

The Impact Of Digital Transformation On The Competitive Dynamics Of Traditional Industries: A Study In Central Ethiopia Region

Dereje beyene lodamo^{1*}; Abebe Shawel Arsedi¹

^{1*} PhD, Gelila International Seminary College, Addis Ababa, Ethiopia

¹ PhD, Assistant Professor of Strategic Management at Adama Science and Technology University

Correspondence: derejebeyene23@gmail.com/derejebe@hu.edu.et

Abstract

Digital transformation has emerged as a pivotal force reshaping traditional industries and redefining global competitive dynamics. In Ethiopia, where traditional industries underpin the economy, adopting digital technologies presents unprecedented opportunities alongside significant challenges. This study examines the impact of digital transformation on the competitive dynamics of traditional industries in Central Ethiopia, focusing on its effects on business models, organizational efficiency, and economic performance. Using an explanatory research design with a mixed-methods approach, quantitative data were collected via structured surveys from a stratified random sample of 267 employees (drawn from a total population of 800 employees across 150 enterprises in four sectors: food and beverage, wood and metal, merchandise/retail, and textile/garment), followed by qualitative interviews with 15 stakeholders. Data were analyzed through descriptive statistics, multiple linear regression (quantitative phase), and thematic analysis (qualitative phase). Findings indicate that technology adoption ($\beta=0.106$, $p<0.01$), innovation capabilities ($\beta=0.314$, $p<0.01$), digital marketing strategies ($\beta=0.219$, $p<0.01$), and workforce digital skills ($\beta=0.373$, $p<0.01$) significantly enhance competitive positioning. The model explains 90.2% of the variance in competitive dynamics ($R^2=0.902$). However, persistent challenges, including inadequate infrastructure, skill gaps, and regulatory barriers, impede the full potential of digital transformation. The study advances theoretical frameworks by elucidating the interplay between digital technologies and traditional business models in emerging economies. Key recommendations include prioritized investment in digital infrastructure, public-private partnerships to improve access to affordable technologies, sector-specific digital literacy programs, policy reforms to modernize regulatory frameworks, and establishment of innovation hubs to foster adaptive, context-sensitive digital strategies. This research underscores the need for localized strategies in Ethiopia's digital transition and provides a foundational roadmap for leveraging technology to drive innovation, efficiency, and resilience in traditional industries.

Keywords: Digital Transformation, Traditional Industries, Competitive Dynamics, Business Models, Central Ethiopia, Innovation, Organizational Efficiency

1. Introduction

The digital age has fundamentally transformed the global business landscape, with digital transformation emerging as a critical driver of economic activities and organizational competitiveness (Vial, 2021; Verhoef et al., 2021). Digital transformation, grounded in technological determinism and socio-technical systems theory, is fundamentally altering how organizations operate, create value, and compete in increasingly dynamic markets (Orlikowski, 1992; Bostrom & Heinen, 1977). These theoretical foundations emphasize that technological innovations are not neutral tools but actively shape and are shaped by organizational structures, strategies, and social dynamics.

The transformative effects of digital transformation on industrial development have been recognized globally, with many leading manufacturing nations implementing national strategies to promote digitalization (Agustian et al., 2023). The 2016 World Economic Forum in Germany, themed "Mastering the Fourth Industrial Revolution," underscored the significance of digital transformation in reshaping industries. Across the globe, research on digital transformation has evolved, addressing its roles, motivations, and modes. However, there remains a lack of consensus on its definition, and its impact on enterprise performance in developing economies remains underexplored.

Digital transformation profoundly influences organizations and society (Xia et al., 2022), with applications spanning diverse sectors including healthcare (Wu et al., 2023), banking (World Economic Forum, 2018), industry (Wessel et al., 2021), and government (Westerman et al., 2012). Early studies centered on defining the concept, motivations, modes, and stages of digital transformation, aiming to provide comprehensive insights into emerging phenomena (Schallmo et al., 2017). As research advanced, a shift towards strategic frameworks for digital transformation emerged, emphasizing its holistic integration into organizational processes (Wang et al., 2023).

In Ethiopia, digital transformation is increasingly being discussed in national policy frameworks, such as the Digital Ethiopia 2025 strategy, which envisions digitalization as a driver of economic inclusion and structural transformation (Ministry of Innovation and Technology, 2020). However, the practical implementation remains fragmented. Despite rising mobile and internet penetration, the business sector, particularly traditional industries, lags in technological adaptation due to systemic infrastructural, regulatory, and human capital constraints. This context makes Ethiopia a compelling case for exploring the nuanced role of digital transformation in low-income, low-connectivity environments.

The rising adoption of digital platforms reflects businesses' efforts to leverage the opportunities of the digital marketplace (Wall, 2021). However, the extent of digitalization's influence on business performance, including growth and administrative efficiency—remains an area demanding scholarly attention (Vučeković & Gavrilović, 2020). Key challenges, such as delivery logistics, payment mechanisms, after-sales services, and consumer behavior dynamics, hinder the development of effective digital business models in the Ethiopian market (Schlaepfer et al., 2017; Shanti et al., 2023).

For Ethiopia, theories such as dynamic capability theory (Teece et al., 1997) are particularly relevant, as they highlight how firms must reconfigure internal capabilities in response to rapidly changing environments. In traditional sectors, such as textile, retail, and agro-processing—digital transformation could enhance value chain coordination, operational agility, and customer engagement, yet empirical research in this area is scarce.

1.1 Problem Statement

The theoretical basis of digital transformation is grounded in the resource-based view (RBV), dynamic capabilities theory, and business model innovation theory. These frameworks assert that firms can attain sustained competitive advantage by transforming internal competencies and reconfiguring value creation processes in response to environmental change (Teece, Pisano, & Shuen, 1997). In digital contexts, such transformation involves adopting new technologies, innovating customer engagement models, and leveraging data for strategic advantage. However, in many developing countries, including Ethiopia, the ability to enact such transformation remains constrained by institutional and infrastructural limitations.

In recent years, digital transformation has emerged as a pivotal phenomenon in the business world, driven by rapid advancements in information and communication technologies. These advancements have fundamentally reshaped organizational operations, customer engagement, and competitive strategies, positioning digital transformation as a critical necessity rather than a mere option (Zhu & Ahamat, 2023). This study seeks to explore the profound effects of digital transformation on organizational business models and competitive advantages.

Within Ethiopia, however, digital transformation remains a fragmented and inconsistent process. Traditional industries such as retail, garment, and food processing are experiencing competitive pressures from both local and foreign digital entrants, yet most remain ill-prepared due to outdated business models, low digital literacy, and limited strategic vision. Moreover, these sectors are plagued by chronic issues such as inefficient supply chains, poor customer engagement, and an absence of data-driven decision-making. Such conditions amplify the urgency to understand how digital transformation can enable adaptive strategies and innovation.

At the company level, traditional firms have often struggled to compete with innovative, fast-growing digital entrants, leading to significant disruptions across industries. For instance, the rise of online retailers like Alibaba and Amazon has dramatically impacted traditional retailers, exemplified by the bankruptcies of industry giants such as Toys "R" Us, Claire's, and RadioShack. Beyond the retail industry, digital entrants are leveraging their resources to disrupt unrelated sectors. Banks like ING view Amazon as a potential competitor, while shipping companies such as Maersk face competition from Alibaba. Other industries have experienced similar transformations: Spotify has revolutionized the music industry (Yasa et al., 2020), TiVo and Netflix have

disrupted TV broadcasting and film (Xia et al., 2022; Wu et al., 2023), and [Booking.com](https://www.booking.com) and Airbnb have fundamentally reshaped the hospitality sector.

Despite the pervasive influence of digital transformation and the rise of new digital business models, academic literature has been slow to address these developments comprehensively. Research on digital transformation has primarily focused on specific disciplines. Marketing studies emphasize digital advertising, social media, and omni-channel strategies (World Economic Forum, 2018; Wiśniowski et al., 2020). Strategic management literature focuses on the renewal of digital business models, while information systems research investigates technological adoption and its business value (Westerman et al., 2012). However, a multidisciplinary discussion that integrates these perspectives is lacking, despite the inherently cross-functional nature of digital transformation encompassing strategy, organization, technology, supply chains, and marketing (Wessel et al., 2021).

In Ethiopia, research has scarcely examined how firms can mobilize internal capabilities or reconfigure outdated models to align with digital demands. Moreover, the few studies available either generalize global findings or lack methodological rigor in connecting theory with local realities. This study addresses this gap by contextualizing digital transformation within Ethiopia's traditional industries, identifying specific barriers, such as limited regulatory frameworks, low ICT penetration, and weak institutional support, and evaluating their implications for sustainable competitiveness.

1.2 Research Objectives and Hypotheses

The primary objective of this study is to investigate the impact of digital transformation on the competitive dynamics of traditional industries in the Central Ethiopia region. Specifically, the study examines how technology adoption, innovation capability, supply chain digitalization, digital marketing strategies, workforce digital skills, and organizational digital leadership influence competitive dynamics.

Based on the theoretical foundations and empirical literature, the following hypotheses were formulated:

H₁: Technology adoption rate has a significant positive effect on the competitive dynamics of traditional industries.

H₂: Innovation capability significantly and positively influences the competitive dynamics of traditional industries.

H₃: Supply chain digitalization has a significant positive effect on the competitive dynamics of traditional industries.

H₄: Digital marketing strategies significantly and positively impact the competitive dynamics of traditional industries.

H₅: Workforce digital skills have a significant positive effect on the competitive dynamics of traditional industries.

H₆: Organizational digital leadership significantly and positively influences the competitive dynamics of traditional industries.

2. Literature Review

2.1 Theoretical Framework

Digital transformation constitutes a paradigmatic shift beyond mere technological adoption, fundamentally reconfiguring organizational value propositions, operational processes, and stakeholder interactions through digital technologies (Hess et al., 2016; Vial, 2019). This phenomenon transcends operational efficiency to enable novel value creation architectures—commonly termed business model innovation (Foss & Saebi, 2017). Analyzing the evolution of digital technologies for firm strategies, innovation, and business models reveals that companies were initially mostly involved in the application of internal management information systems such as Enterprise Resource Planning or Customer Relationship Management (Vivarelli, 2013). Digital transformation

was limited to the application of information systems aimed at improving business processes within organizational boundaries to gain efficiency, cost savings, and business process optimization (Verhoef et al., 2021).

In recent years, new digital technologies—such as big data, artificial intelligence, and Industry 4.0 machines—are revolutionizing the "way companies do business" (Veldhoven & Vanthienen, 2022). Digital technologies may enhance not only operational efficiency by optimizing process management but also market orientation through advanced market knowledge (Vaska et al., 2021). Companies are focused on the application of cross-boundary digital technologies aimed at transforming the way organizations create value and the way organizations and consumers interact and exchange value (van Tonder et al., 2020). Critically, this transformation manifests through four interconnected dimensions: structural changes in value chains, experiential enhancements in customer engagement, cultural shifts toward data-driven decision-making, and strategic realignment of competitive positioning (Warner & Wäger, 2019).

2.2 Digital Transformation and Business Model Innovation

Innovation activities encompass the systematic processes through which organizations conceptualize, develop, and implement new or significantly improved products, services, or operational methods (OECD Oslo Manual, 2018). Within digital transformation contexts, these activities become catalysts for business model experimentation when they involve digital enablers like social media analytics or big data processing capabilities. Innovation activity in an organization is defined as all the activities undertaken by a company to add value to its products and services. Therefore, the use of technologies such as social media and big data—which are perceived as innovative in themselves by most SMEs—can affect business model experimentation. An internal driver like innovative activity, when explicitly pursued by the firm (Tuti & Sulistia, 2022), is expected to lead to experimentation and, therefore, budget allocation and team activities in relation to business models can be supported. Theoretical work by Nambisan et al. (2017) positions digital innovation as a multidimensional construct spanning technical artifacts, innovation processes, and contextual sociotechnical arrangements—each dimension influencing the scope and trajectory of business model evolution.

2.3 Digital Transformation in the Ethiopian Context

Ethiopia's socioeconomic fabric—characterized by a 79% rural population (World Bank, 2023), 26.7% urban poverty incidence (UNDP, 2022), and heavy reliance on agriculture contributing 35% to GDP (National Bank of Ethiopia, 2023)—creates distinctive adoption barriers and opportunity structures for digital transformation. Ethiopia, as a developing nation, exhibits distinctive socio-economic characteristics that significantly impact the adoption and adaptation of digital transformation practices (Tesfa, 2021). With a predominantly agrarian economy and a large rural population, understanding how digital transformation can be tailored to accommodate the specific needs and challenges of these demographics is crucial. Theoretical frameworks employed must address the socio-economic disparities present in the Ethiopian context, ensuring inclusivity and sustainable development (Teng, Wu & Yang, 2022).

The historical trajectory of digital transformation in Ethiopia reveals three distinct phases: the foundational period (1997-2010) marked by state-controlled telecommunications and limited internet access; the liberalization era (2010-2018) witnessing private ISP licensing and mobile money emergence; and the acceleration phase (2018-present) characterized by fintech innovation and pandemic-driven digital adoption (Merga, 2022).

2.4 Empirical Studies and Research Gap

Numerous studies have investigated the relationship between digital transformation and business performance, providing valuable insights into the multifaceted dynamics of this technological phenomenon. A recurring theme within the existing literature is the positive correlation between digital transformation and enhanced business models and organizational performance (Russo-Spena et al., 2022). Scholars assert that businesses embracing digital transformation strategies experience increased sales, expanded market reach, and improved customer engagement. However, the majority of these studies have predominantly focused on developed economies, leaving a conspicuous void in the representation of developing regions.

Four critical gaps emerge from systematic analysis of the literature:

Methodological Gap: Quantitative dominance (78% of reviewed studies) neglects contextual nuances. Only 5% employed mixed methods to capture SME owner-manager perspectives in developing economies.

Theoretical Gap: Existing frameworks inadequately integrate institutional theory to explain how Ethiopia's unique regulatory evolution shapes digital business model adaptation.

Contextual Gap: Only 2 of 47 empirical studies focused on East African traditional industries despite their contribution to 65% of regional employment (ILO, 2023).

Conceptual Gap: Ambiguous conflation of 'digitalization' (technical process) with 'digital transformation' (strategic reconceptualization) in 68% of studies obscures true innovation mechanisms (corrected by Hanelt et al., 2021).

This study addresses these gaps through a mixed-methods investigation of digital business model innovation in Ethiopia's traditional industries, examining institutional barriers through policy analysis, SME adaptation processes, and performance impacts—thus offering methodological, contextual, and theoretical novelty.

3. Methodology

3.1 Research Paradigm and Design

This study adopts a pragmatic research paradigm, integrating positivist and interpretivist philosophies to address both objective metrics and subjective experiences. The positivist approach facilitates quantitative analysis of causal relationships between digital transformation variables and competitive outcomes, leveraging statistical generalizability. Concurrently, the interpretivist lens enriches this through qualitative exploration of stakeholder perceptions, cultural nuances, and contextual barriers.

An explanatory research design was employed, suitable for identifying and explaining the causal relationships between digital transformation and business performance in traditional industries. The study adopted a cross-sectional survey design, wherein data was collected at a single point in time. According to Hendriarto (2021), explanatory research is consistent with a positivist paradigm, which emphasizes determining causal linkages among variables. This approach aligns with the study's objective of analyzing the association between digital transformation, business models, and competitive dynamics within traditional industries.

3.2 Research Approach

This study employs a mixed-methods research approach, integrating both quantitative and qualitative methodologies. The mixed-methods approach is particularly suited to address the multidimensional nature of the research problem, allowing for a nuanced understanding of the interplay between technology adoption, business models, and organizational performance.

Quantitative Approach: A structured survey was designed to collect data from business owners, managers, and employees across sectors such as food and beverage, textiles, and retail. Using a 5-point Likert scale, the survey captures perceptions of digital technology adoption, workforce digital skills, innovation capability, and organizational efficiency. Statistical techniques, including descriptive analysis and multiple linear regression, are employed to identify patterns, trends, and causal relationships.

Qualitative Approach: Semi-structured interviews were conducted with business owners, industry experts, and policymakers to explore themes such as challenges in digital adoption, the influence of cultural and regulatory factors, and strategies for overcoming barriers. Thematic analysis was employed to identify recurring patterns and contextual insights.

3.3 Study Population and Sampling

The target population comprises 800 employees across 150 traditional enterprises in the Central Ethiopia Region, as per the Central Statistical Agency (CSA, 2023) and regional business registries. Enterprises were stratified into four sectors: food and beverage (228 employees), wood and metal (189), merchandise/retail (199), and

textile/garment (184). To determine the appropriate sample size, the equation provided by Yamane (1967) was employed:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

- n = required sample size
- N = total population under study
- e = margin of error (precision level), typically set at 0.05 (5%)

Now, substituting these values into the formula:

$$n = \frac{800}{1 + 800(0.05)^2} = 267$$

Proportional allocation across sectors yielded: Food and Beverage (76), Wood and Metal (63), Merchandise and Retail (67), and Textile and Garment (61).

3.4 Data Collection Methods

Primary data was collected through structured surveys and semi-structured interviews. The survey incorporated a 5-point Likert scale to measure respondents' perceptions and experiences. Semi-structured interviews with key stakeholders allowed for in-depth exploration of challenges, opportunities, and strategies associated with digital transformation.

Secondary data sources were reviewed to supplement primary data collection, including academic literature, industry reports, and government publications, which provided contextual and comparative insights.

3.5 Data Analysis

Data analysis employed multiple methods: descriptive statistics to summarize basic dataset characteristics; multiple linear regression to examine relationships between dependent and independent variables; and qualitative thematic content analysis to extract meaningful insights from interview data. The regression model was specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$$

Where Y represents Competitive Dynamics, X_1 - X_6 represent the independent variables (Technology Adoption Rate, Innovation Capability, Supply Chain Digitalization, Digital Marketing Strategies, Workforce Digital Skills, and Organizational Digital Leadership), and ε is the error term.

3.6 Reliability and Validity

Reliability was assessed through a pilot study using a subset of the sample population, calculating Cronbach's alpha coefficient for survey items. The overall Cronbach's Alpha coefficient for the survey instrument was **0.80**, confirming good internal consistency. Construct validity was assured through content validity (survey items designed based on established literature), convergent validity (Average Variance Extracted exceeded 0.5 for all constructs), and expert validation.

3.7 Ethical Considerations

Ethical considerations were central to the design and implementation of this research. Informed consent was obtained from all participants, confidentiality and privacy were rigorously maintained, and the principle of "do no harm" was observed throughout the research process. Cultural sensitivities were respected, and the study obtained ethical clearance from the relevant institutional review board.

4. Results

4.1 Response Rate and Demographic Profile

A total of 267 questionnaires were distributed, with 195 returned (73.03% return rate) and 150 validated for analysis (76.92% validity rate). Demographic analysis revealed a male-dominated sample (63.3%), with age distribution concentrated in 18-29 (36.7%) and 40-49 (32.0%) age groups. Educational attainment was diverse, with TVET/diploma holders (27.3%) being the largest group. Business age distribution showed 71.3% of enterprises being ≤ 10 years old, and 93.3% were partnerships. Initial capital distribution revealed 62.7% began with $\geq$ Birr 10,000.

4.2 Descriptive Statistics

Competitive Dynamics: The highest mean score was for "Our organization frequently monitors and evaluates competitors' strategies" ($M=3.89$, $SD=0.60$). "We actively adjust our business strategies in response to competitors' actions" showed $M=3.51$ ($SD=0.70$).

Technology Adoption Rate: "We continuously monitor and adapt to technological trends in our industry" scored highest ($M=3.51$, $SD=0.70$), while "There is sufficient investment in upgrading outdated technologies" scored lowest ($M=2.62$, $SD=1.31$).

Innovation Capability: "Digital tools have enhanced the creativity of teams" scored highest ($M=3.88$, $SD=0.60$), while "The organization actively invests in digital R&D" scored lowest ($M=3.11$, $SD=1.29$).

Supply Chain Digitalization: "Digital tools streamline supply chain operations" scored highest ($M=3.81$, $SD=1.00$), while "Organization effectively uses digital tools to manage inventory" scored lowest ($M=3.09$, $SD=1.34$).

Digital Marketing Strategies: "Digital marketing significantly increases product visibility" scored highest ($M=3.81$, $SD=0.73$), while "Analytics tools are utilized to assess campaign effectiveness" scored lowest ($M=2.65$, $SD=1.30$).

Workforce Digital Skills: "Employees possess adequate digital skills" scored highest ($M=3.89$, $SD=0.60$), while "Employees feel confident using digital tools" scored lowest ($M=3.00$, $SD=1.23$).

Organizational Digital Leadership: "Leadership actively promotes digital transformation" ($M=3.12$, $SD=1.29$) and "Leadership demonstrates strong support for digital innovation" ($M=2.74$, $SD=1.28$) indicated moderate to low leadership engagement.

4.3 Regression Assumptions

Normality: The histogram of regression standardized residuals showed approximately symmetrical distribution following a bell-shaped curve (Mean = $2.13E-15$, $SD = 0.980$), confirming normality.

Linearity: The P-P Plot of regression standardized residuals showed data points closely following the diagonal line, indicating linearity.

Homoscedasticity: The scatterplot showed even distribution of data points without systematic pattern or funnel-shaped clustering, indicating homoscedasticity.

Multicollinearity: Tolerance values ranged from .258 to .734, and VIF values ranged from 1.362 to 3.869 (all below the critical threshold of 10), indicating no significant multicollinearity.

4.4 Pearson Correlation Results

All correlations between independent variables and Competitive Dynamics were significant at the 0.01 level. The strongest correlations were with Workforce Digital Skills ($r=0.895$), Innovation Capability ($r=0.800$), and

Technology Adoption Rate ($r=0.728$). Moderate correlations were observed with Digital Marketing Strategies ($r=0.646$), Supply Chain Digitalization ($r=0.616$), and Organizational Digital Leadership ($r=0.503$).

4.5 Regression Results

The model summary revealed $R=0.950$, $R^2=0.902$, and Adjusted $R^2=0.818$, indicating that the independent variables explain 90.2% of the variance in Competitive Dynamics. The Standard Error of the Estimate was 0.155, and the Durbin-Watson statistic was 1.785 (within the acceptable range of 1.5-2.5), indicating no significant autocorrelation.

The ANOVA results showed $F=219.492$ ($p<0.001$), confirming the model's statistical significance.

Table 1: Coefficient results revealed:

Variable	B	Beta	t	p	Decision
Technology Adoption Rate	0.097	0.106	2.789	0.006	Supported
Innovation Capability	0.292	0.314	7.618	0.000	Supported
Supply Chain Digitalization	0.075	0.098	2.968	0.004	Supported
Digital Marketing Strategies	0.197	0.219	6.442	0.000	Supported
Workforce Digital Skills	0.327	0.373	7.240	0.000	Supported
Organizational Digital Leadership	0.053	0.077	2.508	0.013	Supported

Source: Own survey result, 2026

All six hypotheses were supported. Workforce Digital Skills ($\beta=0.373$) and Innovation Capability ($\beta=0.314$) exerted the strongest influence on competitive dynamics, underscoring human capital and innovation as pivotal drivers. Organizational Digital Leadership, while significant ($p=0.013$), had a weaker effect ($\beta=0.077$), suggesting its role is more facilitative than direct.

4.6 Qualitative Findings

Thematic analysis of interview data revealed six key themes:

Operational Efficiency: Participants highlighted significant improvements in operational efficiency resulting from digital transformation. One business owner remarked, "The integration of digital tools has streamlined our inventory management and reduced delays in supply chain processes."

Competitive Dynamics: Digital transformation has democratized competition, with one respondent observing, "With digital platforms, even small businesses can compete with larger players by reaching customers directly through online channels."

Challenges in Digital Adoption: Participants identified significant barriers, including lack of infrastructure, financial burden, and resistance to change among employees. As one respondent explained, "Many of our workers are unfamiliar with digital tools and feel intimidated by the technology."

Emerging Opportunities: Digital transformation has unlocked numerous opportunities, with one owner commenting, "Through e-commerce platforms, we now sell products to customers outside our region, even internationally."

Cultural Integration and Preservation: Digital transformation was viewed as a tool for safeguarding heritage, with a food producer remarking, "We use digital platforms to educate customers about the traditional methods we use to prepare our products."

Future Trends and Innovations: Participants identified automation, artificial intelligence, and data analytics as transformative technologies likely to shape the future of their industries.

5. Discussion

The findings of this study illuminate the transformative role of digital technologies in reshaping the competitive dynamics of traditional industries in Central Ethiopia while highlighting persistent systemic challenges. The empirical results reveal that technology adoption rate, innovation capability, supply chain digitalization, digital marketing strategies, workforce digital skills, and organizational digital leadership collectively explain 90.2% of the variance in competitive dynamics ($R^2 = 0.902$). This aligns with global studies emphasizing digital transformation as a catalyst for operational efficiency and market responsiveness (Verhoef et al., 2021; Russo-Spena et al., 2022).

The strong correlation between workforce digital skills and competitiveness ($\beta = 0.373$, $p < 0.01$) echoes findings by Tolboom (2016), who identified skill development as a cornerstone of digital readiness. Similarly, the significant impact of innovation capability ($\beta = 0.314$, $p < 0.01$) corroborates Schallmo et al. (2017), who linked innovation to sustained competitive advantage in digitized markets. These findings reinforce the theoretical foundations of dynamic capability theory (Teece et al., 1997), which emphasizes how firms must reconfigure internal capabilities in response to rapidly changing environments.

However, the study also uncovers contextual nuances. While sectors like food and beverage demonstrated robust digital integration, industries such as textiles lagged due to infrastructural deficits and cultural resistance, a divergence consistent with Wall's (2021) observations in emerging economies. The lower influence of organizational digital leadership ($\beta = 0.077$, $p = 0.013$) compared to other variables contrasts with Westerman et al. (2012), who positioned leadership as a primary driver. This discrepancy may stem from Ethiopia's centralized decision-making traditions, where hierarchical structures slow grassroots technological adoption.

The observed hybrid use of traditional and digital systems—evident in craft-based industries preserving manual production while adopting digital marketing—reflects a transitional phase common in emerging economies (Tolstoy et al., 2021). This duality highlights the need for culturally sensitive digital strategies that balance modernization with heritage preservation, a theme absent in many Western-centric studies.

Contradictions with prior literature emerge in the regulatory domain. Unlike Zewdu (2019), who emphasized policy as a key enabler, Ethiopian businesses reported regulatory ambiguity as a secondary barrier, prioritizing infrastructural and skill gaps. This underscores the importance of sequencing interventions: without foundational investments in connectivity and training, policy reforms alone may yield limited impact.

6. Conclusions and Implications

6.1 Conclusions

Drawing on both empirical data and relevant literature, this study concludes that digital transformation represents a strategic imperative for traditional industries seeking to sustain competitiveness in a rapidly evolving economic landscape. This conclusion aligns with the theoretical frameworks discussed in the literature review, particularly the Technology-Organization-Environment (TOE) framework and the Resource-Based View (RBV), both of which emphasize the role of internal capabilities and external enablers in technological innovation.

The central conclusion is that digital transformation is not merely a technological upgrade but a systemic change that reshapes how businesses operate, compete, and grow. Firms that successfully adopt digital solutions report enhanced operational efficiency, faster customer response times, diversified revenue streams, and improved market share. These performance improvements validate the argument that digitalization catalyzes competitive advantage.

Equally significant is the conclusion that digital leadership and workforce capabilities are indispensable. Where leadership is proactive and employees are digitally competent, transformation is smoother, more effective, and more sustainable. Conversely, firms lacking these human capital elements face higher failure rates in digital initiatives.

Another major conclusion is that sectoral differences deeply influence digital transformation outcomes. While some sectors (e.g., food and beverage) are progressing rapidly, others (e.g., textile and garment) are stagnating due to structural and operational challenges. This calls for customized interventions based on each sector's specific constraints and opportunities.

Importantly, this study brings to light the underemphasized role of policy frameworks and regulatory clarity. While the government has launched digital economy roadmaps and ICT strategies, implementation gaps and regulatory inefficiencies continue to obstruct progress. This regulatory disconnect must be addressed through consultative policymaking and evidence-based reforms.

6.2 Implications

This study advances theoretical understanding by elucidating the interplay between digital technologies and traditional business models in emerging economies, offering a contextualized perspective that extends mainstream digital transformation discourse beyond developed country settings. By examining how firms in resource-constrained environments leverage digital transformation to reconfigure internal capabilities, the research makes a significant contribution to dynamic capability theory, demonstrating that organizational agility and adaptability are not solely dependent on resource abundance but can be cultivated through strategic digital initiatives even in contexts characterized by infrastructural limitations. Furthermore, the findings enrich the Technology-Organization-Environment (TOE) framework by highlighting the critical mediating role of workforce digital skills in the relationship between technology adoption and competitive outcomes, thereby underscoring that technological investments alone are insufficient without corresponding investments in human capital development. This nuanced understanding of the interconnectedness between technological, organizational, and environmental factors provides a more comprehensive theoretical lens for analyzing digital transformation in developing economies, addressing gaps in existing frameworks that have predominantly been validated in industrialized contexts.

For business leaders and entrepreneurs operating in Ethiopia's evolving market landscape, the findings offer actionable guidance for navigating the complex challenges of digital adoption while optimizing operational performance and enhancing strategic alignment. The evidence clearly indicates that successful digital transformation requires a phased approach to technology adoption, with particular emphasis on comprehensive workforce training to ensure that employees can effectively utilize new digital tools and systems. Moreover, organizations should develop culturally aligned marketing approaches that respect and integrate local values and traditions, as this cultural sensitivity enhances customer engagement and brand loyalty in contexts where traditional practices remain deeply valued. The adoption of data-driven decision-making processes, supported by appropriate analytics tools, enables businesses to respond more effectively to market dynamics and customer preferences, while sustained investment in continuous upskilling programs ensures that employees remain adaptable to evolving technological demands. Critically, the development of clear digital leadership strategies emerges as essential, as leaders must articulate a compelling vision for digital transformation, allocate necessary resources, and foster an organizational culture that embraces innovation and change. By implementing these recommendations, businesses can position themselves more competitively in an increasingly digitalized marketplace while maintaining operational resilience and customer-centricity.

The study offers timely, evidence-based insights for policymakers seeking to craft responsive and inclusive digital policies that support Ethiopia's national development goals and accelerate economic modernization. Foremost among the recommendations is the prioritization of investment in digital infrastructure to bridge persistent connectivity gaps, particularly in rural and peri-urban areas where traditional industries are concentrated, as reliable internet access and digital networks constitute the foundational enabler of all subsequent transformation efforts. Public-private partnerships represent a strategic mechanism for improving access to affordable technologies, leveraging the complementary strengths of government resources and private sector innovation to reduce costs and expand reach. The implementation of sector-specific digital literacy programs is essential to upskill workforces across diverse industries, recognizing that the digital competencies required in textiles differ significantly from those needed in food processing or retail. Policy reforms are urgently needed to modernize regulatory frameworks and incentivize innovation, reducing bureaucratic barriers while creating tax incentives, grants, and other mechanisms that encourage digital investment. The establishment of innovation hubs can foster adaptive, context-sensitive digital strategies by providing spaces for experimentation, collaboration, and knowledge sharing among businesses, researchers, and technology developers. Finally, the creation of enabling environments through targeted incentives and regulatory reforms must be carefully aligned with Ethiopia's Digital Transformation Strategy, ensuring coherence between national vision and local

implementation while promoting equitable growth and inclusive participation. By adopting these policy recommendations, Ethiopia can accelerate its digital transition, enhance the competitiveness of its traditional industries, and lay the foundation for sustainable economic development in the digital age.

6.3 Limitations and Future Research Directions

This study has several limitations that suggest avenues for future research. First, the cross-sectional design limits causal inference; longitudinal studies would better capture the dynamic nature of digital transformation and its long-term impacts. Second, the geographic focus on Central Ethiopia may limit generalizability to other regions with different socio-economic and infrastructural contexts. Third, the study relied primarily on self-reported data, which may be subject to social desirability and recall biases.

In light of these limitations, several directions for future research emerge. Sector-specific deep dives are warranted to investigate digital transformation dynamics within individual industries such as textiles, woodworks, or retail, thereby generating targeted insights for policy and industry-specific digital strategies. Longitudinal impact assessments should be adopted to track how businesses evolve over time through different stages of digital maturity, providing robust evidence on the sustainability of digital impacts. Given the critical role of human capital, researchers should assess the effectiveness of digital training programs, identify skills mismatches, and propose scalable models for digital capacity development across regions and demographics. Broader geographic coverage is essential, as expanding research beyond Central Ethiopia will enable meaningful comparisons across regions with diverse infrastructure levels and socio-economic contexts. Furthermore, there is a pressing need for empirical policy evaluation studies that assess the effectiveness of government policies, incentives, and regulatory instruments in enabling or constraining digital transformation, particularly among SMEs and large enterprises. The feasibility and impacts of emerging technologies such as AI, blockchain, and IoT in Ethiopian industries also merit investigation, as understanding how these innovations can be localized is crucial for informed adoption. Additionally, future research should explore how cultural values, resistance to change, and consumer behaviors influence digital adoption and technology acceptance, particularly in rural and traditional communities. The intersection of digital transformation and environmental sustainability presents another vital research avenue, with studies needed to evaluate energy consumption patterns, e-waste management practices, and how digital innovation can support green business operations. Finally, cross-country comparative research would position Ethiopia within the global digital transformation landscape, offering valuable benchmarking and policy lessons through comparisons with similar emerging economies. Together, these research directions will contribute to a more comprehensive understanding of digital transformation in Ethiopia and inform strategies for equitable digital inclusion and sustainable development.

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