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EXPLORING THE DIGITALIZATION ISSUES CONFRONTED BY SMALL ENTERPRISES

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ABSTRACT
Micro, Small, and Medium Enterprises (MSMEs) are widely recognized for their vital contribution to sustainable and inclusive development, particularly through their role in employment generation and national economic growth. In the context of a rapidly evolving digital economy, the sustained growth and resilience of MSMEs increasingly depend on their capacity to adopt and integrate digital technologies. This study examines the digitalization challenges confronted by small enterprises. Using a qualitative research design, six participants were purposively selected based on asset classification and level of digital technology adoption. Thematic analysis of the interview data revealed five significant challenges: (1) the persistence of manual processes and hybrid operational practices; (2) workforce adaptability gap; (3) infrastructure and digital system constraints; (4) financial and trust barriers in digital systems; and (5) enablers of digital readiness. The findings highlight that while small enterprises recognize the potential benefits of digitalization, structural constraints and capacity limitations continue to hinder full adoption. The study emphasizes the importance of targeted capacity-building programs, affordable digital solutions, and supportive policy interventions in promoting the inclusive and sustainable digitalization among small enterprises.

Keywords
Small Enterprises; Digitalization; Technology Adoption; Skills Gap; Infrastructure Constraints; Government Support

INTRODUCTION
This paper explores the digitalization challenges faced by Small Enterprises in Davao del Sur. Small enterprises play a vital role in economic development; however, they face distinct challenges during their digitalization adoption journey. Digitalization specifically refers to the integration of digital technologies and tools into various aspects of business operations, such as marketing, sales, accounting, and communication (Kallmuenzer et al., 2025). This adoption of digital tools offers small enterprises numerous benefits, including enhanced operational efficiency, expanded market reach, improved customer engagement, and increased innovation capacity. From utilizing online platforms for sales and marketing to implementing digital payment systems and cloud-based solutions, digitalization is reshaping how small businesses operate and interact with their customers and suppliers. Despite the clear advantages, many small enterprises, particularly in developing regions, face significant hurdles in adopting and effectively utilizing digital technologies. These challenges are often multifaceted, ranging from internal limitations such as a lack of digital skills, insufficient financial resources, and resistance to change, to external factors like inadequate internet infrastructure, cybersecurity concerns, and complex regulatory environments. The path toward digitalization is not uniform; enterprises encounter different barriers and enablers depending on their line of business and stage of digital technologies adoption.

METHODOLOGY
This study employs a qualitative research design to investigate the digitalization issues faced by small enterprises in Davao del Sur. Qualitative methods are particularly appropriate for this inquiry because they enable researchers to capture the contextual nuances and decision-making processes through which small enterprise owners navigate digital adoption challenges within their organizational and environmental circumstances. The research is anchored in an integrated theoretical framework that draws from two complementary conceptual models: the Technology-

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Organization-Environment (TOE) framework and the Resource-Based View (RBV) theory, each of which illuminates distinct dimensions of the small enterprise digitalization process.

The Technology Organization Environment (TOE) framework offers a comprehensive, multidimensional lens for examining digitalization challenges, systematically considering three interconnected contexts that influence technology adoption decisions (Risqi Arifia, 2024). The technological dimension encompasses the characteristics of available digital tools and systems relevant to small enterprise operations, including relative advantage, compatibility with existing processes, implementation complexity, and trialability. The organizational dimension addresses firm-specific characteristics, including available financial resources, human capital skills and training capacity, managerial support for technology initiatives, and organizational readiness for change. The environmental dimension encompasses external contextual factors, including competitive pressure from market competitors, regulatory policies and compliance requirements, government support initiatives and incentives, and customer demands for digital engagement.

Complementing the TOE framework, the Resource-Based View (RBV) theory offers a strategic organizational perspective, emphasizing that internal resources and organizational capabilities are critical drivers of competitive advantage and business transformation (Fang et al., 2025). From this theoretical standpoint, challenges such as limited financial capital, inadequate digital skills among workforce members, constrained innovative capacity, and insufficient technical expertise represent structural challenges that fundamentally shape small enterprises' capacity to adopt and implement digital technologies.

Data Collection Methods

This study examines the digitalization challenges confronted by small enterprises. Using a qualitative research design, six participants were purposively selected based on asset classification and level of digital technology adoption.

Informed Consent

Before participating in the study, participants were requested to read and understand the Introduction and Consent Form. Those who indicated their willingness to participate in the interview signed a hard copy of the Consent Form. The researcher facilitated this process and addressed any clarifications raised by the participants.

To ensure informed participation, the interviewer first oriented the participants on the nature of the study, its objectives, and the procedures involved, using the Introduction and Consent Form as a reference. The Consent Form was signed only after participants had fully understood the study details and voluntarily agreed to participate.

Confidentiality and Anonymity of Participants

To safeguard the confidentiality and anonymity of participants, several measures were strictly observed. Each participant was assigned a code to ensure anonymity in all transcripts, notes, and reports. Documents containing personally identifiable information (PII), such as signed Consent Forms with names and signatures, were stored separately from interview transcripts and field notes.

The researcher maintained two secure files: (1) consent forms containing PII, and (2) anonymized interview transcripts, recordings, and field notes. Physical documents were kept in a locked file cabinet, while digital files were stored in password-protected systems accessible only to the researcher.

During the in-depth interviews, audio recordings were made only with the participants' explicit consent, and no photographs were taken without their prior permission. To ensure accuracy while preserving confidentiality, key points or summaries were read back to participants at the end of each interview to confirm that their views had been accurately captured and understood.

In all outputs, including reports and publications, no names or direct identifiers were used. Instead, participants were represented through codes or pseudonyms, ensuring that their contributions remained confidential while still allowing their perspectives to inform the study.

Data Analysis

Qualitative data were analyzed using a thematic analysis approach, in which the data were systematically coded to identify patterns and themes related to the digitalization issues encountered by small enterprises. The analysis was guided by both the study's theoretical frameworks and themes that emerged inductively from the data.

RESULTS AND DISCUSSIONS

This section presents and interprets the study's findings, based on in-depth interviews with six small enterprise owners and managers from diverse sectors. Using thematic analysis, five major themes emerged that explain how small enterprises experience digitalization: (1) the persistence of manual processes and hybrid operational

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practices; (2) the workforce adaptability gap; (3) infrastructure and digital system constraints; (4) financial and trust barriers in digital systems; and (5) enablers of digital readiness. The results highlight varying levels of digital maturity, influenced by an enterprise's capacity, sectoral demands, and contextual constraints.

Participant	Enterprise Type	Existing Digital Tools/Practices	Digital Maturity	Typology Label
Participant 1	Design, Printing & Architectural Services	Uses a wide range of digital tools, including artificial intelligence applications, Canva for graphic design, Microsoft Excel formulas for advanced data processing, Dropbox for cloud-based file storage, online payment platforms, and digital production machines. Digital tools are integrated into daily operations, with evidence of experimentation, adaptation, and process improvement.	Stage 3 – Innovation and Transformation	Digitally Adaptive Creative MSME
Participant 2	Plant-Based Product Manufacturing	Operates through enterprise-level systems such as Systems, Applications, and Products in Data Processing software, point-of-sale systems, electronic commerce platforms, online payment systems, and artificial intelligence tools. Business processes are largely system-driven, though the full potential of digitalization is constrained by high costs, limited training, and unstable internet connectivity.	Stage 3 – Innovation and Transformation	AI-Enabled System-Integrated MSME
Participant 3	Bread, Cakes & Catering Services	Utilizes basic digital tools such as biometric systems for attendance monitoring, Microsoft Excel for record-keeping, and electronic mail for communication. Digital use remains fragmented and primarily supportive, with core business processes still largely manual.	Stage 1 – Digital Awareness and Adoption	Cautious Basic Digital Adopter
Participant 4	Auto Repair Shop	Applies digital tools selectively, including Microsoft Word and basic digital equipment, primarily for documentation and production support.	Stage 1–2 (Transitioning)	Incremental Operational Adopter
Participant 5	Bakery	Demonstrates minimal digital engagement, limited to closed-circuit television cameras for security and Microsoft Word for basic documentation. Although there is strong interest in adopting digital	Stage 1 – Digital Awareness and Adoption	Aspirational Early-Stage Digital MSME

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Participant	Enterprise Type	Existing Digital Tools/Practices	Digital Maturity	Typology Label
		tools, progress is hindered by fear of technology, limited digital skills, and financial constraints.		
Participant 6	Machine Shop	Relies mainly on Viber for internal coordination and communication. Previous use of computer-aided design software has been discontinued, and the enterprise remains heavily dependent on manual processes due to significant digital skill gaps among workers.	Stage 1 – Digital Awareness and Adoption	Communication-Based Digital User

Table 1: Typology of participants according to digitalization stage

The participant typology presented in Table 1 demonstrates a clear progression aligned with the Department of Trade and Industry's (DTI) three-stage digitalization pathway (*DTI MSME Development Plan 2023-2028*, n.d.). Participants 3, 5, and 6 are situated in the Digital Awareness and Adoption stage, characterized by basic and fragmented use of tools such as email, Microsoft Office applications, CCTV, Biometrics, and messaging applications. Their accounts highlight persistent trust issues, perceived digital risks, skills gaps, and financial constraints that limit deeper adoption and sustain reliance on manual or hybrid processes. Participant 4 represents a transitional position between Awareness and Integration, employing digital tools selectively but lacking system interoperability and organizational capacity to fully optimize operations.

In contrast, Participants 1 and 2 exemplify higher levels of digital maturity, corresponding to Integration and Optimization, and extend toward Innovation and Transformation. Participant 2's adoption of SAP, POS, e-commerce, online payments, and AI demonstrates system-level integration despite challenges with cost, training, and connectivity. Participant 1 showcases transformative practices by combining AI tools, digital design platforms, cloud storage, automated machines, and adaptive self-learning, signaling a shift toward reconfiguring business models rather than merely digitizing existing tasks. These cases align with DTI's third stage, where advanced technologies enable innovation, efficiency gains, and strategic positioning for broader markets.

Theme 1: Persistence of Manual Processes

Across all six participants, manual processes persist alongside digital tools, forming hybrid operational systems. Even enterprises that actively use advanced digital technologies continue to rely on handwritten records, notebooks, and manual monitoring for critical business functions. These findings suggest that manual processes provide the business with a sense of control, visibility, and perceived security. Rather than indicating resistance to innovation, the persistence of manual practices reflects adaptive decision-making in contexts characterized by uncertainty, operational risk, and limited safeguards. Digitalization among small enterprises thus emerges as a non-linear and, in some cases, reversible process, shaped more by trust and risk considerations than by efficiency alone (Kallmuenzer et al., 2025).

Participant 1, a female, owner of a design, printing, and architectural services firm, employs AI-based design tools, Canva, Excel formulas, Dropbox, and digital production machines. However, inventory tracking remains partially manual before being digitized:

"The inventory used in sales is still written manually, or we input it manually and then transfer it to Excel or Google Sheets."

Participant 4 (male, auto repair shop owner) similarly records job orders and transactions manually before encoding them:

"I still use a notebook. Then, when possible, I transfer it to the computer."

Participant 6 (male, machine shop owner) relies almost entirely on manual documentation:

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"Not yet, ma'am. I still do everything in a notebook."

For some participants, manual systems are not transitional but intentional. Participant 3 (female, bread, cakes, and catering services owner) reverted to manual transactions after negative digital experiences:

"Because of these experiences, we really went back to manual transactions."

Participant 5 (male, bakery owner) echoed this cautious stance:

"*Everything is still manual when it comes to records… I am afraid of those kinds of things."*

Theme 2: Workforce Adaptability and Skills Gap
A lack of digital skills and formal ICT knowledge is frequently identified as a key barrier to digital adoption in SMEs, where employees and managers often lack training and expertise. This gap limits the effective use and sustainability of digital systems, emphasizing the need for structured training and capacity building (Ojukwu et al., 2025). Effective digital adoption, therefore, requires continuous skills development and institutionalized training mechanisms, rather than relying solely on individual initiative.

Participant 1 described independent learning through online exploration:

"I just studied how it works."

Participant 4 repeatedly emphasized difficulty with Excel:

"I still struggle with Excel. Until now, I have found it difficult. That is why when I have tasks, I use Word because it is easier for me. I still use Excel sometimes, but I always rely on research to figure it out."

Participant 5 openly admitted skills limitations:

"We are not very skilled with Excel, even though it is a huge help. We keep searching and logging into Excel, but it is really difficult."
For Participant 6, the challenge was compounded by workforce limitations:

"With my workers, I do not think they can really catch up, Ma'am. Most of them are only high school graduates. Even reading programs is already difficult for them."

Participant 2 (female, production manager in plant-based manufacturing) highlighted how staff turnover intensifies the skills burden:

"When there are turnovers, we do training again."

Theme 3: Infrastructure and System Reliability Constraints
MSME digitalization is deeply infrastructure-dependent. Unlike large firms, small enterprises lack redundancy mechanisms, making digital disruptions immediate crises (Akpe et al., 2023). These conditions reinforce cautious adoption and reliance on manual backups. All participants reported infrastructure-related challenges, particularly unstable internet connectivity and system downtime, which directly disrupted operations.

Participant 2 described total operational paralysis when systems fail:

"If the internet is down, we are down, or if it is down there, we're down here too. In our internal operations, if SAP is down and it's not an urgent matter, we don't transact. So, delivery doesn't happen."

Participant 1 emphasized how connectivity affects customer response:

"Once the connection is gone, everything stops."

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Participant 3 identified connectivity as a reason for preferring manual processes:

"Connectivity is definitely a challenge. For me, manual processes feel safer."

Hardware and software reliability also posed challenges. Participant 6 explained:

"My computer broke… downloading software was also difficult."

Similarly, Participant 4 cited slow internet and household constraints:

"Sometimes the internet is slow, and I also have a small child, so it's difficult to record everything directly on the computer every day.

Theme 4: Financial Risk, Cost, and Trust Issues
Financial risk significantly influences the digital decisions of small enterprises. High software costs, transaction fees, and hidden expenses discourage adoption. Concerns over confidentiality also emerged, especially when third-party providers accessed business data (Restrepo-Morales et al., 2024). Perceived financial opacity and prior losses erode trust, making digital tools appear risky rather than enabling. Trust, therefore, emerges as a central condition for MSME digital transformation.

Participant 2 described enterprise system costs:

"Maintenance for SAP is expensive—six digits… There are charges per transaction."

E-commerce-related costs were also seen as burdensome:

"Shopee posts it at 325 to cover costs, so it becomes expensive."

Participant 4 cited unaffordable subscription apps:

"There are no free apps. They're expensive and priced in dollars. Some cost around 50 dollars, which is about ₱1,300 to ₱1,500 per month."

Trust concerns were particularly evident in online payments. Participant 3 recalled:

"There was one time when almost three hundred thousand pesos floated."

Participant 5 shared similar fears:

"You leave money in your GCash and you're scared it might disappear."

Theme 5: Enablers of Digital Readiness and Adoption
These findings suggest that while MSMEs encounter structural and contextual barriers, readiness for digitalization is present when appropriate support mechanisms, such as affordable systems, reliable infrastructure, and sustained capacity-building, are in place (Pingali et al., 2023). Digitalization, for MSMEs, is therefore best understood as a gradual, supported, and context-sensitive process rather than a rapid technological shift.

Participant 1 acknowledged government support:

"*DTI provides training, especially on how to use digital tools for business. It really helps us adapt to technology because not all of us are experts at the start."*

She further emphasized that such interventions make digitalization more approachable and aligned with MSME realities:

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"When there are trainings from government, it feels more doable because they explain it based on small business needs, not like big corporations."

Participant 4 emphasized practical learning opportunities:

"Seminars are better for us than going back to school."

Participant 5 articulated future-oriented plans:

"Next year, we'll be able to invest, especially in a POS system, because we know it will help us monitor sales and inventory better."

Participant 6 framed digitalization as an inevitable shift, particularly emphasizing the role of automation in improving efficiency and reducing dependency on manual labor:

"We shouldn't always rely on manual work. Automation should be adopted because it makes the process faster and reduces errors."

He further noted that digital tools are becoming necessary to remain competitive:

"If you don't automate, you will be left behind. Other businesses are already using machines and systems."

Meanwhile, Participant 2 emphasized the importance of continuous learning as an integral part of adopting digital systems. Rather than a one-time adjustment, digitalization was described as an ongoing process of adaptation and skill development:

"Training is ongoing. The system is taught by module, so we learn step by step."

Overall, the findings suggest that MSME digitalization in Davao del Sur is uneven and non-linear, influenced by enterprise type, resource capacity, and human capital, highlighting the need for stage-specific interventions. This digitalization pathway aligns with the global digital maturity framework by (Solis, n.d.), who describes digital transformation as a staged, evolutionary process rather than a one-time technological shift. Solis identifies six stages of digital transformation maturity: Business as Usual, Present and Active, Formalized, Strategic, Converged, and Innovative and Adaptive, highlighting how organizations evolve from fragmented digital experiments to fully integrated, agile, and customer-centric digital enterprises.

RECOMMENDATION

The findings suggest that MSME digitalization initiatives adopt a progressive, capacity-sensitive, and trust-centered approach that recognizes the persistence of manual processes as a rational risk-management strategy, rather than viewing it as resistance to innovation. Policymakers and support institutions should promote hybrid digitalization pathways, allowing MSMEs to incrementally integrate digital tools into critical functions while maintaining manual safeguards. Continuous, modular, and hands-on digital skills training must be institutionalized to address persistent skills gaps, employee turnover, and the learning burden faced by owner-managed firms.
These efforts should be complemented by investments in reliable and affordable digital infrastructure, particularly stable internet connectivity and offline-capable systems, to mitigate operational disruptions that undermine confidence in digital tools. Financial barriers must be reduced through subsidized access to essential software, transparent pricing structures, and strengthened protections for digital payments, alongside basic cybersecurity and digital financial literacy training to rebuild trust. Finally, government-led programs should be localized and aligned with the realities of MSMEs, emphasizing functional improvements and continuous support rather than one-time technology adoption. This approach positions digitalization as an adaptive, long-term process that enhances resilience and competitiveness, rather than imposing additional risk on small enterprises.

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