mediating role of financial literacy on the relationship between digital finance access and SME performance in Ghana and found a positive association. In a similar vein, Thathsarani and Jianguo (2022) studied the role of digital finance and financial inclusion in promoting SME performance within the technology-acceptance framework and found a positive association as well. Most recently, Tandilino et al. (2025) found that digital financial inclusion mediates the relationships between digital financial literacy, government support, and MSME performance. Overall, the studies suggest that while digital financial products can facilitate growth, businesses need to have the competencies and confidence to utilise them effectively.

Technology-acceptance theories suggest that such confidence can come from perceived usefulness and ease of use, as was found by Krah et al. (2024) in their study of Ghanaian SMEs. Their findings identify technology-related perceptions and general behavioural intent as significant predictors of FinTech adoption by these enterprises. In turn, Agyekum et al. (2022) studied the role of technological inclusion in financial inclusion with regard to small businesses in South-East Asian countries. Their findings suggest that it plays a critical role, facilitating access to external finance by promoting financial inclusion. As such, digital capabilities can be a direct enabler of MSME growth, as well as a boundary condition for other growth drivers.

A related concept is that of information asymmetry, which can hinder lending decisions and limit access to credit for MSMEs where audited financial statements and physical collateral are often unavailable. One way in which digital finance can address this challenge is by facilitating electronic transactions which can build a business's digital footprint and serve as a substitute for conventional collateral. While enhanced monitoring and automated lending may have drawbacks such as reduced borrower discretion, they can reduce information asymmetry and help promote lending to MSMEs with limited credit histories. Gao and Ren (2023) examined the ways in which digital finance can affect SME financialisation and found that it can reduce the propensity of these enterprises to engage in such behaviour. By replacing financial assets with operating ones, digital finance can promote more productive allocation of resources.

Finally, the overall growth effect of digital financial inclusion typically operates through an enabling environment, where institutional quality, transaction interoperability, data governance, competition,

and consumer protection all contribute to the extent to which MSMEs can benefit from digital finance. Sanga and Aziakpono (2025) studied the moderating role of institutional quality with regard to the relationship between FinTech development and MSME digital finance and entrepreneurship in Africa. Their findings suggest that it plays a critical role in both cases, influencing how these factors affect MSME growth. Similarly, Mashoene et al. (2025) studied the moderating role of institutional quality with regard to the association between FinTech development and financial inclusion in emerging and developing economies and reported similar findings. In general, these findings suggest that digital financial inclusion is a prime example of a growth enabler that operates through an institutional environment.

Table 1. Operational Concepts and Analytical Indicators

Construct	Working definition	Indicative measures
Digital financial inclusion	Affordable access to and meaningful use of digital financial services by underserved firms.	Digital accounts, payments, mobile/online services, digital credit, FinTech use
MSME growth	Expansion or strengthening of enterprise economic activity.	Sales, employment, productivity, innovation, survival, market reach
Financing channel	Extent to which digital finance relaxes external-finance constraints.	Credit access, financing constraint, liquidity, cost of finance
Transaction-efficiency channel	Reduction in frictions surrounding payments and routine financial operations.	Settlement speed, cash-handling cost, remote payments, record visibility
Firm capability	Knowledge and organisational ability required for productive digital-finance use.	Digital literacy, financial literacy, managerial experience, technology acceptance
Enabling environment	External conditions that affect the reliability and value of digital finance.	Connectivity, interoperability, institutional quality, regulation, consumer protection

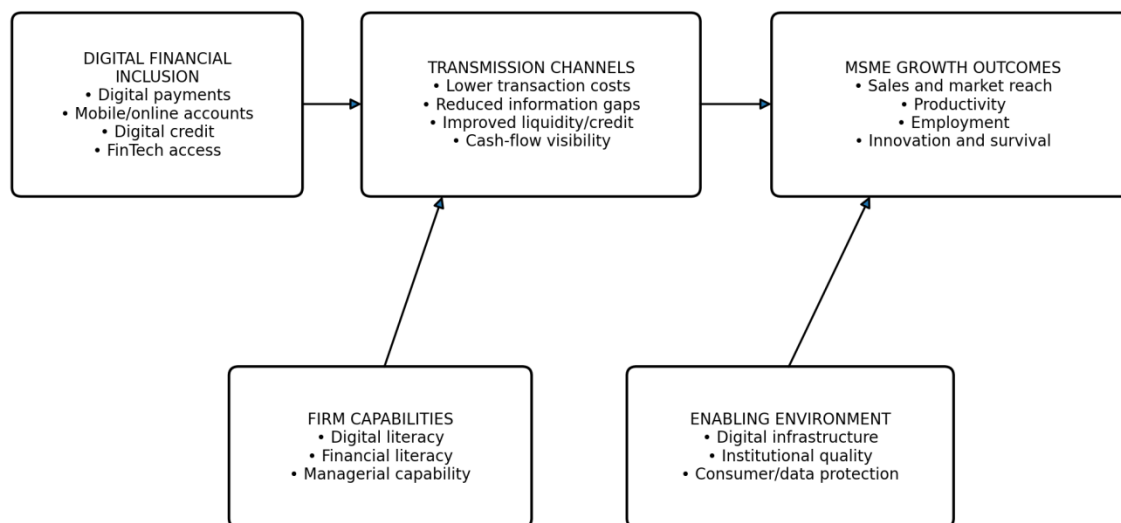


Figure 1. Integrated conceptual model linking digital financial inclusion to MSME growth.

Theoretical Framework

There are three theoretical streams in this paper, including information-asymmetry theory, transaction-cost theory, and technology-acceptance/capability theory. Information-asymmetry reasoning was found to be the best theoretical framework to explain why and how a digital finance intervention could financing-channel effects. For instance, MSMEs face informational barriers in the traditional financing arrangements, which makes it difficult to secure credit with positive net present value (NPV). Digital finance can overcome this hurdle by creating verifiable information about the enterprise using electronic payments and account-opening information. Lu et al. (2022), Yao and Yang (2022), and produce Wang et al. (2025) report financing benefits of digital finance interventions in their respective settings. Overall, the three articles reveal that the theory can predict the likelihood that a growth-constraining informational friction exists and its potency higher in cases where informational asymmetry was traditionally high.

The transaction-cost theory was used to explain how the digitization initiative could create an operational channel. Cash business encounters very high transportation costs, slow settlement speed, reconciliation challenges, risks of theft, and lack of scope for trade and competition. Faster payments and financial intermediation would help to mitigate these shortcomings and open up opportunities for competition and trade. Johri et al. (2024) illustrate how digital finance adoption can help a micro-enterprise to bypass significant business challenges in India. Similarly, Ahodode and Okala Eloundou (2024) associate electronic financial services with enterprise performance in Cameroon. Therefore, the theory was adequate to establish the existence of an operational channel and the conditions under which it could be actualized.

Technology-acceptance theory was used to explain the variation in the access to digital finance and the differing levels of intensity of use in the treatment group. With the availability of a financial technology tool, enterprises would adopt it to varying degrees, with some failing to exploit its potential to improve performance. Thatsarani and Jianguo (2022) used a technology-acceptance model to demonstrate how digital finance can promote economic inclusion and enterprise growth. In a similar vein, Krah et al. (2024) reveal the perceived usefulness, ease of use, attitude, and behavioral intention towards FinTech in small enterprises. Frimpong et al. (2022) and Tandilino et al. (2025), on the other hand, used financial literacy as a critical theory to guide the paper, with the former linking it to enterprise performance while the latter associated it with enterprise growth. Overall, the three articles were instrumental in demonstrating that the ability of an enterprise to benefit from a given digital finance account depends on its level of capability, and thus the paper focuses on capability gaps.

In general, the three theories highlight the conditions under which digital finance can be beneficial to MSMEs, thus setting the theoretical framework for the paper. Specifically, the theories were used to demonstrate why and how access to electronic financial services can lead to higher sales and innovation, as opposed to employment and productivity.

Empirical Review

Overall, the empirical review illustrates that the relationship between digital finance and MSME performance is positive but heterogeneous, with some channels being more prominent in specific settings as in theoretical frameworks, and research designs. Earlier studies focused on enterprise-growth and financing channels of digital financial inclusion. For instance, Yang and Zhang (2020) and Lu et al. (2022) reported growth benefits of digital finance in China. The African studies centered on financial inclusion as a channel through which digital finance could impact MSME performance, with Eton et al. (2021), Frimpong et al. (2022), and Umar et al. (2024) revealing the role of financial literacy and institutional quality. However, most researchers agree that entrepreneurship drives economic growth, and therefore digital finance initiatives should be geared towards promoting entrepreneurial activity. For instance, Liu et al. (2021) reveal entrepreneurship's role in China's economic growth, while Ji et al. (2021) and Yang et al. (2022) associate digital finance with entrepreneurial engagement and outcomes. Xi and Wang (2023) take a different angle in their study on the moderating role of entrepreneurial vitality on the relationship between digital finance and China's economic growth.

The more recent studies focus on unpacking the growth-sales nexus and the role of financial literacy in promoting MSME performance. Johri et al. (2024) used the World Bank's enterprise survey data to illustrate how digital finance can impact micro-enterprise performance in India, while Verma et al. (2024) use a large-scale survey of Indian MSMEs to show that sales growth, not employment growth, is a critical predictor of enterprise performance. At the continental level, Sanga and Aziakpono (2025) used a similar design to examine the association between digital finance and MSME growth in Africa. The authors reveal heterogeneity in the relationship between digital finance and MSME growth, with differences observing both at the country level and within countries at varying levels of entrepreneurial maturity

Table 2 . Selected Empirical Evidence on Digital Finance and MSME-Related Outcomes (2020-2025)

Study	Context / data	Method	Focus	Main finding
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Yang & Zhang (2020)	China; small/micro listed firms	Panel evidence	DFI and sustainable firm growth	Positive association with sustainable growth.
Eton et al. (2021)	Uganda; SMEs	Survey evidence	Financial inclusion and SME growth	Financial inclusion positively related to SME growth.
Liu et al. (2021)	China; regional panel	Panel analysis	DFI, entrepreneurship, growth	Entrepreneurship helps transmit DFI to growth.
Ji et al. (2021)	China; provincial panel	Panel analysis	DFI, entrepreneurship, income gap	Entrepreneurship is an important transmission channel.
Lu et al. (2022)	China; SMEs	Firm/panel analysis	DFI and financing constraints	DFI alleviates SME financing constraints.
Agyekum et al. (2022)	South-East Asia; SMEs	Enterprise-surveys analysis	Technology and financial inclusion	Technological inclusion improves external finance access.
Frimpong et al. (2022)	Ghana; SMEs	Quantitative mediation	Literacy, digital finance, performance	Digital-finance access improves performance and mediates literacy effects.
Thathsarani & Jianguo (2022)	Sri Lanka; SMEs	Survey/SEM	Digital finance, TAM, SME performance	Positive link through inclusion and technology acceptance.
Yao & Yang (2022)	China; GEM-listed SMEs	Panel analysis	Digital finance and innovation	Financing-constraint relief supports innovation.
Al-Smadi (2023)	MENA countries	Panel analysis	Digital finance and inclusion	Digital finance strengthens financial inclusion.
Gao & Ren (2023)	China; enterprise registrations	Large-scale panel/registration data	Digital finance and financialisation	Digital finance reduces SME financialisation.
Xi & Wang (2023)	China; regional panel	Panel analysis	DFI and quality of growth	Positive effect partly through entrepreneurial vitality.
Johri et al. (2024)	India; 998 microenterprises	ANOVA/logit; WB survey	DFI and ease of doing business	Digitally included firms face fewer relevant business obstacles.
Verma et al. (2024)	India; 9,024 MSMEs	Regression/selection correction	Digital finance and performance	Sales growth improves; employment/productivity effects are weaker.
Umar et al. (2024)	African countries	Panel analysis	Digital finance and SME inclusion	Digital finance positively affects SME financial inclusion.

Ahodode & Okala Eloundou (2024)	Cameroon; enterprises	OLS/logit	E-financial services and performance	Positive productivity and export-related effects.
Sanga & Aziakpono (2025)	47 African countries	MMQR	FinTech, SME finance, entrepreneurship	Positive but heterogeneous; institutions strengthen effects.
Mashoene et al. (2025)	28 emerging/developing economies	System GMM	FinTech and financial inclusion	FinTech development raises financial inclusion.
Wang et al. (2025)	China; SMEs	Panel analysis	Digital inclusive finance and innovation	Positive innovation effect; financing constraints matter.
Tandilino et al. (2025)	Indonesia; MSMEs	PLS-SEM	Literacy, support, DFI, performance	DFI mediates literacy/support effects on performance.
Elmi et al. (2025)	Somalia; SMEs	PLS-SEM	FinTech and SME sustainability	Positive; inclusion and literacy act as partial mediators.

Gap in Literature

Although recent studies link digital finance to higher inclusion outcomes and firm performance, several opportunities for advancing the literature stand out. Firstly, access, adoption, use, financing relief, and growth are conflated in the literature, Verma et al. (2024) demonstrate that sales, employment, and productivity can each respond differently to a given stimulus. Secondly, the most conclusive evidence at the firm level often comes with jurisdiction-specific limitations (e.g., Lu et al., 2022; Johri et al., 2024) or invokes institutional dissimilarities across African countries (as in Sanga & Aziakpono, 2025). Thirdly, literacy and adoption studies highlight the absence of synergies between availability and utilization for growth (Frimpong et al., 2022; Krah et al., 2024). Flowing from the foregoing, a more nuanced discussion of the links between finance and enterprise development is needed that distinguishes factors shaping digital finance from those operating through MSME growth, with particular emphasis on intervening mechanisms and moderators. This current study contributes to addressing this gap by synthesizing recent empirical findings at the study level while also incorporating financing, transaction-efficiency, capability, and institutional channels in one analysis of economic growth.

Methodology

This study follows a predefined secondary-evidence design. Specifically this paper’s purpose is not to estimate another firm-level causal coefficient for an inaccessible micro dataset but rather to collate and compare recent empirical findings on digital financial inclusion and MSME growth in developing

and emerging market economies. The unit of analysis was an individual published empirical study. This approach was taken because the relevant literature is scattered across multiple study designs: firm-level surveys, country-year aggregations, listed-company samples, and comparative FinTech analyses. Each of these studies used different concepts and measures to analyze the links between digital finance and enterprise performance.

The body of evidence included in this paper was restricted to articles published in 2020 or later that explicitly addressed at least one the following set of relationships: digital finance and MSME performance; digital finance and SME financing constraints; FinTech and SME financial inclusion; digital financial inclusion and entrepreneurship; and technology/financial literacy as a determinant of productive digital-finance use. Conceptual and review pieces were excluded, as were sources that did not pass initial credibility checks on publisher websites or bibliographic databases.

For each study included in the body of evidence, the following five items of information were extracted:

1. the study's geographical focus;
2. the primary exposure of digital finance;
3. the MSME or entrepreneurial outcome of interest;
4. the reported mechanism or moderator; and
5. the direction of the documented association.

The latter was coded as either direct positive, positive but explicitly conditional or mediated, mixed across outcomes, or indirectly disciplining (see below). No attempt was made to calculate a standardized treatment effect because the individual articles employed mostly non-overlapping dependent variables and econometric specifications. In fact, four categories were used to describe the relationships in the articles to emphasize the differences between outcomes: direct positive association; positive association but explicitly conditional or mediated; mixed associations across outcomes; and indirectly disciplining influence. In other words, a positive coefficient for sales growth was not directly comparable to a similar coefficient for financial inclusion, innovation, or national entrepreneurship.

Table 3. Study-Level Evidence-Coding Framework

Field	Coding categories	Purpose
Region	China/East Asia; South/Southeast Asia; Sub-Saharan Africa; MENA/multi-EMDE	Describes geographic concentration of evidence.
Digital-finance exposure	DFI index, digital payments, FinTech, e-financial services, digital credit	Preserves original study construct.
Outcome	Growth, sales, productivity, employment, innovation, inclusion, entrepreneurship	Avoids collapsing distinct outcomes.
Mechanism/moderator	Finance, transaction efficiency, literacy/capability, institutions/infrastructure	Used for interpretation, not effect-size pooling.
Direction	Direct positive; conditional/mediated positive; mixed; indirect/disciplining	Categorical synthesis only.

4.0 Results

The final number of included studies is 22. Of these, 9 were either focused on China, or used China-dominant evidence, 5 – originated from South or Southeast Asia, 6 – used Sub-Saharan African samples, and 2 – relied on Middle East and North Africa (MENA) or came from other developing/emerging-jobs economies. Overall, the pool was diverse, but studies focused on China remained disproportionately represented in comparison to the regional distribution of literature on digital-inclusive finance, financing constraints, and innovation.

The first result pertains to the direction of association. Out of the 22 studies, 16 reported a predominantly direct positive link between digital finance and an MSME-related outcome. Four studies found positive effects that were mediated, moderated, or non-uniform in nature. One study found mixed results across different performance indicators, and one paper found indirect disciplining effects rather than a direct growth acceleration. Overall, 20 out of 22 studies had positive findings in either direct or conditional sense. It must be noted that not all digital finance interventions are universally positively linked to all aspects of MSME performance, but overall, positive associations were found to predominate the recent literature on the topic, especially when actual use of finance was linked to a specific economically meaningful application.

The most prevalent positive association found was that of financing access. Specifically, Yang and Zhang, 2020 found that digital financial inclusion was associated with the sustainable growth of small and microbusinesses; Lu et al., 2022 found that digital inclusion reduced financing constraints of SMEs; Yao and Yang, 2022 found that such a link existed for innovative SMEs as well, as did Wang et al., 2025. Overall, there is substantial evidence for the idea of digital finance transaction records, broader financial inclusion, or technology-assisted credit assessment positively intervening in the credit constraint mechanism for smaller businesses.

A second result is a finding of heterogeneity in growth outcomes. Verma et al., 2024 found that digital finance had a significantly positive link to sales growth of MSMEs in India, but a lesser link to employment growth and labor productivity, which qualifies as a mixed result for the category of “growth.” This is the only paper in the scoping sample that can be categorized as finding mixed results across outcomes, and it is a particularly valuable contribution, as heterogeneity in growth effects has been found to be common in practice. Sales growth is affected by easier payment terms and working capital access, while employment and productivity tend to be more capital-intensive and reliant on broader transformations with longer time horizons. Therefore, when a paper reports that digital finance “increases MSME performance,” such an assertion must be understood in terms of specific variables.

A third result is the finding of the mediation of access and adoption through financial capabilities or technology receptivity. Frimpong et al., 2022 found that financial literacy trained access to digital finance, and that digital finance access in turn was positively associated with performance of SMEs. Thathsarani and Jianguo, 2022 found a similar link between digital finance, financial inclusion, and technology adoption, and their joint positive association with SME performance. Krah et al., 2024 found that perceptions of FinTech and behavioral intent mediated the link between digital finance and the receptivity of Ghanaian SMEs to FinTech solutions. Finally, Tandilino et al., 2025 found that digital financial inclusion acted as a mediator between digital financial literacy, government support, and MSME performance. Overall, this body of research suggests that the positive association between

digital finance and SME performance is contingent on firms having the necessary financial knowledge and technology acceptance capabilities.

The next result is the finding of heterogeneity in outcomes across regions. African studies were overwhelmingly positive but leaned toward the evidence of a more limited set of conditions required to enable MSME growth. Umar et al., 2024 linked digital finance positively to improved financial inclusion of SMEs in Africa. Ahodode and Okala Eloundou, 2024 found a beneficial association between electronic financial services and enterprise performance in Cameroon. Sanga and Aziakpono, 2025 found that FinTech development increased both digital finance inclusion for SMEs in 47 African countries, but that the association differed for different segments of the entrepreneurship distribution, and was positively moderated by institutional quality. Finally, Elmi et al., 2025 found in Somalia that financial inclusion and literacy acted as partial mediators for the association between FinTech and SME sustainability. Overall, the evidence base for digital finance in Africa suggests that while it is positively associated with outcomes, its effectiveness depends on the institutional and capability contexts in which it is adopted.

The findings for other regions corroborate this point. Al-Smadi, 2023 found that digital finance was associated with financial inclusion in MENA countries. Mashoene et al., 2025 found, using the system-GMM approach, that FinTech development was positively associated with financial inclusion in emerging and developing economies. At the interface of macro and enterprise-level analysis, Liu et al., 2021 found that SME entrepreneurship was a channel for digital financial inclusion to drive economic growth, while Xi and Wang, 2023 found that digital finance drove higher-quality growth via entrepreneurial vitality. Ji et al., 2021 and Yang et al., 2022 found intermediary roles of entrepreneurship for digital finance's associations with economic growth and inclusive development, respectively.

Finally, an unconventional finding came from Gao and Ren, 2023, who found that digital finance decreased the likelihood of MSME financialisation. In the context of this study, this tendency was coded as a negative association. However, the suppression of the financialisation channel can be interpreted as a positive effect stemming from a redirection of enterprise resources toward core operations. Whether such reallocation is beneficial depends on the opportunity cost of financialisation, which is presumably is an issue to individual firms. This finding adds to the evidence base on the mechanisms of digital finance by demonstrating that it can intervene in the financialisation process not only through increased access to finance but also through altering its costs.

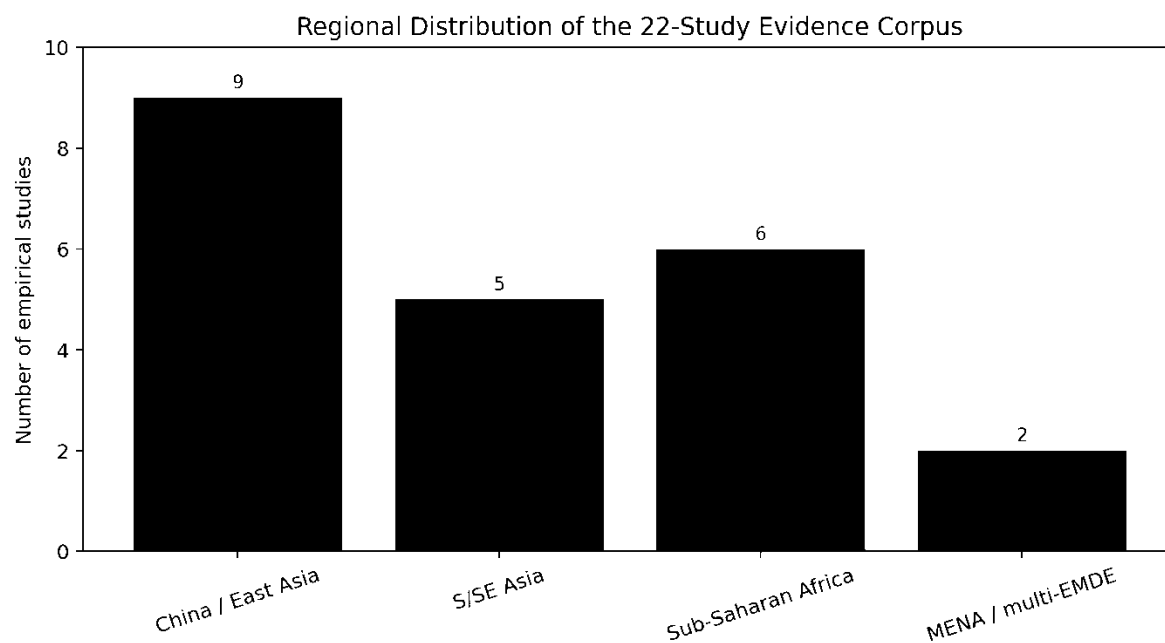


Table 5. Study-Level Direction of Reported Effects

Effect category	Studies (n)	Share	Interpretation
Direct positive	16	72.7%	Predominantly positive relationship on the principal outcome.
Positive, conditional/mediated	4	18.2%	Positive effect depends materially on mediator, moderator, or distribution.
Mixed by outcome	1	4.5%	Positive on one growth measure but weak/insignificant on others.
Indirect/disciplining	1	4.5%	Changes resource allocation rather than directly measuring growth.
Total	22	100.0%	Study-level descriptive coding; not a meta-analysis.

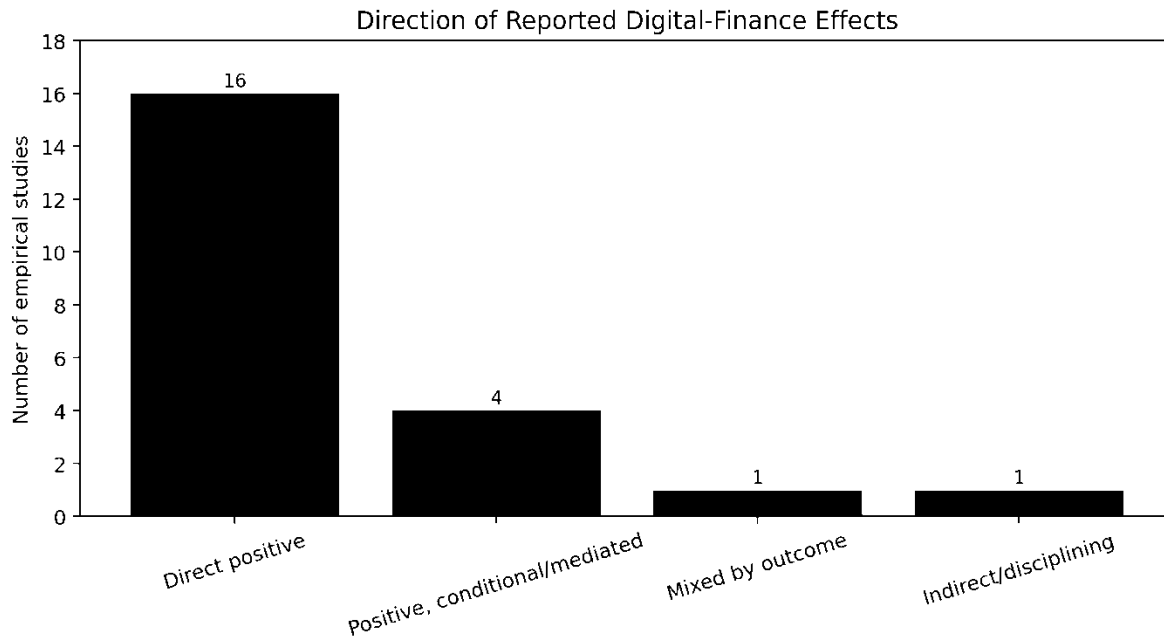


Figure 2. Direction of reported digital-finance effects in the empirical corpus.

Discussion

The evidence indicates that digital financial inclusion is often growth-enabling for MSMEs but also shows a need to specify the relationship more precisely than usual in policy talk. A simple access model assumes that the provision of digital account or payment application relaxes financial constraints and therefore produces growth. The literature reviewed here shows a longer chain: firms must obtain access, adopt the service, use it for economically relevant transactions, obtain a financing or efficiency benefit, and combine that benefit with complementary capabilities. Any part of this chain can be a point of attenuation.

The financing channel is most consistent with information-asymmetry reasoning: conventional lenders often face high fixed costs in screening small borrowers relative to loan size, and MSMEs frequently lack audited statements and collateral, but digital transaction histories can reduce part of this deficit. Lu et al. (2022) found that digital financial inclusion eased SME financing constraints, while Yao and Yang (2022) showed that financing relief could stimulate innovation, and Wang et al. (2025) reached a similar conclusion with respect to SME innovation. These findings imply that the growth value of digital payments may extend beyond settlement convenience if payment histories can become credible information for financial assessment.

This interpretation is reinforced by evidence on technology-enabled inclusion: Agyekum et al. (2022) showed that technological inclusion could promote SME financial inclusion across South-East Asian countries, including improved access to external finance. Al-Smadi (2023) and Mashoene et al. (2025) found positive digital-finance/financial-inclusion relationships in broader regional and developing-economy settings. The implication is that the supply of digital rails changes the feasibility frontier for small firms, particularly where branch expansion is costly. However, a digital channel can reproduce exclusion if pricing, identity requirements, device ownership, connectivity or algorithmic assessment systematically disadvantage the smallest enterprises. Growth policy should therefore evaluate effective use and affordability, not just the number of registered accounts.

The transaction-efficiency channel explains why digital finance could benefit firms even in the absence of a new loan: digital payments reduce the need to travel with cash, accelerate settlement with suppliers, enable remote sales channels, and simplify transaction records. Johri et al. (2024) found that digitally included Indian microenterprises were better positioned relative to important business constraints. Ahodode and Okala Eloundou (2024) associated electronic financial services with improved enterprise outcomes in Cameroon. These findings are consistent with a transaction-cost interpretation: a firm can grow by executing the same basic activities more reliably and with less friction before any expansion in formal credit occurs.

The outcome-specific result reported by Verma et al. (2024) is particularly important for interpreting the overall evidence: their finding that digital finance is more clearly associated with sales growth than with employment growth or labour productivity suggests that digital inclusion may initially affect the revenue side of the firm. Better payments, remote customer reach, and improved liquidity could raise sales without an immediate change in headcount. Labour productivity depends on the relationship between output and labour input and may require complementary technology, process redesign, or employee capability. Employment can also remain unchanged if digital tools enable an enterprise to serve more customers with the same workforce. Accordingly, evaluations of digital-finance programmes should report multiple growth outcomes rather than selecting the most likely to show an effect.

The role of financial and digital literacy qualifies the relationship further: Frimpong et al. (2022) found that financial literacy supported access to digital finance, and that access improved SME performance. Tuffour et al. (2022), although focusing more broadly on financial literacy among small-enterprise managers, also revealed why managerial financial knowledge was important for enterprise performance. Thatsarani and Jianguo (2022) connected digital finance with technology-acceptance conditions, while Krah et al. (2024) identified behavioural and usefulness perceptions that influence FinTech adoption. Tandilino et al. (2025) integrated these strands by showing that digital financial inclusion mediated the effects of digital financial literacy and government support on MSME performance. The practical lesson is that training should not be treated as an optional add-on to digital finance. The ability to compare charges, protect credentials, reconcile transactions, understand loan terms and select appropriate services is part of the productive infrastructure of digital inclusion.

The African cross-country findings reveal a second boundary condition: institutional quality. Sanga and Aziakpono (2025) found positive but heterogeneous FinTech effects of digital finance for SMEs and entrepreneurship, and that institutional quality enhanced the relationship. Umar et al. (2024) also reported the relevance of digital finance to SME financial inclusion in African economies. These studies explain why identical technologies can have different outcomes across countries. Payment-system reliability, contract enforcement, market competition, data protection, dispute resolution, identity systems, and network quality influence user trust and the cost of converting digital access into business value. Where institutions are weak, firms may maintain parallel cash practices, limit balances held digitally, or avoid borrowing from unfamiliar platforms.

Entrepreneurship studies broaden the definition of MSME growth beyond the performance of existing firms. Liu et al. (2021) found that entrepreneurship helped transmit the effect of digital financial inclusion to economic growth in China. Ji et al. (2021) showed that entrepreneurship contributed to the relationship between digital inclusion and the urban-rural income gap, while Yang et al. (2022) demonstrated that digital financial inclusion could support female entrepreneurship. Xi and Wang (2023) similarly identified entrepreneurial vitality in the relationship between digital finance and the quality of economic growth. This evidence suggests that digital inclusion has an effect on the extensive

margin of enterprise development (who can start and participate in business) as well as the intensive margin of how established MSMEs perform.

The finding of Gao and Ren (2023) adds an allocation perspective: if digital finance reduces excessive financialisation by SMEs, it would influence the composition rather than the amount of enterprise activity. This is relevant in developing economies where firms hold liquid financial assets as a precaution against volatile cashflows or because productive investment opportunities are constrained. Digital finance that improves operating liquidity and access to external funds can reduce the need for defensive asset allocation, but policy should not assume that every reduction in financial asset holding is beneficial. The appropriate interpretation depends on whether resources move towards productive investment, working capital, or higher-risk borrowing.

Overall, the evidence confirms the conceptual model presented in Figure 1: digital financial inclusion improves the opportunity set available to MSMEs, with financing access and transaction efficiency as the principal transmission channels, and literacy and managerial capability determining the quality of adoption, while infrastructure and institutional quality condition the value that can be derived. This layered explanation reconciles the predominance of positive findings with the existence of mixed and heterogeneous results, and shifts the policy question from "How many MSMEs have digital accounts?" to "How many can use digital finance safely and repeatedly to lower costs, obtain appropriate capital, reach markets, and build resilient operating histories?"

Conclusion and Policy Implications

This study evaluated the impact of digital financial inclusion on the growth of MSMEs in developing and emerging economies through a structured synthesis of 22 recent empirical studies. The evidence is predominantly favourable, with 16 studies reporting direct positive relationships, four reporting positive but mediated or conditional effects, one producing mixed results across performance measures, and one identifying an indirect disciplining effect. The strongest benefits concern financing access, sales expansion, innovation, entrepreneurship, business continuity, and reduced operating friction. Employment and labour productivity are less consistently affected, indicating that digital finance should be regarded as an enabling infrastructure rather than a sufficient condition for enterprise transformation.

Five policy implications follow. Firstly, governments and regulators should move beyond account-opening targets and measure active/affordable MSME usage of digital payments, savings, credit and merchant services. Secondly, interoperable payment infrastructure should be prioritised, as fragmented systems raise costs and weaken the transaction histories that can support credit assessment. Thirdly, responsible digital credit should be designed around transparent pricing, proportionate data use, explainable decisions, and effective dispute resolution so that inclusion does not become a pathway to over-indebtedness. Fourthly, MSME support programmes should integrate practical digital-financial capability (including transaction reconciliation, cybersecurity hygiene, digital bookkeeping, and loan-cost comparison) with access initiatives. Fifthly, public policy should improve the institutional conditions that amplify FinTech benefits, particularly connectivity, competition, digital identity, consumer protection, and reliable contract enforcement.

For financial institutions and FinTech providers, the results suggest that MSME products should be designed around business cashflow cycles rather than adapted from consumer interfaces. Transaction data can improve service personalisation and credit screening, but value creation depends on trust and usability. Providers should therefore combine digital onboarding with transparent support, merchant tools, and data practices that smaller firms can understand. For MSME owners, digital finance is most valuable when embedded in routine business processes and records rather than merely on occasion.

Limitations and Future Research

The study is limited by the heterogeneity of the underlying literature. The 22 empirical studies use different definitions of digital finance, firm size, financial inclusion, and growth, making a pooled causal effect inappropriate. China is also strongly represented, and some developing regions are understudied. The categorical synthesis records the dominant direction of findings, but does not weight studies by sample size or identification strength.

Future research should use harmonised firm-level measures that distinguish digital access from active use, and report sales, employment, productivity, survival, and innovation separately. Multi-country longitudinal studies would be particularly useful for testing whether institutional quality, gender, firm informality, sector, and digital literacy moderate the effect. Researchers should also examine potential adverse outcomes, including fraud exposure, platform dependency, data exclusion, and costly digital credit, so that the literature captures both the productive and risk dimensions of digital financial inclusion.

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