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Digital Transformation for Operational Leverage: Perception of Small Business Entrepreneurs in Nepal

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Abstract

The global business landscape is transforming rapidly with the cutting edge of advanced digital technology as an outcome of the Fourth Industrial Revolution. The aim of this paper is to assess the perceived influence of digital transformation (DT) on overall operational leverage of small business entities and identify challenges and barriers in the process of DT in the study area of Kailali and Kanchanpur districts. The philosophical underpinning of this paper is a pragmatic realist ontological lens implying that DT in SBFs is both an observable and measurable phenomenon. in terms of selected dimensions and constructs in the context of business performance appraisal. The study population is defined as all the SBFs operating in the study area that are divided into 11 strata and the purposive sampling technique was adopted within the strata considering the relevancy of the study objective. The findings revealed that digital transaction proportion is about 37 percent of total transaction, followed by a 13.99 percent increase in perceived operational efficiency, an 11.16 percent reduction in perceived operational cost, and a 14.58 percent growth in perceived sales. Moreover, DT reduces marginal transaction cost, and improves allocative efficiency, thereby enhancing productivity of SBFs. In conclusion, DT is instrumental in contributing significantly to increase overall operational efficiency and enhancing performance and competitiveness of SBFs. Therefore, the policy makers and stakeholders are

expected to focus on encouraging DT in the business operation through digital literacy and financial incentives for SBFs.

Key words: *Digital Transformation, Operational efficiency, Cost reduction, Sales growth, Market expansion*

JEL Classification: O33, M15, L25

Introduction

The fast-paced rise of Industrial Revolution 4.0 has significantly contributed to digitally transform the global marketplace. The concept of digital transformation (DT) encompasses a wide range of cutting-edge advancement, including social media engagement, e-commerce platforms, data analytics, mobile application and cloud computing intended for resource optimization (Kraus et al., 2021; Westerman et al., 2014). Business entities, whether small or large, are not in a position to ignore DT adoption shift. Moreover, despite resource limitations, small business entities are also increasingly adopting the DT strategy in their business. However, Small Business Firms (SBFs) are not in the financially comfortable position to fully adopt this shift. Studies underscore that many SBFs struggle to fully exploit DT due to high costs, limited skills, and structural barriers (Kallmuenzer et al., 2024; Yujie et al., 2024; Cheng et al., 2023). Positioned at the forefront of this digital shift, SBFs face both opportunities and challenges (Oyeyemi et al., 2024). Firms increasingly deploy digital strategies to remain competitive, improve efficiency, and capture new market opportunities (Chesbrough & Rosenbloom, 2002). In support of this, Government of Nepal has launched Digital Nepal Framework (2019) recently meant for enhancing DT across the country. The Digital Nepal Framework provides a strategic roadmap for leveraging digital technologies across sectors such as finance, agriculture, health, and urban infrastructure to accelerate economic growth and improve service delivery in Nepal (Giri, 2020). Therefore, the DT of SBFs has become increasingly significant in contemporary business world, with the increase in the magnitude and intensity of digitization adopted by SBFs. These technologies are reshaping how firms operate, communicate, and compete (Schallmo et al., 2018). Hence, assessing its impact for operational advantage

is essential for policymakers, business owners, and researchers.

DT has emerged as a potential solution to improve operational efficiency, access to new markets, and enhance customer interactions. The problem, therefore, is the gap in understanding the effect of DT on the growth, competitiveness, and sustainable existence of SBFs in the study area based on the perception of entrepreneurs. Shah et al. (2025) argued that entrepreneurs encounter similar prospects and constraints when adopting digital technologies. Yet limited empirical research has explored their perspectives. In these backdrops, this study addresses that gap by examining how SBF entrepreneurs view DT's contribution to overall operational advantage of SBFs in the study area. Moreover, the central questions of the current study were: What is the existing status of DT in the study area? How is the attitude of SBF owners towards DT with respect to their operational efficiency improvement, sales revenue growth, and cost reduction in the study area? What are the barriers and challenges of DT shift of SBFs in the study area? and how do they address or mitigate these challenges? In fact, getting better answers to these questions is essential for operational efficiency gain for entrepreneurs' and eventually expected to foster economic growth and development of the country. However, the effectiveness of these policies in facilitating DT among small business firms remains unclear. In this context, the current study has provided valuable insights to stakeholders and policy makers to encourage optimal utilization of digital technology and DT framework meant for optimizing resources. Moreover, this has given vision for evidence-based actionable policy formulation implementation regarding DT meant for overall efficiency gain of SBFs in the study area.

Literature Review

Theoretical Perspectives

The discussion on the theoretical underpinning is essential to capture the better scenario of knowledge construction and arrive objective conclusions. Moreover, the theory of creative destruction can offer perspectives on the broader economic implications of DT of SBFs (Carayannis et al., 2020), encompassing market structures, innovation

dynamics and market competition (Emami, 2021; Gomulka, 2006). Another theory, Dynamic Capability Theory underscores the importance of a firm's ability to adapt to a constantly changing external environment (Bleady et al., 2018). Likewise, Resource Based View (RBV) offers a theoretical framework within strategic management that emphasizes the role of internal resources to adopt DT for a firm's competitive advantage and enhanced performance instead of relying solely on external market factors. This strategy is expected to establish a long-term success and resilience amidst market uncertainty (Madani, 2010; Barney, 1991).

Technology Acceptance Model (TAM) proposed by Davis (1989) focuses on predicting and explaining the acceptance of new technology meant for resource optimization originally derived from theory of reasoned action (TRA) (Marangunic & Granic, 2015). However, TRA provides more specific and reliable construct for assessing technology adoption (Davis, 1989; Ali et al., 2020). Essentially, central to the model are two core dimensions: perceived ease of use (PEOU) and perceived usefulness (PU). Moreover, PEOU reflects the extent to which a person believes that interacting with a technology will be free of effort, while PU relates to the belief that the technology enhances business and job performance or overall effectiveness of business (Venkatesh & Davis, 2000; Ali et al., 2020). These factors collectively shape individual attitudes, intentions, and behaviors toward technology adoption. Moreover, Dynamic Capabilities view holds that firms' ability to sense opportunities, seize them, and reconfigure resources is key for successful change in fast-moving, disruptive contexts like DT and entrepreneurs' perceptions are likely influenced by how capable they feel in these dimensions (Held et al., 2025). The aforementioned theoretical discussion provides valuable insight to adopt RBV as a theoretical lens to proceed with this study and arrive at meaningful conclusions with the achievement of predefined objectives of this study.

Empirical Review

Empirical studies have highlighted that DT is playing pivotal role as cutting edge for successful operation of SBFs around the world. Moreover, DT tools improve

operational efficiency, market reach, and innovation capacity of SBFs. In this regard, Chesbrough and Rosenbloom (2002) underscore that SBFs endowed with visionary leadership and culture of experimentation and committed for digital leadership meant for digitization better for navigating the complexities and capitalize on the opportunities. Bharadwaj et al. (2013) underscored that digital technologies including cloud computing, data analytics, and e-commerce platforms can enhance operational efficiency, and customer engagement of SBFs. In addition, DT can yield a range of positive outcomes for SBFs, including increased market reach, enhanced customer experience, improvement in financial performance. Markus and Loebbecke (2013) underscored that DT is instrumental for getting leverage of social media marketing, e-commerce platforms, and data analytics tools to achieve higher levels of customer satisfaction, and customer retention and loyalty. However, SBFs are struggling to invest in the necessary infrastructure, talents, and more importantly cyber security measures required for digitalization effort (Westerman et al., 2014).

Moreover, Avgerou et al. (2016) also opined that leadership support, organizational culture, and employees' skill are critical determinants of DT and reaping its benefit. Likewise, Li et al. (2018) conducted study in China and found digital adoption significantly enhancing firm performance through supply chain integration and quality customer relationship management. However, Schallmo et al. (2018) study highlighted the challenges and risk associated with DT of small business entities financial constraints and technological barriers. The study report of OECD (2021) underscore that small business entities gain productivity and market reach from DT but lag behind larger firms because of shortage of skill, financial constraints and weak digital infrastructure. Intuitively, comparative evidence also shows shocks such as COVID-19 accelerate uptake but do not automatically convert tactical use (e.g. social media, digital payments) into strategic digitalization without targeted support and learning interventions (OECD, 2021).

Teng et al. (2022) study identified three factors; digital technology, employee digital skills, and DT strategy as key for DT. The study asserted that these factors are positively correlated with the DT and play a vital role in enhancing their financial performance, sustainable development of SBFs. Kyurova (2022) examined the essence of DT, and the opportunities and changes associated with the application of technologies in SBFs. The study provided an overview of digital tools and technology used for business transformation, including social, mobile, big data, analytics, and cloud.

Zhang and Ma (2022) paper addressed the significance of DT highlighting its role in helping firms to achieve competitive advantages amid intense market competition in the business world. They argued that technological factors, organizational factors, and environmental factors all play a key role in SBFs' DT journey. The study also concluded that employee skills play a crucial role in determining the relationship between organizational capabilities and DT success of SBFs. Therefore, they suggested that enterprises attach importance to the improvement of organizational capabilities as important resources to promote the success of enterprise DT. Taneja and Dahiya (2024) underscored that the digital era has transformed business, but it has also exacerbated inequality. They explored the impact of digitalization on rural entrepreneurship, revealing opportunities such as family-run businesses, improved employment, and regional economic development. Essentially, their study provided empirical evidence and recommendations for institutional and social reforms, contributing to our understanding of the latest innovation theories associated with Konratieff Schumpeter's wave in institutional and social entrepreneurship.

Zhu et al. (2024) stated that DT enables SBFs to access new markets, diversify their revenue streams and forge strategic partnerships to ensure long-term viability and competitiveness. In addition, the rapid pace of technological change can exacerbate uncertainties and complexities for SBFs. Zhao et al. (2024) examined the influence of DT on the performance appraisal of business firms using a RBV and innovation theory

based on the Chinese companies operating in Shanghai and Shenzhen taking the samples during the period 2010-2021. Their result shows that DT significantly improves firm performance, with total factor productivity and innovation outputs playing a mediating role. In fact, the impact is more noticeable on small and medium-sized enterprises (SMEs) than larger ones, and more significant in Special Economic Zones (SEZs) (SOEs) in comparison to non-SEZs. Moreover, the result also revealed the fact that DT positively affects labor-intensive firms and technology-intensive firms. On the contrary, DT inversely affects the capital-intensive firms. Moreover, recent review work frames DT as interactional and dynamic, where technological affordances and firm capabilities co-evolve; this perspective explains heterogeneous entrepreneur perceptions and adoption paths across sectors and sizes (Plekhanov et al., 2023).

Empirical work on specific digital practices highlights heterogeneity across technologies. In this regard, recent Nepalese studies report mixed readiness. Ghimire et al. (2023) examined the impact of Covid-19 on the digitization of SMEs in Nepal. Their findings suggested that limited change in digitization pre- and post-crisis highlights the necessity for SBFs to embrace digital evolution. Likewise, they suggested SMEs need to adopt DT for sustainability post-COVID-19. Bhattarai et al. (2023) found that digital payments, perceived usefulness, security, and ease of payment thereby significantly affected firm performance. Adhikari and Molla (2024) found that digitalization significantly improves overall business operation including customer support, decision-making, and internal communication. Moreover, access to data and analytics aids timely, informed decisions, boosting efficiency and productivity. The study recommends strategies for business enterprises to adopt digital tools effectively, to ensure sustainable growth of business and improve competitiveness in an increasingly digital business environment. Social-media and platform adoption show clear performance links in Kathmandu-area studies; entrepreneurial orientation predicts social-media uptake and enhanced sales performance (Maharjan, et al., 2024).

Systematic reviews of SBFs' DT argue that sustainable roadmaps and firm capabilities determine whether digital investments yield long-term gains rather than short-term fixes (Melo, 2023; Mick, 2024). Systematic reviews focused on the contribution of digitization to SMEs' performance identify core success factors: leadership commitment, incremental digitalization, skills development, alignment of IT with business goals, and access to affordable solutions (Sagala & Ori, 2024). Likewise, studies have highlighted that there are several benefits of DT in SBFs but facing several structural barriers to adopt DT, including inadequate internet infrastructure, limited technical skills and higher cost of adoption as a result DT is conditional on firm readiness and broader enabling environment (Subedi & Bhatt, 2025). In Nepalese context, SBFs shows interest in digital tools face gaps several dimensions such as leadership, skills, and infrastructure that hinder meaningful adoption of DT (Bhatt, 2025). Another study underscore that there is significant contribution of DT on overall efficiency gain, cost reduction, and sales revenue growth (Subedi et al., 2026). Theoretical and empirical literature summarized so far provides valuable insight regarding significance DT on several dimensions of business performance assessment of SBFs. Moreover, the review synthesizes the global, and regional studies to identify the driver force, barriers and outcomes of DT in SBFs. In this regard, evidence from Nepalese context remains scant and fragmented. In this context, this study has made endeavor to fulfill these gaps through the perception analysis of SBF entrepreneurs of the study area to explore the relationship between the DT of SBFs and their operational leverage for overall efficiency gain.

Methodology

The study is grounded in a pragmatic realist research philosophy, integrating both post-positivist and interpretive perspectives. In this context, the ontological position of the study is critical realism, because this study recognizes DT in SBFs of study area as an observable phenomenon while also acknowledging that owners' perceptions of its

impact exist in reality and can be understood through both objective metrics and contextual interpretation. Likewise, the epistemological position of this study aligns with the pragmatic epistemology tradition, where knowledge is considered valid when derived from empirical observation with objective measurement. In axiological perspective, a value-laden pragmatic axiology, as the research adheres to ethical principles, ensuring confidentiality, accuracy, and respect for participants' perspectives, guided by a value-laden pragmatic approach to produce socially relevant outcomes.

This study is predominantly quantitative in nature followed by the qualitative interpretations of the findings. The study population comprises all the SBFs in the study area that have implemented DT initiatives and have been in operation for at least the past 12 months. The researchers collected the primary data from the study site during the months of January to April 2025, with special focus on the collection of data as to answer earlier stated research questions. Moreover, structured questionnaire was administered via Google Forms to collect the required data to fulfill research objectives relating to this study. The sample size was determined using Cochran (1977) formula:

$$n = \frac{Z^2(P)(1 - P)}{M^2} \dots(1)$$

The sample size (n) is determined using above formula presented equation (1), which is inducted based on the three dimensions viz, Z-score (Z), proportion population having attributes of interest (P), and margin of error (M). In other words, in the equation, n, Z, P, and M stands for sample size, Z-score usually at 95 percent confidence level, proportion population having attributes of interest and margin of error.

Results and Discussion

The empirical analysis is focused on the perception analysis on drivers and barriers of DT adoption in SBFs in the perspectives of entrepreneurs operating in the study area. Therefore, primarily this part is focused on the perception analysis of small business owners towards DT.

Characteristics of Respondent Small Business Firms in Terms of Digital Adoption

It is desirable to present summary result of perception analysis of the SBF owners on various dimensions of DT adoption to overview the existing scenario of DT shift by the SBFs in the study area. In this regard, Table 1 below summarizes the scenario in terms of digital transaction percentage of total transactions, perceived percentage of operational efficiency, perceived percentage of operational cost reduction, perceived percentage of sales growth as the contribution of DT, and life span of SBFs in the study area.

Table 1

Characteristics and Perception of Small Business Firms included as Respondents

Particulars(n=384)	Mean	SD
Life span of SBFs (in years)	8.39	5.745
Percentage of Digital Transactions	37.37	15.366
Perceived percentage of operational efficiency increased by DT.	13.99	4.470
Perceived percentage of operational cost reduction as the contribution of DT.	11.16	9.444
Perceived percentage of sales growth as the contribution of DT.	14.58	9.025

Note. Table 1 shows summary of characteristics and perception of Small Business Firms included as Respondents. Data Source: Field Survey, 2025.

Evidently, Table 1 data shows that average life span of firm is 8.39 years, perceived percentage of digital transaction is 37.37 percent, and perceived percentage of operational efficiency increased by DT 13.99 percent, perceived percentage of cost reduction as the contribution of DT 11.16 percent, and perceived percentage of sales growth as the contribution of DT is 14.58.

Challenges and Obstacles Faced by the SBFs in Adopting DT

The SBFs in the study area were found to confront obstacles during DT adoption in their business entities. The problems, obstacles and challenges are in the form of internet

access, technical know-how, cost of installation and internal inertia obstacles to resist changes. The respondents were allowed to report more than one obstacle or challenge. Therefore, the total outcomes in this regard may be greater than sample size 384. Table 2 below summarizes the challenges regarding SBFs of the study area. Therefore, the total response may be greater than sample size.

Table 2

Challenge and Obstacles Faced by SBFs in DT

Identified Obstacles and Challenges	Frequency
Lack of Fast and Reliable Internet Access	185
Lack of Technical expertise in DT adoption	163
Problems to afford high-cost digital tools and accessories	148
Organizational inertia as a resistance to change for DT	95
Other factors creating obstacles to adopt DT	34

Note. Table 2 presents summary relating to Challenge and Obstacles Faced by SBFs in DT

Table 2 above shows that SBFs are suffering from lack of reliable and fast internet access (185) is the most reported challenge, indicating infrastructural inadequacy is a widespread issue. The second most detrimental factor is identified as lack of technical expertise in DT adoption (163). The third detrimental factor is identified as problem to afford high costs of digital tools (148). Moreover, the fourth major challenge is inertia and resistance to change (95), reflecting attitudinal obstacles. Furthermore, other reasons (34) such as lack of management support, lack of awareness about digital tools, cyber security concerns, uncertainty about return on investment, unreliable power supply as challenges to adopt digitization.

Reliability Test Perception Analysis Construct

Table 3 presents result of the reliability analysis of the items used for perception analysis in term of Cronbach's Alpha for the perception scale encompassing key six

dimensions on digital transformation opted by respondents. The respondents were SBF owners of the study area.

Table 3

Summary of Reliability Test Result used for Perception Analysis

Analysis Dimensions	Number of Constructs Used	Cronbach's Alpha	Interpretation
General Perception towards Digitization	5	0.632	Acceptable
Perceived Contribution to Operational Efficiency	5	0.712	Good Reliability
Perceived Contribution for Customer Satisfaction	5	0.814	Very Good Reliability
Perceived Contribution for Market Expansion	5	0.757	Good reliability
Perceived Contribution for Cost Reduction	5	0.818	Very good Reliability
Perceived Contribution for Sales Revenue Growth	5	0.825	Very good Reliability

Note. Table 3 summarizes the reliability test result perception analysis based on the Cronbach's Alpha.

Table 3 summarizes the reliability test result perception analysis relating to digital transformation based on the Cronbach's Alpha. Moreover, Cronbach's alpha values across the six dimensions range from minimum 0.632 to maximum 0.825, indicating acceptable to very good internal consistency. Moreover, Cronbach's alpha value for the construct perception towards digitization is lowest with 0.632 but still acceptable range. Obviously, Cronbach's alpha value for other construct such as perceived contribution for operational efficiency, customer satisfaction, market expansion and sales revenue growth are in higher reliability condition.

General Perception of Respondents towards Digitization

The general perception analysis on the current status of digitization is essential to visualize the existing scenario of DT in the study area. The Table 4 below shows the

existing status of DT adopted by SBFs entrepreneurs in the study area. The perception analysis assessed using 5-point scale is presented in the Table 4.

Table 4

General Perception of Respondents towards Digitization

Statement (n = 384)	Mean	SD
Our business uses digital tools and technologies in daily operations.	4.08	0.617
The digital tools we use are sufficient to meet the current needs of the business.	3.80	0.615
Our business is actively investing in new digital technologies.	3.03	1.173
Employees in my business are skilled in using digital technologies.	3.50	0.827
The adoption of digital tools is a priority for my business.	3.60	0.834

Note. Table 4 summarizes the general perception of respondents towards digitization based on the data collected in the study area.

The result presented in table 4 shows that most of the business organizations are satisfied that existing tools are good enough to their current needs. The mean and standard deviation (SD) for the construct 'our business uses digital tools and technology in daily operation' are 4.08 and 0.617 respectively, suggesting consistent view of SBF owners of the study area. The mean score is relatively strong (3.80), on the threshold of "Agree," with low variability (SD = 0.615), indicating consistent agreement. Lowest mean (3.03) implies neutral position on actively investing in new digital technologies. The higher standard deviation (1.173) captures significant heterogeneity across some businesses meaning that they might be actively investing and the others might not be investing at all. Respondents agree that employees are moderately competent in digital technologies. The mean response of 3.50 lies in the interval of "Neutral" and "Agree." A moderate SD of 0.827 implies there exists some spread in the perceived level of employees' competencies across businesses. The adoption of digital tools is a priority for the business is rated as moderate priority (Mean = 3.60). However, the SD (0.834) captures minimal variability some businesses rank this higher than others.

Perceived Contribution of Digitization in Operational Efficiency

Table 5 summarizes the perception of entrepreneurs on the contribution DT for operational efficiency of SBF using 5-point Likert scale including five items covering vital aspects of operational efficiency.

Table 5

Role of Digitization in Operational Efficiency

Statement (n=384)	Mean	SD
The use of digital tools has improved the efficiency of our business operations.	3.79	0.661
Digital technologies have significantly reduced the operational costs of my business.	3.66	0.687
Digitization has streamlined communication and coordination within the business.	3.49	0.754
Using digital tools helps us make better and faster decisions.	3.74	0.678
Digital technologies allow us to track and manage inventory more effectively.	3.74	0.767

Note. Table 5 summarizes the perceived contribution of digitization in operational efficiency.

Table 5 presents summary of perception analysis on role of digitization in operational efficiency. The result shows that the application of digital tools has improved business operations' efficiency of SBFs, as supported by high mean value close 3.79 accompanied by the low standard deviation (0.661) indicates positive perception, and most businesses share this view consistently. Likewise, most respondents agree that digital technologies have helped to reduce operational costs of business as mean for this construct is 3.66 that shows a moderately strong agreement, while the relatively low SD (0.687) indicates uniform responses across businesses. Moreover, the mean score of 3.49 suggests that respondents are somewhat neutral to slightly agreeing about digitization streamlining communication and coordination, followed by the higher SD (0.754) reflects a greater degree of diversity in their opinion for the construct gives room for understanding the perception variation. Likewise, mean and SD for the construct 'using digital tools helps us make better and faster decisions' are 3.74 and

0.678 respectively, indicating relatively consistent agreement across the samples. Finally, mean and SD for the construct ‘digital technologies allow us to track and manage inventory more effectively’ are 3.74 and 0.767 respectively, indicating relatively consistent agreement across the samples. This gives overall result as DT improves operational efficiency, reduces operational cost, streamlines communication and coordination, enhances decision making capacity and contributes to the function of tracking and managing inventory of SBFs in the study area. To sum up, general agreement that digitization enhances operational efficiency, reduces costs, and improves decision-making.

Perceived Contribution of Digitization in Customer Satisfaction

Table 6 summarizes the perception of entrepreneurs on the contribution DT for customer satisfaction of SBF on different five constructs. The items were measured on 5-point Likert scale, where higher means indicate stronger agreement.

Table 6

Contribution of Digitization in Customer Satisfaction

Statements (n=384)	Mean	SD
Digital tools have enabled my business to respond to customer inquiries more quickly.	3.69	0.600
The use of digital platforms has improved the overall quality of service provided to customers.	3.53	0.744
Customers have provided positive feedback regarding the digital services offered by my business.	3.79	0.778
Digitization has helped us better understand and meet customer needs.	3.96	0.862
Customers are more likely to return to my business because of the convenience provided by digital tools.	3.65	0.823

Note. Table 6 summarizes the perceived contribution of digitization in customer satisfaction.

The calculated result shows that owners of business firms generally agree (3.69) that digital tools have helped them respond faster to their customer inquiries and the low standard deviation (0.600) in this regard suggests consistent agreement among respondents. However, regarding improved Service Quality (Mean = 3.53, SD = 0.744),

having low mean score suggesting that while some improvements are recognized, this benefit may not be as strongly perceived as others. Similarly, the SD indicates moderate variability in responses. The mean score and SD for the statements are 3.79 and 0.79, implies there is general agreement that customers have given positive feedback on digital services. But, moderate SD 0.778, suggests that some businesses have received stronger feedback than others. Moreover, regarding understanding and meeting customer needs has mean 3.96 and SD 0.862. The highest mean value 3.96 for the statement indicates that SBF owners strongly feel DT has enhanced their ability to understand and address customers need in the study area. However, the highest SD as 0.862 across all construct within the given dimension may be reflecting that some SBFs are benefiting significantly more than others. Finally, the statement "customers are more likely to return to my business because of the convenience provided by digital tools" has mean score mean 3.65 and SD 0.823. This implies that respondents generally agree that digitization has contributed to customer retention by offering convenience. Moreover, the SD 0.823 shows some variation meaning that not all firms may equally experience increased loyalty (Table 6).

Perceived Contribution of Digitization for Market Expansion

Table 7 summarizes the perception analysis result on the contribution of DT for market expansion from the perspectives of SBF owners on different five constructs. The items were measured on 1–5-point Likert scale, where higher means indicate stronger agreement.

Evidently, the mean scores for all items range between 3.49 and 3.57, suggesting that respondents agreed moderately to strongly that digital technology have positively influenced various aspects of their businesses. The respondents generally agree that DT has enhanced their ability to reach their potential customers beyond their traditional market limitations, followed low standard deviation (0.664) suggests that responses were relatively consistent across respondents. Regarding the statement "online marketing and social media have significantly increased the visibility of my business"

has slightly lower mean (3.49) than other items, followed the higher standard deviation (0.821) indicates more varied opinions. This may imply that businesses may not have experienced this benefit as strongly as others.

Table 7

Perception Contribution of Digitization for Market Expansion

Statement (n=384)	Mean	SD
Digital technologies have allowed my business to reach customers beyond our immediate local area.	3.56	0.664
Online marketing and social media have significantly increased the visibility of my business.	3.49	0.821
The adoption of e-commerce platforms has helped us attract new customer segments.	3.57	0.666
Our market reach has expanded as a result of implementing digital payment systems.	3.67	0.769
Digital tools have facilitated collaboration with other businesses, helping us enter new markets.	3.54	0.760

Note. Table 7 summarizes the perceived contribution of digitization on market expansion.

The statements "The adoption of e-commerce platforms has helped us attract new customer segments" has the highest mean (3.57), indicating strong agreement with the role of e-commerce in attracting new customers. Moreover, responses are again quite consistent SD 0.666. The mean score and SD for the "adoption of e-commerce platforms helped us attract new customer segments" are 3.67 and 0.769, showing that digital payment systems have played a significant role in expanding market reach, but variability is slightly. Furthermore, respondents generally agree (Mean =3.54), but responses show moderate variation with SD 0.760, suggesting differences in how businesses perceive the impact of collaboration tools on market expansion.

Perceived Contribution of Digitization in Sales Revenue Growth

Table 8 summarizes the perception analysis result on the contribution of DT for sales revenue growth from the perspectives of SBF owners on different five constructs. The

items were measured on 1-5 point Likert scale, where higher means indicate stronger agreement.

Table 8 presents the mean scores and standard deviations (SD) of perceptions measured on a 5-point Likert scale, with values ranging from 3.37 to 3.57 and 0.673 to 1.001 respectively.

Table 8

Perception of Respondents Regarding Contribution of Digitization in Sales Revenue Growth

Statement (n=384)	Mean	SD
Digitization has directly contributed to an increase in sales for my business.	3.54	0.673
The use of online platforms has made it easier to up sell or cross-sell products or services.	3.54	0.816
Digital marketing efforts have resulted in a higher volume of customer inquiries and sales.	3.57	1.001
Our business revenue has grown due to the operational efficiencies enabled by digital tools.	3.57	0.879
Digital technologies have reduced costs, leading to improved profit margins.	3.37	0.924

Note. Table 8 summarizes the perceived contribution of digitization in sales revenue growth based on the data collected in the study area.

The highest mean score (3.57) was recorded for the statements “digital marketing efforts have resulted in a higher volume of customer inquiries and sales” and “business revenue has grown due to operational efficiencies enabled by digital tools,” indicating general agreement that digitization supports sales and revenue growth. In contrast, the mean score for the construct ‘digital technologies have reduced costs, leading to improved profit margin’ reflects weaker conviction about cost reduction benefits. The mean and SD for the construct ‘digitization has directly contributed to an increase in sales for my business’ are 3.54 and 0.673 respectively, indicating relatively consistent responses

across the sample. Finally, the mean score and SD for the construct ‘digital marketing efforts have resulted in a higher volume of customer inquiries and sales’ are 3.57 and 1.001. The highest SD across the construct under the dimension ‘contribution of DT in Sales Revenue Growth’ clearly indicating that marketing outcomes show greater variability among SBFs in the study area.

Perceived Contribution of Digitization for Sustainable Business Growth

The contribution of digitization for sustainable business growth is another important dimension of perception analysis of SBFs in the study area. The Table 9 below summarizes the perception analysis result across all five constructs relating to customer reaction, market reach, cost and benefits of DT, business competitive advantages and essentiality of DT for business growth of SBFs. The perception of the respondents was measured using 5-point Likert scale where all mean scores exceed 3.4 with different degree of variability of opinion across the dimension.

Table 9

Perceived Contribution of Digitization for Sustainable Business Growth

Statements(n=384)	Mean	SD
Digitization has positively transformed customer interactions.	3.59	0.671
Market reach has grown due to digital tools.	3.49	0.870
Financial benefits outweigh costs of digitization for business sustainability.	3.58	0.934
DT provides competitive advantage to my business	3.83	0.710
DT adoption is essential for business growth of SBFs	3.80	0.756

Note. Table 9 summarizes the perception of respondents on the dimension the contribution of DT on sustainable business growth across five constructs.

Table 9 result shows that mean score and SD for the construct ‘digitization has positively transformed customer interactions’, are 3.59 and 0.671 respectively. It indicates that the response is consistent with positive attitude and low variability across

the constructs. Likewise, mean score and SD for the construct ‘Market reach has grown due to digital tools’, are 3.49 and 0.87 respectively, indicating positive attitude towards with higher variability on the construct comparing across the constructs. Moreover, mean score and SD for the construct ‘financial benefits outweigh costs of digitization for business sustainability’, are 3.58 and 0.934 respectively, indicating positive attitude towards the construct with highest variability across the constructs. Similarly, mean score and SD for the construct ‘competitive advantage of my business is given by DT’, are 3.83 and 0.71 respectively, indicating positive attitude towards the construct accompanied by relatively lower variability on the construct comparing across the constructs. Finally, mean score and SD for the construct ‘DT adoption is essential for business growth of SBFs’, are 3.80 and 0.756 respectively, indicating positive attitude towards the construct accompanied by relatively mid-level variability on the construct comparing across the constructs. Overall, entrepreneurs widely acknowledge digital transformation as necessary for competitive advantage and business sustainability.

Lesson Learned from DT

Table 10 shows perception analysis of SBF entrepreneurs regarding lessons learned from DT with respect to operational efficiency of business firms. The respondents were requested to express their view regarding lesson learned from DT in the context of increase in operational efficiency of small business in the study area. The response was not mandatory but it was voluntary, out of 384 only 167 expressed their view in this regard.

Table 10 shows that most of the respondents (34.74) stated that they learned the use of digital platforms, followed by convenience in payments (22.16 %), increase in consumer satisfaction (10.79%), understanding internet problem (5.99 %), cost reduction (5.38 %).

Table 10*Respondent Perceived Lesson Learned from DT*

Responses	Frequency	Percentage
Use of digital tools & platforms for Business	58	34.74
Use of internet for business Operation	3	1.80
Digital literacy Improved	3	1.80
Efficiency improvement	7	4.20
Convenient via digital Payments	37	22.16
Customer satisfaction Increased	18	10.79
Reduction in Cost	9	5.38
DT as future necessity	6	3.59
Automation Orientation of AI	3	1.79
Awareness of Digital Training	1	0.60
Understanding of Internet problem	10	5.99

Note. Table 10 summarizes the respondent perceived lesson learned from DT.

Other lessons from the system were use of internet in business, digital literacy, automation of AI and awareness of digital training.

Conclusion

The study findings indicate that SBFs have average digital transactions account for about 37 percent of business activities, reflecting moderate adoption of digital technologies among SBFs. Moreover, the perception analysis result shows that the digital transformation (DT) contributes positively to increase overall operational efficiency in terms of operational cost reduction, and sales growth. These findings imply that DT can enhance the performance and competitiveness of SBFs. In conclusion, strengthening digital infrastructure and providing tailored training could maximize efficiency gains, reduce costs, and stimulate sales growth across the small business sector. More importantly, enhancing operational efficiency by improving DT is directly

linked with the twin goals of national development and the Sustainable Development Goals (SDGs). Therefore, increased productivity of small business entity contributes to job creation and decent work Sustainable Development Goal 8 (SDG8) and innovation sustainable Goal 9 (SDG 9).

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