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Islamic digital economy and SME integration into global value chains: Evidence and policy implications for emerging economies

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Abstract

Small and medium-sized enterprises (SMEs) play a central role in global economic development, yet participation in global value chains (GVCs) remains constrained. This study examines how digitalization from an Islamic perspective, particularly through information and communication technologies (ICT), influences SME integration into GVCs while identifying structural barriers in developing economies. Drawing on a conceptual and analytical approach, the study synthesizes literature on digital adoption, SME internationalization, and GVC participation to develop an integrative framework linking Islamic digital capabilities with export performance and value chain integration. Findings indicate that ICT adoption, such as websites, e-commerce platforms, and digital logistics systems, enhances export capacity by reducing transaction costs, improving market access, and strengthening supply chain coordination. However, benefits remain uneven due to persistent constraints, including limited digital infrastructure, inadequate internet accessibility, and low levels of Islamic-oriented technological literacy. These barriers disproportionately affect SMEs in developing economies, reinforcing structural inequalities in GVC participation. The study contributes by integrating digitalization and GVC perspectives within an Islamic framework and highlights the need for policy interventions that strengthen infrastructure, enhance digital skills, and support inclusive ecosystems for sustainable SME participation.

Keywords: Islamic digital economy, global value chains, SMEs, ICT.

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Introduction

Small and Medium Enterprises (SMEs) constitute a dominant share of global economic activity, accounting for more than 90 percent of all firms and approximately 60-70 percent of employment worldwide (Puspitaningrum et al., 2021). In the post-pandemic recovery phase, SMEs have demonstrated resilience through increasing sales performance, in some cases exceeding pre-pandemic levels (El-Sahli & Alsamara, 2022). This structural prominence has positioned SMEs at the center of policy discussions on inclusive growth and international trade integration. In parallel, the emergence of the Islamic digital economy introduces an additional dimension (Rachman, 2020), in which digitalization is not only a tool for efficiency but also a mechanism to uphold ethical, transparent, and Shariah-compliant economic practices (Erlanitasari et al., 2019).

Within this context, global value chains (GVCs) have been widely framed as a mechanism through which SMEs can access international markets by participating in fragmented production processes (Cusolito et al., 2017). Such fragmentation enables SMEs to specialize in specific stages of production, thereby lowering entry barriers into global trade. However, empirical evidence suggests that SME participation in GVCs remains uneven and structurally constrained (Ganne & Lundquist, 2019). Limitations in production capacity, access to finance, technological capability, and organizational readiness continue to restrict SMEs' ability to move beyond peripheral roles within value chains (Lanz et al., 2018; Lusiantoro et al., 2025). Ongoing structural limitations raise critical questions concerning the conditions that facilitate SME upgrading and meaningful integration into GVCs.

The rapid expansion of the digital economy has introduced new dynamics into this debate. Digital technologies, particularly information and communication technologies (ICT), are often presented as enablers of SME internationalization by reducing transaction costs, improving market access, and facilitating cross-border coordination (Chang et al., 2017; Nambisan, 2017). Existing studies highlight that internet adoption enhances export performance and increases the likelihood of SMEs engaging in international trade (Abel-Koch, 2016; Cusolito et al., 2017; Erlanitasari et al., 2019; Puspitaningrum et al., 2021; Putri et al., 2022). Within an Islamic digital economy perspective, these technological capabilities are further associated with principles of transparency (***amanah***), fairness (***adl***), and accountability (***hisab***), which strengthen trust and integrity in cross-border transactions and supply chain relationships (Ahyani et al., 2021; Hassan et al., 2021; Rachman, 2020; Raihan et al., 2023).

Nevertheless, this optimistic view remains theoretically and empirically contested. While digital technologies can lower entry barriers, benefits are not uniformly distributed. Structural inequalities persist due to disparities in digital infrastructure, technological capabilities, and institutional support, particularly in developing economies (Lestari &

Pambekti, 2023; Yusfiarto & Pambekti, 2019). In addition, compliance with Shariah-based digital standards, including halal traceability and ethical data governance, may introduce further capability requirements for SMEs (Alamsyah et al., 2022; Nasyiah et al., 2024). Multinational firms often require SMEs to meet specific ICT standards as a prerequisite for integration into supply chains, thereby reinforcing capability-based exclusion mechanisms (Ganne & Lundquist, 2019). Digitalization, therefore, functions simultaneously as both an enabler and a selective barrier to SME participation in GVCs.

This study addresses this gap by examining how the digital economy, from an Islamic perspective, influences SME participation in GVCs, with particular attention to the interplay between digital capabilities and structural barriers in developing-country contexts. A synthesis of insights from digitalization, GVC literature, and Islamic economic principles provides a conceptual contribution that explains SME integration as a function of both enabling technologies and normative ethical frameworks. Such an approach advances a more nuanced understanding of SME upgrading in the digital era and establishes a foundation for more targeted and context-sensitive policy interventions.

Method

This study adopts a conceptual paper design supported by a structured literature review to examine the role of digitalization in shaping SME participation in global value chains (GVCs) (Cusolito et al., 2017; Ganne & Lundquist, 2019; Lanz et al., 2018). Instead of relying on a purely narrative discussion, this study employs a structured approach to identify, select, and analyze relevant literature, thereby enhancing analytical transparency and methodological clarity (Elo & Kyngäs, 2008; Tierney & Clemens, 2011). To operationalize this approach, the study proceeds with a structured literature search strategy as outlined below.

Stage 1: Literature Search Strategy

The literature was collected from major academic databases, including Scopus, Web of Science, and Google Scholar, and complemented by policy reports from international organizations such as the World Trade Organization (WTO), the Organization for Economic Co-operation and Development (OECD), and the World Bank. Keywords used in the search process included combinations of “SMEs,” “Islamic digitalization,” “ICT adoption,” “global value chains,” “export performance,” and “developing countries.” The search was limited to publications between 2010 and 2024, reflecting the period in which digital transformation and GVC restructuring have accelerated significantly. To enhance the rigor and replicability of the review process, explicit inclusion and exclusion criteria were defined (see Table 1), in line with established approaches to structured literature reviews (Lestari et al., 2025; Lusiantoro et al., 2025; Tranfield et al., 2003).

Following the screening process, a total of 64 sources, as explained in the PRISMA flowchart, were retained for analysis. These consisted of 45 peer-reviewed journal articles, 12 policy and institutional reports, and 7 book chapters and conference papers (see Figure 1). The selected literature strikes a balance between empirical evidence and conceptual contributions, enabling a comprehensive examination of the relationship between digitalization and SME participation in global value chains.

Table 1. Inclusion and Exclusion criteria

Inclusion criteria:	Exclusion criteria:
• peer-reviewed journal articles indexed in Scopus or Web of Science; • empirical and conceptual studies addressing SMEs, digitalisation, or GVC participation; • reports from reputable international organisations (e.g., WTO, OECD, World Bank); • studies focusing on developing or emerging economies.	• non-peer-reviewed sources lacking methodological transparency; • studies unrelated to SME internationalisation or digital economy; • publications with insufficient empirical or conceptual contribution.

Stage 2: Analytical Approach

The analysis employs a conceptual synthesis combined with comparative analysis. First, a thematic categorization was conducted to identify recurring dimensions across the literature, including digital capabilities, structural constraints, and GVC participation mechanisms (Braun & Clarke, 2006). Second, a comparative analysis was applied to distinguish between ICT-enabled and non-ICT-enabled SMEs in terms of export performance, market access, and value chain integration (Mongeon & Paul-Hus, 2016). This approach enables the study to move beyond descriptive reporting by developing an integrative analytical framework linking digital adoption to SME upgrading in GVCs.

Stage 3: Contextual Focus

While the analysis draws on global literature, particular attention is given to Indonesia as a representative emerging economy, where rapid digital adoption coexists with structural limitations in infrastructure, financial access, and technological capabilities. This contextualization provides empirical grounding for interpreting broader theoretical patterns.

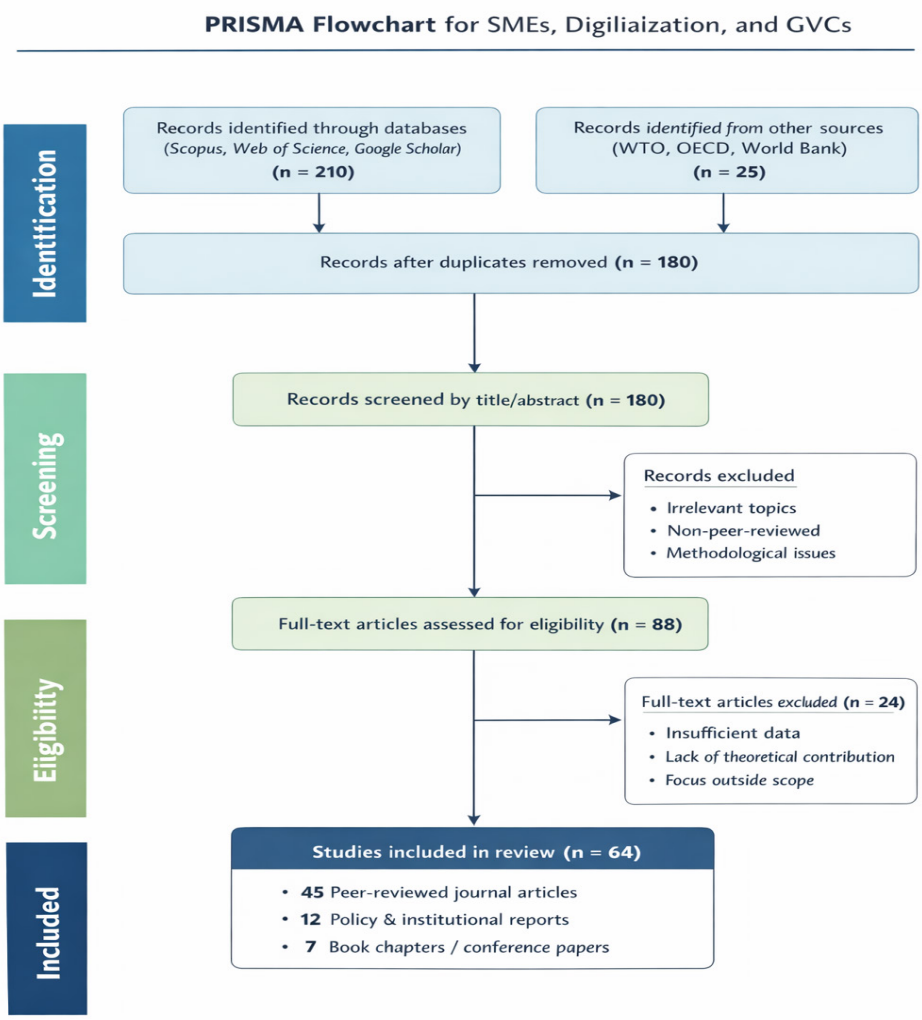


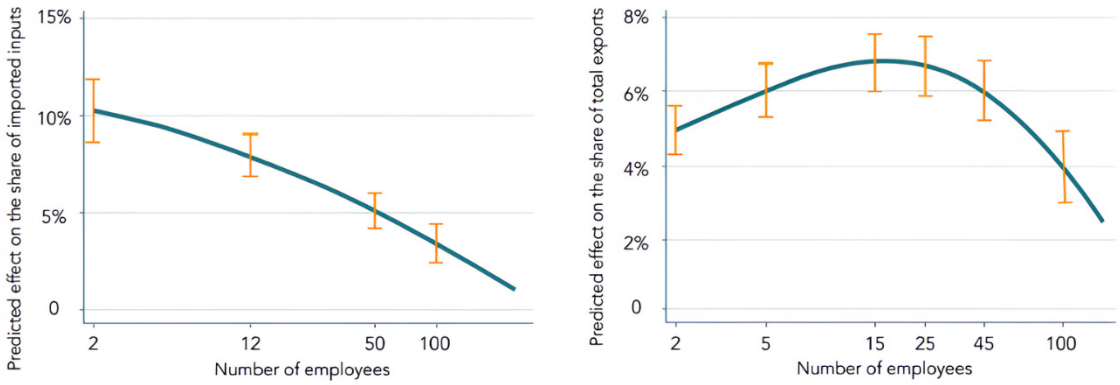
Figure 1. PRISMA Flowchart

Result and Discussion

Before discussing the impact of the Islamic digital economy on SMEs, this essay first examines the effects of digital connectivity on SMEs. As demonstrated by Lanz et al. (2018), there are notable differences between ICT-enabled SMEs and large firms in developing countries in terms of trade engagement and digitally connected participation in Global Value Chains (GVCs). Their findings support the theory that digital transformation can enhance SME participation in GVCs, particularly in import-based (backward-linked) value chains.

Using data from the World Bank Enterprise Surveys, Lanz et al. (2018) show that, for SMEs in developing countries, having a website, as a proxy for ICT capability, has a greater impact on the use of imported inputs for production and export share than it does for large firms. For instance, an ICT-enabled small firm with two employees is predicted to have an import input share that is 10 percent higher than a similarly sized non-ICT-enabled firm. Likewise, a firm with 12 employees would have a predicted input share 8 percent

higher than that of larger firms, significantly more. In contrast, for a 50-employee ICT-enabled firm, the predicted effect on the share of imported inputs is only 5 percent, and for a 100-employee firm, the effect is just 3 percent. As for export participation, firms with 15 and 25 employees show higher predicted export shares if they are ICT-enabled (see Figure 2). These findings lead to the conclusion that smaller ICT-enabled firms are more robustly positioned for global trade participation than larger firms. This suggests that the impact of digital empowerment is significantly more pronounced for small enterprises than for their larger counterparts.



Source: (World Trade Organization, 2021)

Figure 2. Effect of ICT-enabled firms on Import and Export Participation by Firm Size

Digital Connectivity as a Catalyst for SME Upgrading in GVCs

This study advances a conceptual analysis grounded in a structured synthesis of prior research, rather than presenting primary empirical evidence. Within this analytical framework, digital connectivity, operationalized through the adoption of information and communication technologies (ICT), is positioned as a central mechanism shaping SME participation in global value chains (GVCs) (Ganne & Lundquist, 2019). In the context of the Islamic digital economy, digital connectivity extends beyond technical functionality, encompassing principles of ethical conduct, transparency (***amanah***), and accountability (***hisab***) in digital transactions and supply chain interactions (Ahyani et al., 2021; Hassan et al., 2021; Rachman, 2020; Raihan et al., 2023). Existing evidence consistently indicates that the effects of digital connectivity are asymmetric across firm sizes. SMEs tend to derive disproportionately greater benefits from ICT adoption than larger firms, particularly in terms of export participation and access to imported inputs (Juwita et al., 2020). This asymmetry can be interpreted as a partial equalization of structural constraints: digital technologies reduce transaction costs (Erlanitasari et al., 2019), lower information asymmetries (Brynjolfsson & Hitt, 2000), and facilitate cross-border coordination (El-Sahli & Alsamara, 2022), thereby enabling smaller firms to overcome limitations traditionally

associated with scale, geographic distance, and market access. Within an Islamic perspective, such reductions in uncertainty and information gaps also reinforce trust-based exchanges and ethical market participation.

From a theoretical standpoint, this dynamic aligns with the literature on GVC upgrading, which emphasizes the role of capability development in enabling firms to improve their position within value chains. In this context, digital connectivity contributes to at least two forms of upgrading (Cenamor et al., 2017; Cummins et al., 2019). First, it supports market upgrading by enabling SMEs to gain direct access to international customers through digital platforms and online channels (Lanz et al., 2018). Second, it facilitates functional upgrading, particularly in backward linkages, where firms improve their ability to source higher-quality or more competitively priced inputs from global suppliers (Holmes et al., 2025). From an Islamic digital economy perspective, these upgrading processes are not solely efficiency-driven but are also guided by principles of fairness (***adl***) and value creation that aligns with broader societal welfare (***maslahah***), thereby extending the purpose of upgrading beyond economic gains (Dusuki & Abdullah, 2007; Jailani et al., 2025).

However, the relationship between digital connectivity and upgrading is neither linear nor automatic (Laudon & Laudon, 2012). While ICT adoption may enable initial entry into global markets, it does not guarantee sustained participation or progress toward higher-value-added activities. This is because GVC integration is governed not only by access to technology, but also by the ability to meet the organizational, technical, and compliance standards imposed by lead firms. In this regard, digital connectivity functions less as an independent driver and more as an enabling infrastructure that must be complemented by firm-level capabilities (Laudon & Laudon, 2012; Ong et al., 2023). Within Islamic digital systems, these requirements may also include adherence to halal traceability, ethical sourcing, and transparent documentation practices. Digital connectivity, therefore, functions less as an independent driver and more as an enabling infrastructure that must be complemented by firm-level capabilities (Puspitaningrum et al., 2021; Yusfiarto & Pambekti, 2019).

This distinction is critical in moving beyond overly deterministic views of digitalization. Much of the existing discourse frames digital technologies as inherently inclusive, assuming that access to ICT will translate directly into improved competitiveness. The present analysis challenges this assumption by emphasizing the gap between digital access and effective digital capability (Handayani et al., 2023; Lusiantoro et al., 2018). While many SMEs may adopt basic digital tools, such as websites or participation in online marketplaces, fewer are able to strategically leverage these tools to coordinate supply chains, manage quality standards, and engage in long-term relationships with global buyers (Erlanitasari et al., 2019; Puspitaningrum et al., 2021). In an Islamic context, this gap also reflects the challenge of embedding ethical and Shariah-compliant practices

within digital operations, which requires not only technical adoption but also value-driven organizational alignment.

As a result, digital connectivity should be understood as a conditional catalyst for SME upgrading within GVCs. It expands the possibility space for participation, but its actual impact depends on how firms mobilize complementary resources, including managerial expertise, organizational routines, and institutional support (Berger & Udell, 1998; Mukantwali et al., 2013). In Islamic digital economy settings, such resources also include ethical governance, trust-building mechanisms, and compliance with Shariah principles. Without these supporting conditions, SMEs risk remaining confined to low-value or peripheral segments of value chains, even when digitally connected (Abel-Koch, 2016). Digitalization is therefore better conceptualized not as a binary enabler, but as a capability-dependent mechanism shaped by both technological and ethical dimensions. This perspective provides a more nuanced explanation of heterogeneous outcomes across SMEs and offers a conceptual bridge between digitalization literature, GVC upgrading theory, and Islamic economic principles.

Islamic Digital Technologies and Cost Reduction Mechanisms in SME Internationalization

Building on the argument that digital connectivity functions as a capability-enabling mechanism, this section examines the specific channels through which digital technologies reshape the cost structure of SME participation in international markets. Instead of approaching digitalization as a general enabler, the analysis focuses on how it systematically reduces transaction and operational costs across key business functions (Nambisan, 2017). Within the Islamic digital economy, such efficiencies are not solely technical in nature but are also associated with enhanced transparency and accountability in economic transactions (Abbas & Arizah, 2019).

At a fundamental level, SMEs face disproportionately higher costs in entering and operating within global markets (El-Sahli & Alsamara, 2022). These include expenses related to market research, marketing, regulatory compliance, financing, logistics, and day-to-day operations. Such costs are often fixed in nature, placing smaller firms at a structural disadvantage compared to larger enterprises (Berger & Udell, 1998). Digital technologies alter this cost structure by reducing reliance on physical intermediaries, increasing information accessibility, and enabling more flexible coordination mechanisms (Cenamor et al., 2017; Sumarliah & Al-hakeem, 2023). From an Islamic perspective, reducing informational asymmetries also supports more transparent and trustworthy exchanges, strengthening confidence among market participants (Al-Masri, 2004).

The transformation is particularly evident in market access and marketing activities (Lestari & Pambekti, 2023). Traditional approaches require SMEs to rely on local advertising agents, printed promotional materials, and fragmented distribution channels,

often resulting in high costs and limited reach (Purwantiningrum et al., 2018). In contrast, digital platforms, such as search engine optimization (SEO), social media advertising, and online marketplaces, allow firms to directly target international customers with significantly lower marginal costs (Badea et al., 2021). This shift not only expands market reach but also enables more precise customer segmentation and real-time performance monitoring.

Similar cost-reducing effects can be observed in regulatory compliance. Traditionally, SMEs must navigate complex foreign regulations through time-intensive, paper-based processes and often depend on specialized intermediaries, such as legal consultants or export agents (Husin & Haron, 2020; Rohmatin et al., 2021). Digital systems, including online regulatory portals and integrated platforms such as national single window mechanisms, streamline documentation processes and provide direct access to compliance information. This reduces both the time and financial burden associated with cross-border transactions (Cenamor et al., 2017; Nambisan, 2017).

In the domain of finance, digital technologies expand access to funding through alternative mechanisms such as crowdfunding, peer-to-peer lending, and platform-based financial services (Buechel & Krähenmann, 2022). These tools partially mitigate the constraints associated with limited access to traditional banking systems, particularly in developing economies (Ghatak, 2000; Han et al., 2018). In Islamic digital finance contexts, these mechanisms may align with Shariah-compliant models, offering more inclusive and ethically grounded financing options. Such tools partially mitigate the constraints associated with limited access to traditional banking systems, particularly in developing economies (Albaity & Rahman, 2019; Ascarya, 2017).

Table 2. An Islamic Digital Economic Map

Global Value Chain	**Digital Impact**		
	Detail	Traditional Scenario	Islamic Digital Scenario
Market Research	• Identification and Quantification of Foreign Halal Business Opportunities • Gaining Information and thorough Understanding of Target Islamic Markets	• Labor-Intensive: Dedicated Staff, Market Research Agencies, Potential Field Visits • Potential Journey to Market	• Desktop Research • Islamic Digital Market Research Tools (e.g. Online Surveys) • Reduced Need to Travel

Global Value Chain	Digital Impact		
	Detail	Traditional Scenario	Islamic Digital Scenario
Marketing	• Targeting Customers in Overseas Islamic Markets through Advertising • Distribution of Promotional Materials through Various Advertising Channels	• Procurement of Local Advertising Space in Overseas Markets (e.g. Newspaper, Radio and TV Advertising)	• Islamic Digital Advertising Channel (Search Engine Optimization Display, Social, Video) • Leverage Marketplace Platforms
Insurance and Finance	• Access to Halal Product Shipping Insurance and Securing Export Islamic Financing • Information on Insurance Procurement and Financing Security	• Limited Transparency • Time Intensive Paper Based Approach • Specialized Broker	• Halal Product Comparison Site • Single Window View on the Islamic Market • Islamic Digital Financial Products
Regulatory Compliance	• Regulations, Rules and Laws in Foreign Markets that MSMEs must Comply with • Costs of Complying with Foreign Regulations such as Filing Documents and Legal Fees	• Time Intensive Paper Based Approach • Specialized Consultants	• National Single Window
Operational	• Physical Delivery of Goods to Overseas Markets • Delivery of Products to Overseas Distributors	• Manual Supply Chain Management • Limited Information causes Inefficiency	• Automated and Islamic Digital Supply Chain Management (e.g. Internet of Things)
Distribution	• Day to day Business Operations (e.g. Processing Orders, Back Office/Admin Tasks) • TI Tasks such as, Database Management, Accounting, Communications	• Specialized IT Equipment (e.g. Servers, Office Software) • Communication Services • Specialized Travel Agencies	• Cloud Computing and Software • Voice over IP • Online Halal Travel Services

Table 2 introduces operational digitalization within the context of an Islamic digital economy, which extends beyond reducing the need for costly physical infrastructure to reconfiguring how economic activities are governed and executed (Hasan et al., 2020). Digital tools such as cloud computing, online communication platforms, and integrated service systems not only replace traditional investments in IT hardware, travel, and administrative processes but also enable more transparent, accountable, and traceable interactions across business functions (Ong et al., 2023). This transformation allows SMEs to operate with leaner organizational structures while maintaining trust-based connectivity with global partners, where information integrity and transactional clarity become central features of digital exchange (Erlanitasari et al., 2019).

The restructuring effect is not limited to efficiency gains. Digital processes reshape the organization of SME activities across the value chain by embedding mechanisms of real-time verification, documentation, and coordination. In Islamic digital systems, these features support principles of ***amanah*** (trust) and ***hisab*** (accountability), reducing not only coordination costs but also uncertainty and potential opportunistic behavior (Alotaibi et al., 2022; Ascarya, 2017). As a result, transaction cycles are shortened, information asymmetries are minimized, and cross-border interactions become more reliable and verifiable. This enables SMEs to extend their participation beyond local market constraints while maintaining credibility in international networks (Abubakar & Handayani, 2018; Brynjolfsson & Hitt, 2000).

However, the benefits of this transformation are not universally realized. The effectiveness of Islamic digital technologies depends on firms' capacity to integrate technical capabilities and ethical governance into their operations. Cost reduction, therefore, should not be interpreted as an automatic outcome of digital access but as a contingent result of capability development that includes technological proficiency, organizational readiness, and value-based alignment. Firms lacking these complementary conditions may remain constrained, unable to fully leverage the efficiency, transparency, and trust-enhancing potential of digital systems (Nambisan, 2017).

Islamic Digital Finance and SME Inclusion in Global Markets

While digital connectivity reduces operational and transaction costs, financial access remains a critical determinant of SMEs' ability to participate effectively in global markets. In this context, Islamic digital finance, enabled through financial technologies (***fintech***), emerges as an important extension of digitalization, influencing the degree to which SMEs can translate market access into sustained participation in global value chains (GVCs) (Ganne & Lundquist, 2019; Lee & Teo, 2015). From an Islamic economic perspective, access to finance represents not only a commercial necessity but also a mechanism for promoting equitable participation, financial inclusion, and ethically grounded economic exchange (Hasan et al., 2020). Participation in GVCs requires not only

entry into international markets but also the ability to absorb risks, manage cash flows, and meet production and delivery requirements imposed by global buyers (Batunanggar, 2019; Nigmonov et al., 2021).

Traditional financial systems often fail to meet these needs, particularly for SMEs in developing countries, where limited collateral, asymmetric information, and high transaction costs restrict access to credit. Islamic digital finance mechanisms, such as Shariah-compliant peer-to-peer lending, crowdfunding platforms, and e-commerce-based financing (Hasan et al., 2020), partially address these constraints by reducing information asymmetries and lowering entry barriers to financial services (Lanz et al., 2018; Razak et al., 2015). Leveraging digital transaction data and platform-based reputational systems, these instruments enable SMEs to access funding without relying solely on conventional interest-based banking relationships, thereby expanding financial inclusion and strengthening their capacity to engage in cross-border trade (Chuc et al., 2022; Varghese & Viswanathan, 2018).

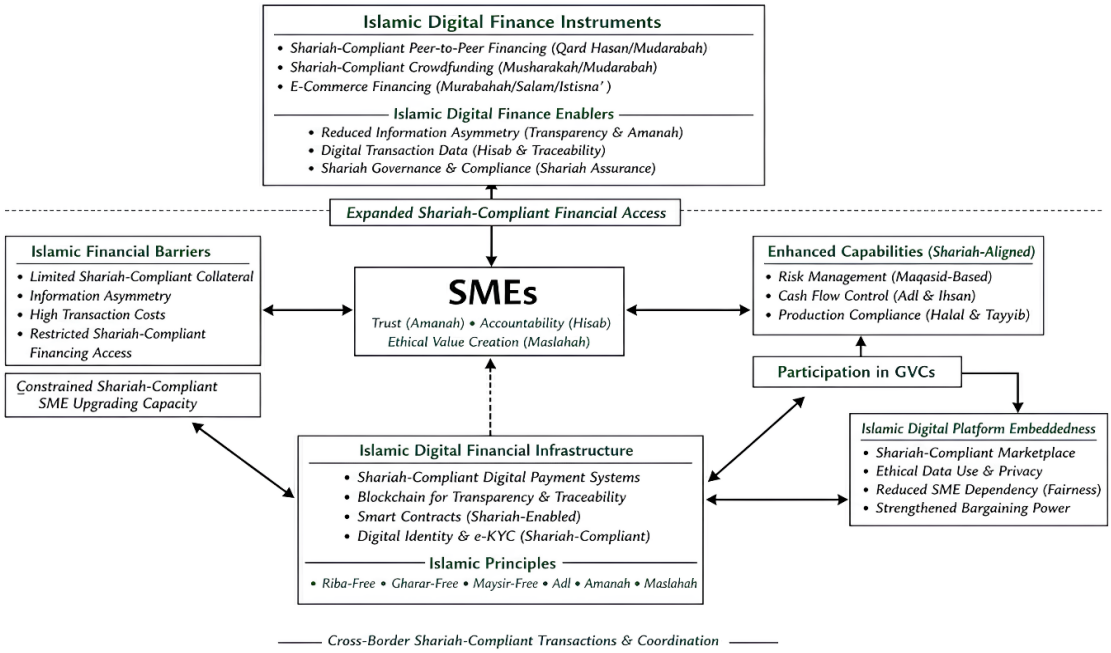
In addition, digital payment systems facilitate international transactions by improving speed, transparency, and traceability (Cenamor et al., 2017), as well as Islamic digital payment systems (Rachman, 2020). This is particularly relevant in GVC contexts, where coordination across multiple actors requires reliable and efficient financial flows. Technologies such as blockchain further extend these capabilities by enabling secure, decentralized transactions and enhancing trust among trading partners, especially in environments characterized by weak institutional frameworks (Handayani et al., 2023; Rejeb et al., 2020; Sidarto & Hamka, 2021).

However, similar to other dimensions of digitalization, the impact of digital finance is uneven (Badea et al., 2021). While fintech solutions expand access to financial services, they also introduce new forms of conditionality. Participation in digital financial ecosystems often depends on SMEs' ability to generate digital transaction histories, comply with platform requirements, and operate within formalized systems. As a result, firms that remain informal or lack digital footprints may continue to be excluded from these emerging financial channels (Laudon & Laudon, 2012; Lestari & Pambekti, 2023).

Moreover, platform-based financing models may reinforce dependence on specific digital ecosystems, in which SMEs must operate within particular marketplaces to access credit facilities (Freedman & Jin, 2017). This creates a form of embeddedness in platform governance structures, which may limit SMEs' autonomy and bargaining power within value chains (Chuc et al., 2022; Demirguc-Kunt et al., 2017). Islamic digital finance should therefore be understood not simply as an enabler of financial inclusion, but as a mechanism that reshapes the conditions under which SMEs access and utilize financial resources (Dewantara et al., 2018; Wijaya et al., 2023). It expands opportunities for participation in global markets, yet simultaneously introduces new layers of dependency and selectivity. This reinforces the broader argument that Islamic digitalization facilitates

SME integration into GVCs in a conditional manner, mediated by both technological access and institutional constraints (Abu-saifan, 2012; Rejeb et al., 2020).

Figure 3 illustrates the conceptual relationship between Islamic digital finance and SME participation in global value chains (GVCs). The framework positions SMEs as the central actors whose upgrading capacity is shaped by the interaction between structural financial barriers and digitally enabled Islamic financial opportunities. On one side, constraints such as limited Shariah-compliant collateral, information asymmetry, high transaction costs, and restricted access to Islamic financing continue to hinder SME integration into global markets. On the other side, Islamic digital finance instruments, including Shariah-compliant peer-to-peer financing, crowdfunding, and e-commerce financing, expand financial inclusion through transparent, traceable, and ethically governed digital systems.



Source: Author's own works

Figure 3. Islamic Digital Finance and SME Inclusion in GVCs: Opportunity and Dependency

The framework further highlights that Islamic digital financial infrastructure, supported by blockchain technology, smart contracts, and Shariah-compliant payment systems, strengthens trust, accountability, and transactional transparency in cross-border coordination. Nevertheless, the model emphasizes that participation in digital financial ecosystems remains contingent on SMEs' technological readiness, digital capabilities, and compliance with platform governance structures. Consequently, Islamic digital finance functions not only as a mechanism for financial inclusion but also as a

governance system that reshapes how SMEs access, use, and sustain their participation in GVCs.

Islamic Digital Participation without Structural Integration: Evidence from Indonesia

The Indonesian case reinforces a central proposition of this study: Islamic digital participation does not necessarily lead to deeper integration into global value chains (GVCs). Significant progress has been achieved in expanding digital access. Internet users reached 221.6 million in 2024, corresponding to a penetration rate of 79.5 percent. At the same time, small and medium enterprises (SMEs) remain a dominant component of the domestic economy, contributing approximately 60.3 percent of GDP and absorbing around 97 percent of total employment, while accounting for only 14.4 percent of national exports (Ministry for Economic Affairs, 2022). This divergence highlights a critical structural imbalance. Broad digital diffusion and a large SME base have not yet translated into strong export participation or sustained upgrading within cross-border production networks (Wijaya et al., 2023). Within an Islamic digital economy perspective, this condition further indicates that digital inclusion alone is insufficient to generate equitable and value-based participation in global markets (Hassan et al., 2021).

Such a pattern indicates that the primary constraint is no longer limited to digital access. A more significant challenge lies in the weak transformation of digital presence into productive and relational integration within GVCs (Ganne & Lundquist, 2019). A substantial number of Indonesian SMEs have entered the digital economy through marketplace onboarding and social commerce (Lestari et al., 2021). However, these activities remain largely concentrated in domestic retail transactions. Engagement in higher-value functions, such as supplier integration, sourcing of imported inputs, compliance with international standards, and long-term contractual relationships with foreign buyers, remains limited (Holmes et al., 2025). Government data indicate that 22.68 million SMEs had been digitally onboarded by 2023, demonstrating considerable scale. Nonetheless, digital onboarding should not be equated with upgrading. Visibility in digital markets does not inherently imply movement into higher-value segments of global production systems (Musafak & Nikmah, 2024). This condition may be more accurately conceptualized as transactional digital inclusion without structural integration into the value chain.

The distinction is analytically significant. Digital platforms expand market access, yet they do not automatically generate the capabilities required for GVC participation. Such capabilities include quality assurance, traceability, production consistency, regulatory compliance, export documentation, and integration with logistics and payment infrastructures (Cenamor et al., 2017; Erlanitasari et al., 2019). Within the context of an Islamic digital economy, these capabilities are also associated with transparency, accountability, and trustworthy commercial practices that support long-term participation

in global markets (Mudrikah, 2025). Evidence further suggests that Indonesia's GVC participation remains below its potential and remains concentrated in upstream segments, while SME upgrading continues to be constrained by limited access to finance, digital capability gaps, and infrastructural limitations (Lestari et al., 2021; Listyarini et al., 2009).

A further constraint emerges in the uneven distribution of digital readiness. Despite high national internet penetration, disparities between urban and rural areas persist (Indana & Pambekti, 2022; Pambekti & Lestari, 2023). Many SMEs operate outside major metropolitan regions and depend on local infrastructure that remains insufficient for business-intensive digital activities. Consequently, aggregate connectivity indicators tend to overstate the effective readiness of smaller firms to engage in activities requiring stable bandwidth, real-time coordination, and data-intensive operations associated with cross-border trade (Erlanitasari et al., 2019; Husin & Haron, 2020). This uneven readiness also limits the broader objective of inclusive Islamic digital development, particularly in ensuring fair opportunities for participation across regions and enterprise scales.

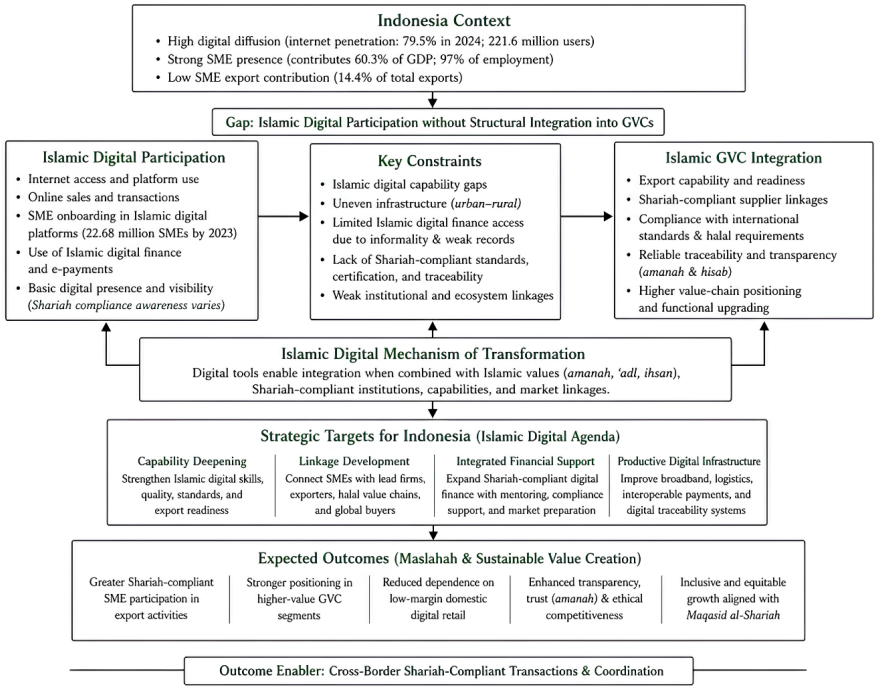
Financial inclusion presents another layer of complexity. The expansion of Islamic digital finance in Indonesia represents an important enabling development (Murshed et al., 2023). Fintech lending has grown significantly, with outstanding peer-to-peer lending expected to reach Rp75.60 trillion in 2024 and to continue expanding at a double-digit rate. Such developments indicate that alternative financing channels are increasingly accessible to underserved segments, including SMEs (Kholidah et al., 2022). However, this expansion does not eliminate structural exclusion. Firms characterized by informality, weak financial records, or limited digital footprints remain less likely to access these financial instruments. Islamic digital finance, therefore, broadens access while simultaneously reinforcing selectivity, favoring firms that already exhibit higher levels of formalization and managerial capability (Zaid et al., 2025).

The Indonesian experience supports a more differentiated interpretation of Islamic digitalization. The issue does not lie in the absence of digital transformation, nor can it be resolved through further expansion of onboarding initiatives alone. Digital diffusion has progressed rapidly, yet upgrading has lagged behind. The central bottleneck concerns the conversion of digital participation into export capability, supplier reliability, compliance with international standards, and deeper value-chain embeddedness (Sumarliah & Al-hakeem, 2023). This observation reinforces the conceptual distinction between digital access and effective digital capability developed in earlier sections. An increasing number of SMEs are connected to digital platforms, payment systems, and online markets; however, a significant proportion lack the complementary organizational and institutional capacities required to translate access into sustained GVC participation (Juwita et al., 2020; Laudon & Laudon, 2012; Sirat et al., 2020).

An effective policy response, therefore, requires a shift in focus from expansion to deepening. Emphasis should be placed on capability development rather than on numerical

onboarding targets. Priority areas include export readiness, digital financial literacy, certification processes, traceability systems, and cross-border logistics coordination (Ibrahim, 2019; Liu et al., 2021; Pambekti & Lestari, 2023). Digital platforms may also be repositioned as linkage mechanisms that connect SMEs with domestic lead firms, exporters, and multinational buyers, rather than functioning solely as retail marketplaces (Nasyiah et al., 2024). Integration between Islamic digital finance and business development services is equally critical, ensuring that access to funding is accompanied by mentoring, compliance support, and market preparation (Waharudin, 2018). Infrastructural development should further prioritize productive connectivity, particularly in non-urban SME clusters, including reliable broadband, interoperable payment systems, and efficient logistics networks (Husin & Haron, 2020; Rohmatin et al., 2021).

Such an approach creates a mutually reinforcing outcome. Economic inclusion can be maintained while enhancing export competitiveness and value-added participation (Chuc et al., 2022). SMEs gain opportunities to transition from low-margin digital retail activities to more stable and higher-value positions within GVCs. Lead firms and digital platforms benefit from a broader pool of capable and reliable suppliers (Abel-Koch, 2016). The Indonesian case, therefore, does not indicate a failure of Islamic digitalization (Lestari & Pambekti, 2023). Instead, it demonstrates that meaningful integration into global value chains depends on aligning digital participation with capability development, institutional coordination, ethical governance, and structured pathways for upgrading.



Source: Author's own works

Figure 4. Islamic Digital Participation and SME Integration into Global Value Chains in Indonesia

Figure 4 illustrates the conceptual relationship between Islamic digital participation and SME integration into global value chains (GVCs) within the Indonesian context. The framework highlights a structural paradox in which high levels of digital diffusion and extensive SME participation in digital platforms have yet to translate into deeper integration into higher-value segments of GVCs. The model positions Islamic digital participation as an initial stage characterized by internet access, online transactions, platform onboarding, and the adoption of Islamic digital finance. However, the framework emphasizes that digital participation alone remains insufficient to generate sustained upgrading. A range of structural constraints, including Islamic digital capability gaps, uneven infrastructure, limited access to Shariah-compliant finance, weak traceability systems, and insufficient institutional linkages, continue to hinder SME transformation. Figure 4 further proposes that meaningful integration into GVCs depends on an Islamic digital transformation mechanism that combines digital technologies with ethical values, Shariah-compliant governance, capability development, and market linkages. Strategic priorities, therefore, shift from numerical digital onboarding towards capability deepening, linkage development, integrated Islamic financial support, and productive digital infrastructure. The framework ultimately demonstrates that Islamic digitalization should not be understood merely as technological adoption, but as a broader ecosystem that supports transparency, accountability, inclusive participation, and sustainable value creation aligned with ***Maqasid al-Shariah***.

Conclusion

Digitalization and Islamic digital finance have expanded opportunities for SMEs to participate in global value chains (GVCs) by lowering transaction costs, broadening market access, and improving cross-border coordination. Nevertheless, the findings indicate that digital participation does not automatically lead to deeper value-chain integration. Persistent constraints, including capability gaps, uneven infrastructure, limited access to Shariah-compliant finance, and weak institutional support, continue to restrict SME upgrading within higher-value segments of GVCs. The Indonesian case particularly demonstrates that rapid digital onboarding may increase market visibility without necessarily strengthening export capability, supplier integration, or long-term participation in global production networks.

The study contributes by integrating perspectives from digitalization, GVC upgrading, and Islamic digital economy literature into a unified conceptual framework. The analysis highlights that Islamic digitalization should be understood not merely as technological adoption, but as a capability-dependent and institutionally embedded process shaped by ethical governance, transparency, and inclusive participation. Such a perspective extends existing discussions on SME internationalization by emphasizing the distinction between

digital access and effective digital capability.

Several policy implications emerge from the findings. Policy agendas should move beyond numerical digital onboarding targets towards capability deepening, including export readiness, traceability systems, digital financial literacy, certification support, and cross-border logistics coordination. Greater integration between Islamic digital finance, business development services, and institutional support mechanisms is also required to strengthen SME upgrading pathways within GVCs.

This study remains limited by its conceptual approach and reliance on secondary evidence. Future research may extend the analysis through empirical investigation across different developing economies, sectors, and Islamic digital ecosystems to examine how capability development, institutional quality, and Shariah-compliant digital infrastructures influence SME upgrading outcomes within global value chains.

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