

The Impact of Digital Technology on the Performance of Micro, Small, and Medium Enterprises in Champasack Province

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Abstract:

This study investigates the impact of digital technology adoption on the performance of Micro, Small, and Medium Enterprises (MSMEs) in Champasack Province, Lao PDR. Using survey data from 397 enterprises and applying an Ordinary Least Squares (OLS) regression model, the analysis examines how digital practices, firm characteristics, and institutional factors influence revenue performance.

The results demonstrate that digital technology adoption, including the use of electronic banking applications, online sales combined with wholesale operations, direct delivery services, and payment card readers, has a positive and statistically significant effect on MSME revenues. Among these, electronic banking showed the strongest association, contributing to substantial revenue increases by improving financial efficiency, customer trust, and market accessibility. Additionally, firms with larger asset bases, more employees, formal registration, and better access to finance consistently reported higher revenues. Entrepreneurial factors, such as prior training and exposure to advice on productivity and innovation, were also found to strengthen firm performance. Conversely, enterprises operating solely as individual firms without formal registration were at a revenue disadvantage compared to those structured as single-member limited companies or partnerships.

These findings highlight that digital adoption is not an isolated determinant of performance but interacts closely with firm resources, entrepreneurial capacity, and institutional support. For MSMEs in Champasack Province, digitalization provides a pathway to overcome traditional barriers of financing, market reach, and operational inefficiency. The study contributes to the growing body of literature on digital transformation in emerging economies and offers practical insights for policymakers to promote digital finance, business formalization, and capacity building in order to strengthen MSME competitiveness and sustainability in Laos.

Keywords: Digital Technology, MSMEs, Performance, Revenue.

1. Literature Review and Problem Statement

The growing role of digital technology has been widely acknowledged as a crucial driver for the growth, competitiveness, and sustainability of Micro, Small, and Medium Enterprises (MSMEs). Prior studies consistently highlight that digital adoption enhances operational efficiency, broadens market access, and strengthens management effectiveness. For example, Hartono (2025) found that digital technology

significantly increased income and marketing reach for MSMEs in Buahbatu Regency, while Harianto (2024) reported a positive impact of digitalization on profits in Makassar City, although technological capability remained a limiting factor. Similarly, Kumar et al. (2024) emphasized that digitalization improves productivity, innovation, and operational efficiency, but only when supported by effective technology management strategies. Complementary findings by Rahmatullah et al. (2020) showed that digital tools are more effective than manual systems, particularly in accounting and inventory management, whereas Onyango et al. (2023) demonstrated that mobile-based technologies significantly enhanced sales and profitability for women-led refugee enterprises.

Despite these advantages, not all evidence points to uniformly positive outcomes. Olateju (2024) observed that while digital adoption facilitates business expansion among SMEs, it does not always translate into higher profitability, as cost management and strategic integration remain critical determinants. Likewise, Hasibuan et al. (2024) showed that platforms such as e-commerce and social media improve competitive advantage only when integrated with broader business strategies. These findings suggest that while digital technology presents substantial opportunities, its actual impact on MSME performance varies according to context, technological readiness, and management capacity.

Research in the Lao PDR has increasingly examined the role of digital technology and e-commerce in enhancing the performance of small and medium-sized enterprises (SMEs). Studies in Vientiane Capital (Phonepadith & Somsanouk, 2023) and the southern region (Khamphone & Vilayvanh, 2023) demonstrated that digital adoption improves financial outcomes through revenue growth, cost reduction, and market expansion. Similarly, Kyophilavong, et. (2024), Bounthong & Sisavanh (2022) highlighted that the integration of information technology strengthens business management efficiency and customer satisfaction. However, these studies largely focus on urban and tourism-driven areas, where economic structures differ significantly from predominantly rural and agricultural provinces such as Champasak. The research on digital adoption and performance outcomes remains limited. Existing studies in Champasak Province have primarily examined macroeconomic factors, such as the effects of stagflation on SME survival (Singthong, 2024), while little attention has been given to the transformative role of digital technology in enhancing competitiveness, profitability, and long-term resilience. This knowledge gap is particularly concerning in Champasak, an economic hub in southern Laos with strong agricultural and tourism potential, where MSMEs continue to face challenges in marketing, financial management, and access to broader markets.

Moreover, the slow pace of digital adoption among MSMEs in the province may restrict their ability to compete in an increasingly digitalized economy. Many enterprises lack adequate digital skills, financial resources, and strategic frameworks to effectively leverage technology for business growth. Consequently, there is a critical need to investigate how digital technology influences MSME performance in Champasak Province. Such an inquiry will not only contribute to academic knowledge on MSMEs in developing economies but also provide policymakers, development agencies, and entrepreneurs with evidence-based insights to design targeted interventions that foster digital adoption, strengthen competitiveness, and promote sustainable regional economic development.

2. Objective:

This study aims to empirically investigate the impact of digital technology adoption on the revenue performance of MSMEs in Champasak Province.

3. Materials and Methods

For this study, a sample of 397 enterprises in Champasack Province was determined using Yamane's (1967) formula to ensure statistical precision. The sample selection employed a stratified random sampling method to ensure representation across different enterprise categories. Data collection through observational polls with a questionnaire list. The official data collection was conducted throughout June 2025 across all 10 districts of the Champasack Province.

The survey team comprised a collaborative effort between the research team and members from the Faculty of Economics and Management at Champasak University, including staff, faculty members, and students. Data were gathered through structured, face-to-face interviews with either the business owners or managers of the selected enterprises.

For the quantitative data analysis, this study investigates the impact of digital technology adoption on the operational performance of Micro, Small, and Medium Enterprises (MSMEs) in Champasack Province. The analysis utilizes data on the annual revenue of MSMEs in Champasack Province. A multiple regression model is applied, with estimation conducted using the Ordinary Least Squares (OLS) method. The models used are as follows: Kyophilavong, P., Thangavelu, S. M., & Sayvaya, I. (2024). During the estimation process, potential econometric issues, particularly multicollinearity, heteroskedasticity, the Ramsey reset test, and the Link test may arise. These issues will be detected and addressed during the estimation phase.

$$Ln(REV_{ij}) = \alpha + \sum_{i=1}^4 \beta_i (COE_i) + \sum_{k=1}^6 \varepsilon_k (COB_i) + \sum_{m=1}^2 \gamma_m (SOE_i) + \sum_{n=1}^6 \theta_n (DTS_i) + \mu_i$$

$Ln(REV_{ij})$ is the natural logarithm of the annual revenue of MSMEs

(COE_i) is a vector of Characteristics of the Entrepreneurs

(COB_i) is a vector of Characteristics of the Business

(SOE_i) is a vector of the Size of the Enterprise

(DTS_i) is a vector of Digital technology Services for Enterprise/Business

α is the constant; $\beta_i, \varepsilon_k, \gamma_m$ and θ_n are corresponding vectors of coefficients

μ_i is a normally distributed random error term. The details of the variables for the regression is in Table 1.

Table 1: Variables and Definitions for Regression

Variables	Definition of variables	Measuring unit	Expected sign	sources of variable
Dependent variables				
	Ln(RE) Natural logarithm of annual revenue of MSMEs	Index		Kyophilavong, P., Thangavelu, S. M., & Sayvaya, I. (2024).
Independent variables				
I Characteristics of the Entrepreneur (COE)				
1	AOB Age of owner-manager	year	Positive	Biggs & Shah (2006) Fahm, H. P. (2023)
2	EDU Education level of owner-management as completed vocational and higher	1 = yes; 0 = otherwise	Positive	Kyophilavong (2008) Fahm, H. P. (2023)
3	STR Owner-manager has experience from study and training	1 = yes; 0 = otherwise	Positive	Authors
4	TIN Owner-manager received advice to promote productivity, technology, and innovation	1 = yes; 0 = otherwise	Positive	Authors
II Characteristics of the Business (COB)				
1	TRA Trade sector	1 = yes; 0 = otherwise	Positive	Authors
2	PWG Enterprises participating in a wholesale group	1 = yes; 0 = otherwise	Positive	
3	EFI Enterprise form as individual enterprise	1 = yes; 0 = otherwise	Negative	Phonepadit, et al (2023)
4	ACF The firm access to finance by received loan for running business	1 = yes; 0 = otherwise	Positive	Kyophilavong, et. (2024) Khamphone, et al (2023)
5	LNOC Natural logarithm of number of Customers.	Index	Positive	Roman, A., & Rusu, V. D. (2022)
6	BDR The business has been duly registered	1 = yes; 0 = otherwise	Positive	Authors
III Size of Enterprise (SOE)				
1	SMA Number of employees (6 - 50 persons)	1 = yes; 0 = otherwise	Positive	Kyophilavong, et. (2024).
2	ASS Company assets valued higher than 50 million Kip	1 = yes; 0 = otherwise	Positive	Phonepadit, et al (2023)
IV Digital technology Services for Enterprise/Business (DTS)				
1	CP Firm has computer/tablet for running business	1 = yes; 0 = otherwise	Positive	Kyophilavong, et. (2024) Fahm, H. P. (2023)
2	ACC Firm uses accounting system program, design program	1 = yes; 0 = otherwise	Positive	Kyophilavong, et. (2024) Khamphone, et al (2023)
3	BAP Firm uses electronic bank or bank apps for payment pattern	1 = yes; 0 = otherwise	Positive	Kyophilavong, et. (2024) Onyango, et al. (2023).
4	OVS Firm engages in both online sales and wholesale	1 = yes; 0 = otherwise	Positive	Authors
5	DDC Firm uses direct delivery to customers for services	1 = yes; 0 = otherwise	Positive	Bounthong & Sisavanh, (2022)
6	PCR Firm uses Payment card reader	1 = yes; 0 = otherwise	Positive	Authors

Source: the authors

4. Results and Findings

The empirical estimation may have had several econometric problems, such as multicollinearity, heteroskedasticity, the Ramsey reset test, and the Link test, which were addressed to establish the robustness of the results. The OLS regression results are summarized in Table 2 below. All variables were found to be statistically significant at conventional levels ($p < 0.1$, *; $p < 0.05$, **; $p < 0.01$, ***).

Table 2: The Impact of Digital technology on the performance of MSMEs by OLS

Independent variab	Definition of variables	Coefficient	t
I Characteristics of the Entrepreneur (COE)			
1 AOB	Age of owner-manager	-0.0041	-0.85
2 EDU	Education level of owner-management as completed vocational and higher	0.0109	0.92
3 STR	Owner-manager has experience from study and training	0.1818	1.07
4 TIN	Owner-manager received advice to promote productivity, technology, and innovation	0.3019*	1.66
II Characteristics of the Business (COB)			
1 TRA	Trade sector	0.2612*	1.82
2 PWG	Enterprises participating in a wholesale group	1.1404	0.86
3 EFI	Enterprise form as individual enterprise	-1.9279*	-1.88
4 ACF	The firm access to finance by received loan for runing business	0.5624***	3.24
5 LNOC	Natural logarithm of number of Customers.	0.4773***	4.26
6 BDR	The business has been duly registered	0.288**	2.5
III Size of Enterprise (SOE)			
1 SMA	Number of employees (6 - 50 persons)	0.4428**	2.08
2 ASS	Company assets valued higher than 50 million Kip	0.3446**	2.24
IV Digital technology Services for Enterprise/Business (DTS)			
1 CP	Firm has computer/tablet for runing bussiness	0.3941	1.51
2 ACC	Firm uses accounting system program, design program	0.2252	0.53
3 BAP	Firm uses electronic bank or bank apps for payment pattern	1.8801***	4.96
4 OWS	Firm engages in both online sales and wholesale	0.5798***	4.76
5 DDC	Firm uses direct delivery to customers for services	0.4041***	3.35
6 PCR	Firm uses Payment card reader	0.8908**	2.37
con		18.5959***	16.14
Obs	= 397		
F(18, 378)	= 22.95		
Prob > F	= 0.000		
R-squared	= 0.4619		
Adj R-squared	= 0.4363		

Source: the authors' own calculations.

Note: The superscripts ***, **, and * denote rejection at 1%, 5%, and 10% critical values, and heteroskedasticity, the Ramsey reset test, and the Link test have been tested and corrected.

1) Characteristics of the entrepreneur (COE)

The owner-manager has experience from study and training (STR). The key variables are positive and statistically significant at conventional levels (STR at $p < 0.1$). Coefficients indicate approximately 18.18% increases in revenue for MSMEs where the owner-manager has study and training experience, compared to those without, while controlling for other factors. For example, Skill Enhancement: Training provides owner-managers with modern management, financial, and marketing skills that improve decision-making and operational efficiency. Productivity Gains: Knowledge from formal study or professional training often leads to the adoption of better production techniques, cost control, and quality improvements. Innovation and Market Adaptation: Well-trained managers are more likely to introduce innovative products or services and quickly adapt to market changes, thereby capturing more customers. Impact on

Revenue: These improvements directly increase sales, reduce inefficiencies, and expand customer reach—resulting in higher and more sustainable revenue for MSMEs.

The Owner-manager received advice to promote productivity, technology, and innovation. Focal variables are positive and statistically significant at conventional levels (TIN at $p < 0.1$). Coefficients can be interpreted as indicating approximately 30.19% increases in revenue for MSMEs that The Owner-manager received advice to promote productivity, technology, and innovation, relative to those without, while holding other factors constant. For instance, a firm is External Expertise: Advice from experts, government agencies, or business networks introduces MSMEs to new tools, methods, and technologies that they may not otherwise access. Technology Adoption: Guidance on digitalization, automation, or e-commerce platforms enhances efficiency, reduces transaction costs, and widens market access. Innovation Drive: Support for innovation leads to new product development, improved service delivery, and differentiation from competitors, helping firms capture higher revenue shares. Impact on Revenue: Access to expert advice often accelerates business growth, enables MSMEs to enter new markets, and strengthens competitiveness, which positively and significantly increases revenue.

2) Characteristics of the Business (COB)

The regression results indicate that operating as an Enterprise Formed as an Individual Enterprise (EFI) has a statistically significant negative impact on MSME revenue at the 10% level ($p < 0.1$). The coefficient suggests that, on average, MSMEs operating as individual enterprises generate approximately 192.79% less revenue than those organized as Single-Member Limited Companies (SMLCs) or Limited Partnerships (LPs), holding other factors constant. This finding highlights the structural disadvantages individual enterprises face: Limited Credibility and Market Access. Unlike SMLCs, individual enterprises lack full recognition as distinct legal entities, which can diminish their credibility with suppliers, customers, and financial institutions. This often restricts their access to larger contracts and higher-value markets.

Financing Constraints: The absence of a formal corporate structure and a clear liability framework makes it difficult for sole proprietors to secure loans or attract investment. These financial limitations hinder their ability to scale operations, invest in technology, or expand marketing efforts, all of which are critical drivers of revenue growth. High Risk and Limited Risk-Sharing: Individual enterprises concentrate all financial and operational risk on the owner. In contrast, Limited Partnerships distribute risk between general and limited partners, facilitating the management of larger projects and growth opportunities. Lack of Specialization: Individual entrepreneurs must manage all business functions, potentially limiting efficiency. Conversely, LPs allow for a division of labor (e.g., general partners manage operations while limited partners provide capital), which often leads to more efficient operations and increased revenue.

By comparison:

- Single-Member Limited Companies (SMLCs) benefit from formal legal recognition, enhanced credibility, better access to finance, and operational flexibility, all of which support revenue expansion.
- Limited Partnerships (LPs) gain advantages from pooled resources, role specialization, risk-sharing, and greater appeal to investors, enhancing their capacity to increase sales and revenue.

Thus, the evidence underscores that formal business structures like SMLCs and LPs are more conducive to revenue growth for MSMEs than operating as an individual enterprise. These findings align with those of Phonepadit & Somsanouk (2023), who emphasized that both digital adoption and formal firm structure positively influence SME performance in Laos in terms of revenue, cost reduction, and market expansion.

Access to finance is critically important for promoting Micro, Small, and Medium Enterprises (MSMEs) as engines of economic growth. It supports MSMEs through several key channels:

- **Working Capital Expansion:** Loans enable MSMEs to purchase inventory, procure raw materials, and manage seasonal surges in demand, which directly increases sales revenue.
- **Investment in Productive Assets:** Financing facilitates the acquisition of machinery, vehicles, and technology, thereby enhancing productivity and expanding revenue-generating capacity.
- **Risk Absorption:** Access to finance provides a buffer against economic shocks, allowing MSMEs to maintain stable operations and protect their revenue streams.

Recognizing this, the government has implemented cooperation policies with various non-governmental organizations to improve MSMEs' access to low-interest, long-term credit.

This study finds that access to finance (ACF) has a strong positive and statistically significant effect on firm revenue ($p < 0.01$). The coefficient indicates that MSMEs with access to finance experience, on average, approximately 56.24% higher revenue than those without, holding all other factors constant. This implies that MSMEs utilizing loans to expand or run their operations achieve significantly greater revenue. This finding is consistent with Kyophilavong et al. (2024), whose research in the Lao People's Democratic Republic also underscores the link between firm performance and key enabling factors. The empirical evidence from this study's Ordinary Least Squares (OLS) regression shows a strong positive coefficient, confirming that MSMEs with access to loans are better positioned to scale their operations and capture larger market shares.

The regression results show that LNOC (Natural logarithm of the number of customers) has a positive and statistically significant impact on MSME revenue at the 1% significance level ($p < 0.01$). The coefficient can be interpreted as indicating that a 1% increase in the number of customers leads to approximately a 0.47% increase in firm revenue, holding other factors constant. This result highlights the critical role of customer base expansion in driving MSME performance:

Direct Relationship with Sales: An increase in customers almost directly raises revenue, as more buyers translate into higher sales volume. By using the logarithmic form, the model also captures diminishing returns meaning that while each additional customer adds to revenue, the marginal effect becomes smaller as the customer base grows larger.

Customer Base as a Growth Driver: A larger customer pool not only increases immediate sales but also generates long-term revenue through repeat purchases and customer loyalty. Network effects, such as word-of-mouth and referrals, further strengthen revenue streams.

Strategic Leverage: Firms with a broad customer base are more attractive to business partners, wholesalers, and digital platforms. This enhances their bargaining power, expands distribution channels, and opens new market opportunities.

Empirical Evidence: The significance of LNOC aligns with the broader literature, as the number of customers often emerges as one of the strongest predictors of firm revenue in OLS models. It reflects the revenue elasticity with respect to market size and underscores the importance of market expansion strategies for MSMEs. This finding is consistent with Roman and Rusu (2022), who examined the role of digital technologies in SME performance and found that customer reach and market expansion significantly enhance firm revenue. This finding confirms that formal business registration is a key institutional driver of MSME revenue. The result is statistically significant at the 5% level ($p < 0.05$), meaning there is a 95% confidence level that this positive relationship is genuine and not due to random chance. The 28.80% revenue increase is a substantial economic effect. It quantifies the premium that formalized businesses earn. This underscores the idea that operating within the formal legal framework provides tangible benefits that outweigh the potential costs of registration. It suggests that policies encouraging and simplifying business

registration can directly catalyze MSME growth and profitability by integrating them into the formal economy, where they can access more significant opportunities.

The analysis reveals that formal business registration (BDR) has a positive and statistically significant impact on MSME revenue at the 5% significance level ($p < 0.05$). Holding all other factors constant, the coefficient indicates that duly registered MSMEs generate, on average, approximately 28.80% higher revenue than their unregistered counterparts. This significant revenue premium can be attributed to several key advantages conferred by formal registration: **Enhanced Legitimacy & Trust:** Registration increases a firm's credibility and reputation in the marketplace. This enhanced standing with customers, suppliers, and financial institutions leads to greater sales opportunities and more stable business relationships. **Access to Finance & Contracts:** Formal registration is often a prerequisite for accessing critical growth resources. This includes formal bank loans, government tenders, and large-scale business-to-business (B2B) contracts, all of which directly boost revenue potential. **Legal Protection & Operational Stability:** Registration provides legal recognition and protects the business name and operations. This formal structure reduces the risk of disruption, enables the enforcement of contracts, and creates a stable foundation for long-term growth. The empirical evidence from the Ordinary Least Squares (OLS) regression supports this, showing that registered MSMEs are better positioned to operate formally, attract higher-value customers, and scale their operations more effectively. This finding aligns with the work of Roman and Rusu (2022), whose research on digital technologies and SME performance also highlights the importance of formalization and institutional integration as a critical factor for business success.

3) Size of Enterprise

SMA – Number of Employees (6–50 persons): focal variables are positive and statistically significant at conventional levels (SMA at $p < 0.05$). Coefficients can be interpreted as indicating approximately 44.28% increases in revenue for MSMEs that practice this, relative to those without, while holding other factors constant. For instance, a firm has several Employees (6–50 persons). Increases in revenue, more than other sizes of employees, because of labor capacity & productivity. A larger workforce allows MSMEs to produce more goods or deliver more services, directly increasing sales volume. **Specialization:** With more employees, tasks can be divided (e.g., sales, production, logistics, customer service), improving efficiency and quality. **Market coverage:** Additional staff support expansion into new markets, extended operating hours, or faster service, all of which attract more customers. **Innovation & adaptation:** More human capital provides a diversity of skills and knowledge, enabling MSMEs to adapt to market changes and sustain growth. **Empirical evidence:** In OLS regressions, the coefficient on the number of employees is usually positive and highly significant, meaning that as MSMEs grow their workforce, revenues increase proportionally (elasticity effect). This is consistent with the research of Kyophilavong et al. (2024). Study about the Urban Amenities, Firm Performance, and the Probability of Exporting in the Lao People's Democratic Republic.

The regression results indicate that ASS (Company assets valued above 50 million Kip) has a positive and statistically significant effect on MSME revenue at the 5% significance level ($p < 0.05$). The estimated coefficient suggests that MSMEs with assets exceeding 50 million Kip experience approximately 33.46% higher revenue compared to those with lower asset levels, while holding other factors constant. This finding underscores the importance of asset endowment as a key driver of MSME performance: **Production Capacity:** Higher asset levels, such as machinery, vehicles, and IT equipment, increase the scale and efficiency of production. This enables MSMEs to expand output, reduce unit costs, and capture larger sales volumes. **Service Quality:** Asset-rich firms can invest in better storage facilities, delivery

infrastructure, and technology, improving reliability and customer satisfaction. These improvements help attract and retain high-value customers. Financial Resilience: A larger asset base strengthens the firm's collateral position, enhancing access to external finance. This financial leverage supports business expansion, marketing, and technological upgrades that directly contribute to revenue growth. Competitive Advantage: With greater assets, MSMEs can adopt digital tools, establish larger warehouses, or implement advanced POS systems. These capabilities make them more competitive in both wholesale and retail markets, driving sustainable revenue increases. From an empirical perspective, asset size has consistently been found to be a significant predictor of revenue in OLS models. Firms with higher asset values report superior financial performance even after controlling for sector and geographic location. This is consistent with the findings of Phonepadith and Somsanouk (2023), who documented that digital technology adoption and firm resources play a crucial role in enhancing SME performance in Vientiane.

4) Digital Technology Services for Enterprise/Business

The regression results show that BAP (Electronic banking or bank apps for payment) has a positive and statistically significant impact on MSME revenue at the 1% significance level ($p < 0.01$). The coefficient suggests that MSMEs adopting electronic banking or mobile banking applications achieve approximately 188.03% higher revenue compared to those not using such tools, holding other factors constant. This finding highlights the transformative role of financial digitalization in MSME performance: Faster Transactions: Electronic banking reduces delays in receiving payments, thereby improving cash flow and allowing firms to reinvest more quickly in operations and growth. Expanded Customer Base: By offering cashless and remote payment options, MSMEs can reach customers who prefer digital transactions, including younger, urban, and international buyers. Lower Transaction Errors: Automated digital records minimize human error, reduce disputes, and ensure accurate revenue tracking, strengthening financial management. Trust and Credibility: Customers perceive firms using formal digital banking systems as more reliable and professional. This perception encourages repeat purchases and enhances long-term customer relationships. From an empirical perspective, this result aligns with growing evidence that financial technology adoption significantly boosts firm performance. For instance, Kyophilavong et al. (2024) demonstrated that access to urban amenities and financial tools enhances firm performance and export potential in Laos. Similarly, Onyango, Otuya, and Nanyama (2023) found that mobile phone-based digital technologies substantially improved the revenue performance of refugee women-led MSMEs in Kenya.

The firm engages in both online sales and wholesale (OWS); the focal variable is positive and statistically significant at conventional levels (OWS at $p < 0.01$). Coefficients can be read as approximate 57.98% increases in revenue for MSMEs with the practice, relative to those without, holding other factors constant. So Firm engages in both online sales and wholesale Diversified channels: Multiple revenue streams (retail online customers + bulk wholesale buyers). Increased sales volume: Wholesale orders provide bulk revenue, while online retail captures individual customers. Market expansion: Online sales remove geographic barriers, reaching national or even international customers. Risk reduction: If wholesale demand falls, online sales can still sustain revenue (and vice versa).

The regression results indicate that DDC (Direct delivery to customers) has a positive and statistically significant effect on MSME revenue at the 5% significance level ($p < 0.05$). The coefficient suggests that MSMEs offering direct delivery services generate approximately 89.08% higher revenue compared to those that do not, holding other factors constant. This result emphasizes the revenue-enhancing role of delivery services in MSMEs: Convenience Premium: Customers are often willing to pay extra for the

convenience of home delivery, which increases the average revenue per transaction. Customer Loyalty: Direct delivery fosters stronger customer relationships by providing personalized service, leading to higher repeat purchases and long-term retention. Expanded Reach: Delivery services enable firms to sell to customers who cannot physically visit the store, thereby enlarging the customer base and market coverage. Competitive Edge: By offering delivery, MSMEs differentiate themselves from competitors with less flexible service models, capturing additional market share. From an empirical perspective, this finding aligns with broader evidence that service innovation and customer convenience drive firm performance. In particular, Bounthong and Sisavanh (2022) demonstrated that information technology integration strengthens SME management efficiency and customer satisfaction in Laos—both of which are closely tied to higher revenue outcomes.

Payment card reader (PCR): focal variables is positive and statistically significant at conventional levels (DDC at $p < 0.01$). Coefficients can be read as approximately 40.41% increases in revenue for MSMEs with the practice, relative to those without, holding other factors constant. so, the Firm uses a Payment Card Reader (machine or mobile reader The revenue impact is Higher purchase frequency: Customers tend to spend more with cards compared to cash (impulse buying + less cash limitation). Access to cashless customers: Many people don't carry cash; card acceptance captures these sales. Professional image: MSMEs appear modern and trustworthy, attracting higher-value clients. Reduced payment barriers: No need for customers to find ATMs or carry large amounts of cash, increasing the likelihood of purchase. Data-driven decisions: Card readers generate transaction records, useful for sales analysis and revenue forecasting.

5. Conclusion

This study examined the impact of digital technology adoption on the performance of Micro, Small, and Medium Enterprises (MSMEs) in Champasack Province, Lao PDR. Using survey data from 397 enterprises and applying Ordinary Least Squares (OLS) regression, the findings provide strong empirical evidence that digital technology has a significant impact on the revenue performance of MSMEs.

The results show that key digital practices—such as electronic banking applications, online sales combined with wholesale operations, direct delivery services, and the use of payment card readers—are all positively and statistically associated with higher revenue. Among these, electronic banking demonstrated the largest effect, highlighting the transformative role of financial digitalization in improving cash flow, expanding market access, and strengthening customer trust. Similarly, online sales and wholesale diversification, direct delivery to customers, and the adoption of card readers were found to substantially increase revenues by expanding customer reach, providing convenience, and enhancing competitiveness.

Beyond digital adoption, the study also revealed that structural and organizational factors play an important role in determining MSME performance. Enterprises with larger asset bases, more employees, formal business registration, and better access to finance consistently achieved higher revenues. Entrepreneurial factors, such as prior training and access to external advice on technology and innovation, also contributed positively to performance. Conversely, enterprises operating as individual firms without formal registration or partnerships were shown to face significant revenue disadvantages, underscoring the importance of institutional and structural strengthening.

Taken together, these findings confirm that digital technology adoption is not a standalone driver but works synergistically with firm resources, entrepreneurial capacity, and supportive institutional

frameworks. For Champasack Province, where many MSMEs remain concentrated in agriculture, tourism, and trade, digitalization provides a pathway to overcome traditional barriers of market access, financing, and operational inefficiency. However, successful adoption requires complementary support in training, financing, and formalization to fully realize the benefits.

Therefore, policymakers and development agencies should prioritize initiatives that promote financial digitalization, encourage business registration, improve access to affordable credit, and expand training programs for entrepreneurs. For MSMEs, integrating digital technology into broader business strategies will not only enhance revenue but also build long-term competitiveness and resilience in an increasingly digitalized economy.

This research thus contributes to the growing body of evidence that digital technology, when combined with enabling conditions, plays a transformative role in strengthening MSME performance and supporting sustainable regional economic development in Laos.

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