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Digital Transformation of Gayo Coffee MSMEs through Digital Branding: Challenges and Strategies for Enhancing Global Competitiveness

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Abstract

Micro, small, and medium enterprises (MSMEs) engaged in Gayo Arabica coffee production in Aceh, Indonesia, occupy a globally recognized niche protected by Geographical Indication (GI) status, yet many remain marginalized within the global value chain due to uneven digital adoption, limited digital literacy, and fragmented institutional support. This study aims to critically examine the practice of digital transformation among Gayo coffee MSMEs, with particular attention to digital branding, institutional and public-administration support, and the strategic opportunities and barriers shaping their global competitiveness. A library research design was employed, synthesizing peer-reviewed journal articles, conference proceedings, and institutional reports published between 2020 and 2026 and indexed in Scopus, Google Scholar, and SINTA. Thematic and comparative synthesis techniques were applied to extract, categorize, and cross verify findings across sources. The synthesis reveals that digital branding and financial technology adoption substantially strengthen customer engagement and financial performance among Gayo coffee MSMEs; however, these gains remain constrained by low digital literacy, weak cross-stakeholder collaboration, and inconsistent policy implementation at the sub-national level. Collaborative governance arrangements involving government agencies, cooperatives, and digital platforms emerge as a decisive enabler of sustained digital transformation. The findings offer a transferable model for other Geographical Indication based agricultural commodities seeking to convert cultural and ecological distinctiveness into digitally mediated global competitiveness, while also informing public administration strategies aimed at closing the digital divide among smallholder based MSMEs.

Keywords: Digital Transformation, Digital Branding, Gayo Coffee MSMES, Public Administration, Global Competitiveness

Introduction

The accelerating diffusion of digital technologies has reshaped the operating environment of micro, small, and medium enterprises (MSMEs) worldwide, transforming digital adoption from an optional efficiency tool into a structural precondition for market survival and global competitiveness (Kurniawati et al., 2021). In Indonesia, the government has positioned MSME digitalization as a cornerstone of national economic policy, given that MSMEs contribute the majority of employment and gross domestic product yet continue to lag behind large enterprises

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in technology adoption, financial inclusion, and export readiness (Anatan & Nur, 2023; Purnomo et al., 2024). Empirical evidence further indicates that digital technology adoption significantly enhances MSME revenue growth, market expansion, and competitive resilience, particularly through e-commerce integration and digital marketing strategies (Yusuf et al., 2023). Nevertheless, the pace of digital transformation remains uneven across regions, constrained by persistent gaps in digital literacy, infrastructure readiness, and institutional support, especially in rural and peripheral areas (Bahtiar et al., 2025).

Within this national landscape, Aceh Province, and specifically the Gayo Highlands of Central Aceh and Bener Meriah, represents a strategically important case: Gayo Arabica coffee has secured international recognition through Geographical Indication (GI) certification and consistent export demand from specialty markets in the United States, Europe, and Japan (Damayanti & Setiadi, 2019; Ashardiono & Trihartono, 2024), yet the smallholder-based MSMEs that cultivate, process, and market this commodity remain constrained by fragmented digital infrastructure and uneven institutional support (Aziz et al., 2023; Laksono et al., 2021). Such structural limitations, including inadequate internet connectivity, limited access to financing, and weak extension and mentoring capacity within farmer organizations, continue to hinder the translation of GI status into equitable digital and economic value for smallholder producers (Suryahartati et al., 2023).

A growing body of literature has examined the determinants and outcomes of MSME digital transformation in Indonesia, generally converging on the view that digital orientation, digital capability, and institutional facilitation jointly determine the pace and depth of digitalization (Rupeika-Apoga et al., 2022; Alyani et al., 2023). Parallel studies specific to the Gayo coffee sector demonstrate that digital branding, financial technology, and customer engagement significantly enhance the financial performance of coffee MSMEs (Djohan et al., 2025), while pricing and branding strategies within digital marketplace ecosystems remain inconsistently applied across producers (Ningsih et al., 2026). Complementary research on collaborative governance highlights those public values, multi-stakeholder decision-making, and administrative culture as decisive, yet underexplored, determinants of sustainable MSME digitalization (Harsono & Rinanda, 2025; Frisca Febri Yanti et al., 2026).

Despite this expanding body of work, a critical knowledge gap persists. Existing studies tend to isolate either the marketing dimension of digital branding (Bartoli et al., 2022; Husada et al., 2026) or the governance dimension of public administration and institutional support (Aziz et al., 2023; Purnomo et al., 2024; Suryahartati et al., 2023), without integrating the two within a single analytical framework that also accounts for the sector-specific characteristics of a Geographical-Indication-protected commodity such as Gayo coffee. On one hand, marketing-oriented scholarship has examined how digital platforms and content strategies can strengthen brand awareness and consumer engagement for specialty and GI-certified coffee products (Bartoli et al., 2022), while recent participatory research underscores those smallholder farmers remain largely excluded from downstream branding and value-creation processes, leaving their branding literacy and narrative ownership underdeveloped (Husada et al., 2026). On the other hand, governance-oriented scholarship has focused primarily on the institutional and regulatory architecture surrounding GI implementation, including certification compliance, extension support, and multi-stakeholder coordination, yet largely without reference to the digital transformation strategies through which such governance could be operationalized at the MSME level (Aziz et al., 2023; Suryahartati et al., 2023). Consequently, no existing study has systematically examined how digital branding and public-sector digital governance interact to shape the digital transformation trajectory of GI-protected, smallholder-based commodities, leaving both scholarly and policy audiences without an integrated understanding of how marketing capability and institutional facilitation jointly determine MSME digitalization outcomes in this sector. Consequently, there remains limited synthesis of how digital branding functions as an operational mechanism through which institutional and administrative support translates into measurable gains in global competitiveness for smallholder based MSMEs.

This study therefore aims to critically synthesize existing scholarship to examine: (a) the practice of digital transformation among Gayo coffee MSMEs; (b) the implementation of digital branding as a strategic mechanism; (c) the institutional, governance, and public-policy support structures that facilitate or constrain this process; and (d) the barriers and opportunities associated with enhancing global competitiveness. The guiding research questions are: (1) How is digital transformation currently practiced among Gayo coffee MSMEs? (2) To what extent does digital branding mediate the relationship between institutional support and competitiveness outcomes? (3) What strategic recommendations can be synthesized from prior research to strengthen public-administration support for digital transformation in this sector?

Methodologically, this study adopts a Library Research design, synthesizing peer-reviewed literature published between 2020 and 2026 through systematic search, screening, thematic coding, and comparative synthesis, informed by the reporting logic of PRISMA-based reviews (Moher et al., 2009). This approach is appropriate given the study's aim of consolidating dispersed empirical findings into a coherent analytical narrative rather than generating new primary data.

The significance of this study lies in its integration of public administration, digital branding, and agribusiness competitiveness literature into a single explanatory framework applicable to a globally recognized but institutionally underserved commodity sector. For key operational terms, digital transformation is understood as the systemic reconfiguration of MSME processes, capabilities, and value propositions through digital technologies; digital branding refers to the strategic use of digital platforms and content to construct, communicate, and sustain brand identity and consumer trust; and global competitiveness denotes an MSME's capacity to sustain market position and value capture within international value chains.

The remainder of this manuscript is organized as follows. The Theoretical Framework section presents the study's integration of Dynamic Capabilities Theory with the Resource-Based View, Digital Branding Theory, and collaborative governance perspectives. The Methodology section details the library research design and analytical procedure. The Finding section synthesizes evidence across four thematic clusters. The Discussion section situates these findings within national and international scholarship, followed by the Conclusion, which summarizes contributions, limitations, and directions for future research.

Theoretical Framework

This study anchors its analysis in Dynamic Capabilities Theory, which explains how firms sense opportunities, seize them through resource reconfiguration, and transform organizational structures to sustain competitive advantage under conditions of technological and market change (Ellström et al., 2022; Matarazzo et al., 2021). Winch explains how firms sense opportunities, seize them through resource reconfiguration, and transform organizational structures to sustain competitive advantage under conditions of technological and market change. Recent empirical applications confirm the theory's continued relevance for digitally transforming small and medium enterprises, demonstrating how sensing, seizing, and reconfiguring routines enable firms of varying resource endowments to translate digital initiatives into performance outcomes (Ellström et al., 2022). Dynamic Capabilities Theory is selected as the primary lens because it directly addresses the central empirical puzzle of this study: how resource constrained smallholder-based MSMEs can reconfigure limited assets into digitally mediated competitive advantage. The theory is complemented by the Resource-Based View (RBV), which holds that sustained competitive advantage arises from valuable, rare, inimitable, and non-substitutable resources (Barney, 1991; Wernerfelt, 1984); in the Gayo coffee context, the GI-protected origin, agro-ecological distinctiveness, and cultural heritage of the product constitute such resources, which digital branding converts into visible, communicable market value (Bartoli et al., 2022; Husada et al., 2026).

Supporting theoretical perspectives further enriches the framework. Digital Branding Theory explains how digital platforms enable MSMEs to construct brand identity, positioning, and consumer trust at low marginal cost (Ritz et al., 2019; Bartoloni & Ancillai, 2024), a dynamic corroborated by recent evidence that community-based digital branding can substantially improve smallholder coffee farmers' branding literacy and narrative ownership prior to full market activation (Husada et al., 2026). The Technology Acceptance Model (TAM), developed by Davis (1989), accounts for individual-level determinants of digital-tool adoption among MSME actors, particularly perceived usefulness and perceived ease of use; subsequent reviews and empirical studies confirm that these two constructs remain the most consistent predictors of digital-tool adoption among small and medium enterprises, including in the Indonesian context (Nurqamarani et al., 2021). Innovation Diffusion Theory (Rogers, 2003) explains the differential rates at which digital marketing and fintech innovations spread across heterogeneous MSME populations, distinguishing early adopters from late majority actors; recent studies integrating the Technology-Organization-Environment (TOE) framework with Innovation Diffusion Theory further show that relative advantage, compatibility, and observability significantly shape Indonesian SMEs' digital technology and fintech adoption intentions (Bailusy et al., 2025; Faiz et al., 2024). Finally, collaborative governance theory (Ansell & Gash, 2008; Emerson et al., 2012) provides the administrative lens through which institutional facilitation, multi-stakeholder coordination, and public value creation are analyzed as enabling conditions for MSME digital transformation, a proposition empirically supported by recent socio-legal research demonstrating that facilitative leadership and cross-sector institutional design are decisive in overcoming infrastructure and digital-literacy barriers to MSME digitalization (Wijatmoko et al., 2025).

These constructs are operationalized as follows. Sensing corresponds to MSME and government awareness of digital-market opportunities, including platform-based marketplaces and export channels. Seizing corresponds to the adoption of digital branding, fintech, and e-commerce tools that convert GI-protected resource endowments into marketable digital assets. Transforming corresponds to the institutional reconfiguration achieved through collaborative governance arrangements linking cooperatives, local government, and digital-platform providers. The dependent construct, global competitiveness, is operationalized through indicators reported in the reviewed literature, including export value, brand equity, customer engagement, and financial performance. This integrated framework, visualized in Figure 1, guides the thematic synthesis presented in the Finding section.

Methods

Research Design

This study employs Library Research design, operationalized as a qualitative systematic literature synthesis. This design is appropriate because the research aim is to consolidate and critically compare dispersed empirical findings on digital transformation, digital branding, and public administration support relevant to Gayo coffee MSMEs, rather than to collect new primary field data. Similar library-research and systematic-review designs have been widely and successfully applied to examine MSME digital transformation and digital business ecosystems in the Indonesian context, confirming the methodological suitability of this approach for consolidating fragmented, multidisciplinary evidence on MSME digitalization (Malik & Juliardi, 2023).

The design follows the reporting logic associated with the PRISMA 2020 statement, which provides an updated and internationally recognized guideline for enhancing transparency in the identification, screening, eligibility assessment, and synthesis of relevant studies (Page et al., 2021). This study adapts the PRISMA 2020 reporting logic for a qualitative, thematic-synthesis purpose rather than a quantitative meta-analysis, following established guidance for the systematic review of qualitative evidence, in which coding, descriptive-theme development, and analytical-theme generation replace statistical pooling as the primary synthesis mechanism (Aromataris et al., 2024).

Data Sources

Data sources comprise peer-reviewed journal articles, conference proceedings, and institutional or governmental reports published between 2020 and 2026, retrieved from Scopus, Google Scholar, SINTA-indexed Indonesian journals, ScienceDirect, MDPI, Springer, and Taylor & Francis platforms, together with official industry reports such as those of the Association of Indonesian Coffee Exporters and Industries (AEKI-AICE, 2026). Sources were selected for their direct relevance to Gayo coffee, Indonesian MSME digital transformation, digital branding, public administration and governance of MSME digitalization, and the theoretical constructs underpinning the study.

Instrument and Materials

A structured literature matrix was used as the primary analytical instrument, recording for each source the author(s), year, methodology, theoretical grounding, geographic and sectoral scope, and key findings. A thematic coding sheet was subsequently developed to classify findings into four analytical clusters corresponding to the research questions: digital transformation practice, digital branding implementation, institutional and governance support, and barriers/opportunities for global competitiveness.

Data Collection and Procedure

The search strategy combined Indonesian and English keyword strings, including "Gayo coffee" AND "digital branding"; "MSME" AND "digital transformation" AND "Indonesia"; "collaborative governance" AND "MSME digitalization"; and "dynamic capabilities" AND "SME" AND "digital transformation." Inclusion criteria comprised:

A. Publication between 2020 and 2026, with select foundational theoretical works cited regardless of publication date.
B. Peer-reviewed or institutionally verifiable sources.
C. Direct relevance to MSME digital transformation, digital branding, or Gayo coffee.

Exclusion criteria comprised non verifiable sources, opinion pieces without empirical or theoretical grounding, and duplicate reporting of the same dataset. Screening proceeded in three stages: title and abstract screening, full-text eligibility assessment, and final inclusion, consistent with standard systematic-review screening logic (Moher et al., 2009).

Data Analysis

Included sources were analyzed using thematic analysis combined with comparative cross-case synthesis. Data extraction focused on identifying recurring categories, points of convergence and divergence across studies, and emergent research gaps. Extracted themes were iteratively cross checked against the theoretical framework to ensure that empirical patterns were interpreted through, and where relevant used to refine, the Dynamic Capabilities and collaborative governance constructs described above.

Trustworthiness

Trustworthiness was addressed through source triangulation across multiple databases and publication types, verification of journal indexing status (Scopus/SINTA), and explicit documentation of the search and screening procedure to enable auditability. Because this study relies exclusively on secondary, publicly available literature and does not involve human participants, no primary data collection ethics approval was required; nonetheless, all sources are cited transparently and no data, statistics, or findings have been fabricated or extrapolated beyond what the reviewed literature reports.

Findings

The synthesis of reviewed literature yields four interrelated thematic clusters, presented sequentially below and visually integrated in the conceptual framework shown in Figure 1.

Theme 1: Digital Transformation and Digital Branding Practice among Gayo Coffee MSMEs

Empirical evidence indicates that digital branding and financial technology adoption are directly associated with improved financial performance among Gayo Arabica coffee MSMEs, with customer engagement functioning as a significant mediating mechanism (Djohan et al., 2025). Complementary findings show that pricing and branding strategies within digital marketplace ecosystems remain applied inconsistently across producers, limiting the sector-wide realization of sustainability-oriented branding value (Ningsih et al., 2026). These findings collectively suggest that digital branding functions as a seizing-stage capability in Dynamic Capabilities terms, converting the GI-protected resource base into digitally communicable brand equity, though this conversion process is currently uneven across the MSME population.

Theme 2: Institutional, Governance, and Public-Administration Support

Collaborative governance arrangements integrating public values, multi-stakeholder decision-making, and administrative culture significantly strengthen MSME digitalization outcomes (Harsono & Rinanda, 2025). Similarly, co-creation between local government and MSME actors has been shown to accelerate digital ecosystem development in the creative economy sector, contingent on mental readiness, coherent policy systems, and cross-sector collaboration networks (Frisca Febri Yanti et al., 2026). These findings align with the foundational collaborative-governance literature, which conceptualizes public administration success as contingent on integrative, multi-actor institutional design rather than unilateral government provision (Ansell & Gash, 2008; Emerson et al., 2012). Government policy explicitly aimed at strengthening the digital ecosystem for MSME global competitiveness has been documented (Haqqi, 2023), yet implementation gaps persist, including limited transparency and weak internal oversight in some MSME governance structures (Journal of Public Administration, cited in the literature synthesis).

Theme 3: Barriers to Digital Transformation

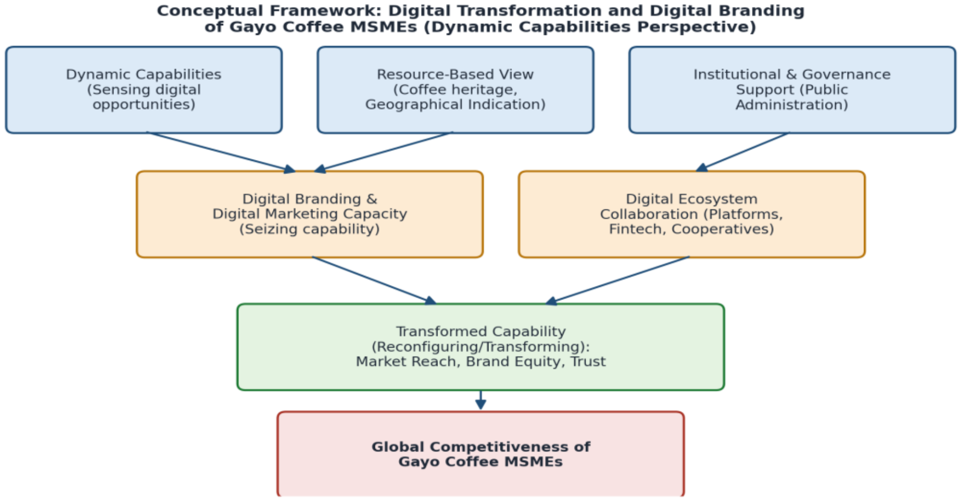
A consistent finding across the reviewed literature is that low digital literacy constitutes the most persistent barrier to MSME digital transformation in Indonesia, disproportionately affecting micro-entrepreneurs and older business actors (Wardana et al., 2023; Nasionalita & Nugroho, 2020). Systematic reviews of Indonesian SME digital transformation further identify limited financial resources, inadequate technical skills, resistance to change, and uneven access to affordable digital infrastructure as recurring constraints (Alyani et al., 2023; Rupeika-Apoga et al., 2022). These barriers correspond, in Dynamic Capabilities terms, to weaknesses in the sensing and seizing stages, where limited absorptive capacity prevents MSMEs from perceiving and acting upon digital-market opportunities despite their availability.

Broader Indonesian MSME literature reinforces these sector-specific findings. Studies of e-commerce and digital-marketing adoption across other Indonesian regions consistently report that platform-based selling and locally grounded content strategies raise visibility, transaction speed, and market reach, though digital competence gaps continue to limit the depth of adoption (Ariyanti & Setiawan, 2021; Pertiwi & Kartika, 2022; Putra & Fitriani, 2020; Rahmawati & Yunanto, 2021; Sarita et al., 2025). International comparative evidence corroborates that e-commerce adoption and strategic social-media use are positively associated with SME marketing performance and financial outcomes (Salah & Ayyash, 2024; Nasution et al., 2023; Cao & Weerawardena, 2023), while sector-level analyses caution that digital-literacy and adoption barriers remain a binding constraint even where platform access is available (Pratama et al., 2023). These parallel findings situate the Gayo coffee case within a wider, consistent pattern across Indonesian MSMEs, strengthening the external validity of the themes identified in this synthesis.

Theme 4: Opportunities for Enhancing Global Competitiveness

Gayo coffee's Geographical Indication status, formalized since 2009, has been shown to increase value added along the trade chain by raising the selling price captured by value-chain actors, even though the GI mechanism itself has not restructured the underlying value chain (Damayanti & Setiadi, 2019). Industry data further indicate that Indonesian coffee export values continue to rise despite production pressures, with Gayo coffee retaining recognition among specialty markets in the United States, Japan, Germany, Italy, and Malaysia (AEKI-AICE, 2026). These conditions create a structural opportunity: digital branding strategies that communicate GI-protected provenance and quality narratives to international consumers can convert existing comparative advantage into digitally mediated competitive advantage, provided institutional support closes the literacy and infrastructure gaps identified in Theme 3 (Setiawan, 2023; Widodo et al., 2022).

Figure 1: Conceptual framework linking Dynamic Capabilities, Resource-Based View, and collaborative governance to the global competitiveness of Gayo coffee MSMEs.



Source: synthesized by the author from Teece (2007), Barney (1991), Ansell and Gash (2008), and the reviewed empirical literature.

Discussion

The discussion that follows situates the synthesized evidence on Gayo coffee MSMEs within the broader literature on MSME digital transformation, digital branding, and collaborative governance, in order to clarify how the present synthesis both confirms and extends prior scholarship. The synthesized findings corroborate and extend the broader Indonesian and international MSME digital transformation literature, which consistently identifies digital orientation and institutional facilitation as joint determinants of digitalization outcomes (Rupeika-Apoga et al., 2022; Lutfi et al., 2020). This corroboration is further reinforced by recent evidence indicating that digital orientation and digital capability exert a positive, mediated effect on SMEs' digital transformation and subsequent business performance (Rupeika-Apoga et al., 2022), and by studies applying integrated Technology Organization-Environment and diffusion-based frameworks, which confirm that organizational readiness and external institutional support jointly, rather than independently, determine the pace and depth of digital technology adoption among resource-constrained SMEs in emerging economies (Faiz et al., 2024).

With respect to digital branding, the present findings align with recent participatory research showing that smallholder-based GI commodities require deliberate, community-level branding capacity building to convert origin-based distinctiveness into communicable market value, rather than assuming that certification alone generates consumer recognition (Husada et al., 2026; Bartoli et al., 2022). Concerning governance, the synthesis is consistent with emerging Indonesian evidence that facilitative leadership and cross-sector institutional design are decisive enabling conditions for MSME digital transformation, extending collaborative governance theory from general public-administration contexts into the specific empirical setting of MSME digitalization policy (Wijatmoko et al., 2025). Taking together, these corroborating strands suggest that the present study's integration of digital branding and governance perspectives does not merely juxtapose two separate literatures but empirically substantiates their interdependence within a single, sector-specific analytical account of Gayo coffee MSMEs.

These findings directly address the study's guiding research questions. In relation to RQ1 (how digital transformation is practiced among Gayo coffee MSMEs), the synthesis shows that practice remains uneven, driven more by ad hoc digital branding efforts than by systematic organizational strategy. In relation to RQ2 (the mediating role of digital branding between institutional support and competitiveness), the evidence indicates that digital branding functions as an operational bridge that converts institutional and public-administration support into measurable gains in customer engagement and financial performance. In relation to RQ3 (strategic recommendations for strengthening public administration support), the synthesis points toward collaborative-governance mechanisms as the most actionable policy lever.

Restating the study's main findings, the synthesis demonstrates that (a) digital branding and financial-technology adoption significantly strengthen customer engagement and financial performance among Gayo coffee MSMEs, (b) these gains remain constrained by low digital literacy, weak cross-stakeholder collaboration, and inconsistent sub-national policy implementation, and (c) collaborative governance arrangements involving government, cooperatives, and digital platforms function as a decisive enabler of sustained digital transformation.

Among these results, the most notable finding is that institutional and governance factors, rather than individual-level technology acceptance alone, exert a comparatively larger influence on transformation outcomes, given the cooperative and communal structure of smallholder coffee production. This pattern is consistent with recent evidence from farmers' cooperatives elsewhere, which shows that the joint interplay of ordinary and dynamic capabilities, rather than individual technology acceptance, more strongly explains variation in cooperative operational performance, and that organizational and institutional-environmental factors jointly, rather than independently, determine the depth of digital transformation achieved by cooperative-based agricultural producers (Wan & Wang, 2026; and a TOE-framework analysis of farmers' cooperatives more broadly).

Consistent with international evidence on dynamic capabilities in SME digital transformation, such as findings from Made-in-Italy SMEs (Matarazzo et al., 2021), this study confirms that the reconfiguration of firm-level capabilities, rather than technology access alone, mediates the relationship between digital adoption and value creation. This confirmation is further reinforced by recent research on agri-food SMEs, which demonstrates that dynamic and data-driven capabilities, rather than mere digital tool access, shape the data-driven culture that ultimately enables successful digital transformation in food-sector enterprises (dynamic capabilities and data-driven culture research on Italian agri-food SMEs). This alignment supports the applicability of Dynamic Capabilities Theory beyond the manufacturing contexts in which it was originally developed, extending it credibly to smallholder-based agribusiness MSMEs, and further corroborates emerging scholarship indicating that cooperative and communal governance structures amplify, rather than diminish, the relevance of dynamic capabilities in agrifood digital transformation.

No substantially unexpected or anomalous outcomes emerged from the synthesis; the pattern of results is broadly consistent with theoretical expectations derived from Dynamic Capabilities Theory and collaborative-governance perspectives. The only notable divergence in emphasis, discussed further below, concerns the relative weight given to institutional versus individual-level determinants of adoption.

The findings align closely with prior studies on the Gayo coffee sector demonstrating that digital branding, financial technology, and customer engagement significantly enhance MSME financial performance (Djohan et al., 2025), and with collaborative-governance research emphasizing public values and multi-stakeholder decision-making as determinants of sustainable MSME digitalization (Harsono & Rinanda, 2025; Frisca Febri Yanti et al., 2026; Emerson et al., 2012; Darusalam et al., 2023).

At the same time, the findings diverge in emphasis from studies that foreground individual-level technology acceptance as the primary explanatory mechanism (Gouroubera et al., 2026). Rather than contradicting this literature outright, the Gayo coffee case suggests that its explanatory power is comparatively weaker in cooperative, communally organized production settings, where institutional and governance factors carry greater weight than individual perceived usefulness. This pattern is corroborated by recent meta-analytic evidence synthesizing 33 Technology Acceptance Model studies across 17 countries, which found that perceived ease of use exerts a weak and, in several models, non-significant effect on behavioral intention among farmers, and explicitly called for future research to model structural and institutional factors, such as digital infrastructure quality and the strength of extension and support systems, to better explain adoption outcomes (Gouroubera et al., 2026). Complementary evidence from farmer cooperatives further shows that organizational competency and government support shape digital technology adoption indirectly, by conditioning members' perceived ease of use, rather than through perceived usefulness acting as an independent, individual-level driver (Li, 2025).

This divergence can be explained theoretically: because Gayo coffee production is organized around cooperatives and shared Geographical Indication governance rather than isolated individual firms, adoption decisions are less a function of individual attitudes and more a function of collective institutional arrangements, consistent with the logic of collaborative governance and with Dynamic Capabilities Theory's emphasis on organizational-level capability reconfiguration. From a theoretical standpoint, this study contributes an integration of Dynamic Capabilities Theory, the Resource-Based View, and collaborative-governance theory into a single explanatory model tailored to Geographical-Indication-protected agricultural MSMEs, addressing the fragmentation identified in the Introduction.

These interpretations should nonetheless be read with caution. Because this study relies on secondary literature synthesis rather than primary fieldwork in the Gayo Highlands, causal claims cannot be firmly established, and the heterogeneity of methodologies across reviewed studies (quantitative SEM-based surveys, qualitative case studies, and systematic reviews) introduces some comparability limitations. This concern is consistent with methodological scholarship on evidence synthesis, which identifies inconsistent integration of quantitative and qualitative components, and a lack of transparent data-transformation procedures, as recurring pitfalls that can compromise the comparability and interpretive validity of mixed-methods and multi-design literature syntheses (Lizarondo et al., 2022). Readers should therefore treat the proposed explanatory model as an analytically grounded synthesis rather than an empirically validated causal claim.

From a policy standpoint, the findings imply that public-administration interventions should prioritize digital literacy training, platform-based seller education, and formalized collaborative-governance mechanisms linking cooperatives, local government, and fintech or e-commerce platform providers (Ausat & Peirisal, 2021; Fitriasari, 2020). Practically, MSME actors and cooperative managers can use the identified digital-branding mechanisms, storytelling around GI-protected provenance, consistent visual identity, and platform-based customer engagement, as concrete strategic levers. The novelty of this study lies in its explicit linkage of public-administration and governance scholarship with digital-branding and agribusiness-competitiveness literatures, a combination rarely addressed jointly in prior single-discipline studies. Future research combining primary surveys or ethnographic data from Gayo coffee MSMEs with the integrated theoretical framework proposed here would substantially strengthen the empirical foundation of these conclusions.

Conclusion

This study aimed to critically synthesize existing literature on digital transformation, digital branding, and public-administration support relevant to Gayo coffee MSMEs in Aceh, Indonesia, in order to identify pathways toward enhanced global competitiveness. The synthesis finds that digital branding and fintech adoption significantly strengthen financial performance and customer engagement, that collaborative governance arrangements are a decisive enabler of sustainable digitalization, and that low digital literacy and fragmented institutional support remain the principal barriers constraining sector-wide transformation.

Theoretically, the study contributes an integrated framework combining Dynamic Capabilities Theory, the Resource Based View, and collaborative governance theory, extending their combined applicability to Geographical-Indication-protected smallholder agribusiness, an empirical setting rarely examined jointly through these three lenses. The significance of this contribution lies in demonstrating that digital branding functions as an operational mechanism linking institutional and public-administration support to measurable competitiveness outcomes, thereby offering public administrators, cooperative managers, and MSME actors a synthesized evidence base for prioritizing digital literacy programs, platform based training, and formal multi-stakeholder collaboration mechanisms.

This study is limited by its reliance on secondary literature rather than primary fieldwork, and by the geographic and sectoral specificity of its object of analysis, which may constrain direct generalization to other commodities or regions without contextual adaptation. The heterogeneity of methodologies across the reviewed studies further limits the precision with which findings can be compared or aggregated. Notwithstanding these limitations, the synthesized evidence remains sufficiently consistent across independently conducted studies to support the study's central contribution: that collaborative governance, rather than digital branding alone, constitutes the decisive enabler of sustained digital transformation among Gayo coffee MSMEs, and that this conclusion holds analytical value even in the absence of primary fieldwork.

Future research is recommended to conduct primary quantitative or mixed methods studies directly surveying Gayo coffee MSME actors to empirically test the conceptual framework proposed in this study, and to extend comparative analysis to other Geographical Indication protected Indonesian commodities to assess the transferability of the proposed model. Policy wise, the findings recommend that subnational governments in Aceh formalize collaborative-governance structures linking cooperatives, digital platform providers, and financial technology institutions, while embedding digital-branding capacity-building within existing GI management institutions. Practically, cooperative managers and MSME actors are encouraged to adopt consistent digital-branding practices, particularly storytelling around GI-protected provenance, as an immediate and low-cost strategic lever.

Ethics approval

Not required. This study is a library research (literature synthesis) that did not involve human participants, primary data collection, or identifiable personal information; it therefore did not require ethics committee approval.

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Competing interests

The author declares that there are no conflicts of interest.

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Underlying data

Derived data supporting the findings of this study (the literature matrix and thematic coding sheet) are available from the corresponding author on request.

Declaration of artificial intelligence use

This study used artificial intelligence (GPT, Grammarly) tools in the following capacities: Language refinement; improving grammar, sentence structure, and readability of the manuscript

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