Research in Management and Humanities

DWIJMH VOL. 4 NO. 2 (2025) ISSN: 2980-4817

Available online at www.dwijmh.org
Journal homepage: http://www.dwijmh.org
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The influence of digital literacy, financial readiness, and government support on the information and communication technology adoption

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ARTICLEINFO

Article history:
Received: March 15, 2025
Received in rev. form. April 25, 2025
Accepted: May 20, 2025
Published: June, 20, 2025

Keywords: ***Literacy, Finance, Government, ICT, Small Businesses.***

JEL Classification: I21

ABSTRACT

The contemporary business environment is profoundly shaped by Information and Communication Technologies (ICT), which are now integral to global commercial operations. Drawing on Eshet-Alkalai's Digital Literacy Framework, the Finance Readiness Framework, and the Advocacy Coalition Framework, this study aimed to explore how digital literacy, financial readiness, and government support influence ICT adoption among small businesses in Vigan City. It also assessed the levels of digital literacy, financial readiness, government support, and ICT adoption. Using descriptive and correlational research designs, the study surveyed 150 owners and employees of small businesses in Vigan City, selected through non-probability quota sampling. The data were collected using a researchers-designed questionnaire. The findings revealed that increased digital literacy enhanced ICT adoption by reducing barriers to technology integration, while financial readiness positioned businesses to invest effectively in ICT solutions. Moreover, substantial government support—through initiatives like subsidies, training programs, and infrastructure development—created an enabling environment for ICT adoption by addressing challenges such as high costs and inadequate infrastructure. These factors collectively enhanced operational efficiency and competitiveness among small businesses. To optimize ICT adoption further, the study recommended implementing training programs, workshops, and conducting additional research to identify other influencing factors and strategies for effective technology integration in small business operations.

Introduction

Today's business landscape is profoundly shaped by Information and Communication Technologies (ICT), which have become integral to commercial operations worldwide. The pervasive application of ICT is transforming production methods, work processes, and consumption patterns among enterprises and their customers. Businesses are increasingly

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recognizing the necessity of integrating ICT into their operations to harness the benefits it offers (Yuwono et al., 2024).

According to Juniarti and Omar (2021), ICT encompasses a broad range of technologies that facilitate communication, information sharing, and business operations. For small businesses, adopting ICT can lead to enhanced efficiency, improved customer service, and greater competitiveness.

Before the emergence of ICT and its integration into business practices, businesses operated solely in physical spaces, confined to specific geographic locations. Business processes such as bookkeeping and inventory management relied on traditional paper records, and communication often posed significant challenges. In contrast, small businesses around the globe now acknowledge the potential of ICT and actively incorporate it to extend their operations beyond physical boundaries. They utilize computer systems to streamline paperwork, leverage technology to enhance production and services, and maximize email and social media platforms for improved communication (Adeyemo, 2021).

In the global economy, the adoption of ICT in small businesses has emerged as a crucial factor for enhancing competitiveness and operational efficiency in a globalized economy. As businesses increasingly operate in interconnected markets, the integration of ICT not only facilitates improved communication and collaboration but also opens up new avenues for market access and customer engagement. Small businesses leveraging ICT can enhance their operational efficiency, reduce costs, and improve customer service, which are critical components for success in competitive markets (Mishrif & Khan, 2023).

In the Philippines, the adoption of ICT in small business has become increasingly vital as these businesses navigate a rapidly changing digital landscape. With SMEs comprising approximately 99.58% of all registered businesses in the country, their ability to effectively integrate ICT into their operations is crucial for enhancing competitiveness, improving efficiency, and accessing broader markets (Philippine Statistics Authority, 2021). Some small businesses successfully transitioned by leveraging social media and e-commerce platforms. This shift not only helped them survive but also positioned them for future growth by expanding their customer base beyond local markets (Mia et al., 2024).

Additionally, there have been recommendations for small businesses to adopt ICT. However, many studies have focused on the challenges of effectively implementing ICT in SMEs within advanced economies, which is quite different from the circumstances in developing countries. Therefore, there is an urgent need for continued research to identify the factors that impede the successful integration of established ICTs, particularly in less developed nations (Sadiq et al., 2022).

Despite its potential, the adoption rate of ICT among small businesses remains suboptimal (Quimba & Calizo Jr., 2019; Khaund & Nath, 2022). Most existing studies on ICT adoption among small businesses have been conducted in urban settings or regions with different socio-economic dynamics, such as Ibadan, Nigeria, or metropolitan areas in the United States (Adeyemo, 2021; Paye, 2024).

While numerous studies have explored ICT adoption in various settings, there is a notable lack of focused research that examines the specific challenges influencing small enterprises in Vigan City. This gap is particularly concerning given the unique socio-economic and cultural context of the region, which may significantly affect how businesses approach technology integration.

One critical factor that warrants further investigation is the role of digital literacy as a determinant of ICT adoption. While broader studies have acknowledged its importance (Paye, 2024), there is insufficient exploration of how varying levels of digital literacy among business owners in Vigan City impact their ability to adopt and utilize ICT effectively. Understanding this relationship is essential for identifying barriers that may prevent local enterprises from maximizing the benefits of technology.

In addition to digital literacy, financial readiness also plays a significant role in hindering ICT adoption. Although research has highlighted financial limitations as a barrier to technology integration in small enterprises across many countries (Adeyemo, 2021), there is a scarcity of localized studies focusing specifically on Vigan City. This lack of targeted research limits our understanding of how local economic conditions and financial challenges uniquely affect small businesses in this area.

Moreover, while some literature discusses the importance of governmental support in promoting ICT adoption (Chandavarkar & Nethravathi, 2023), there is a lack of research specifically examining how local government initiatives in Vigan City influence small business decisions regarding technology adoption. Investigating this aspect could provide valuable insights into how policy measures can effectively address the financial and educational barriers faced by local enterprises, which ultimately fostering a more conducive environment for ICT integration. This transition maintains a logical flow between the ideas while connecting each paragraph's main points.

Based on the previously mentioned data, the purpose of this study was to identify the variables that influence the ICT adoption among small businesses. Three variables were statistically investigated to see if they have any influence on the intentions to adopt ICT.

Literature review

Digital literacy

Digital literacy encompasses a range of skills necessary for individuals to effectively access, evaluate, and communicate information using digital technologies. It includes not only technical skills related to using specific software or hardware but also critical thinking and problem-solving abilities that enable business owners and employees to leverage technology for operational efficiency (Reddy et al., 2020). According to Sulistyowati (2021), enhanced digital literacy among micro and medium-sized business owners can significantly improve their overall business performance by enabling them to utilize ICT more effectively.

A study conducted by Wardani et al., (2022) examined the effects of ICT adoption and ICT literacy on the performance of MSMEs in Surakarta, Indonesia. The researchers found that both ICT adoption and ICT literacy significantly influence MSME performance. Specifically, they highlighted that higher levels of ICT literacy among business owners lead to better utilization of technology, which in turn enhances operational efficiency and market reach. This study underscores the importance of equipping small business owners with the necessary digital skills to leverage ICT effectively, ultimately improving their business outcomes.

Sari et al., (2022) explored the readiness of MSMEs to adopt digital technologies, particularly in response to challenges posed by the COVID-19 pandemic. Their literature review identified several key aspects affecting digital literacy readiness, including access to resources, technology infrastructure, and existing digital skills among business owners. The study emphasized that many MSMEs face significant barriers due to insufficient funding for technology investments and a lack of awareness regarding the benefits of digitalization. The findings suggest that enhancing digital literacy through targeted training programs is essential for MSMEs to thrive in a digital economy.

Paye's (2024) dissertation highlights various barriers faced by small businesses in adopting ICT, including inadequate digital skills among owners and employees. The research indicates that a lack of understanding regarding technology's potential benefits often hinders adoption efforts.

A study by Omiunu (2019) found that ICT literacy significantly impacts the performance of MSMEs by facilitating better technology adoption. The study emphasizes that without adequate digital skills, businesses may struggle to align their strategies with technological capabilities, leading to suboptimal outcomes. Furthermore, Wardani et al., (2022) demonstrated that higher levels of digital literacy directly influence the extent to which small businesses can adopt e-commerce solutions, ultimately enhancing their market competitiveness.

Financial readiness

Financial readiness is defined as the preparedness of businesses to allocate sufficient resources toward technology investments, including initial costs, maintenance, and training. A study by Trinugroho et al., (2022) investigated the factors affecting digital adoption by ultra-micro, micro, and small enterprises (UMSEs) in Indonesia. The findings indicated that financial constraints significantly hindered the ability of these enterprises to adopt digital technologies, such as e-commerce and digital payments. The study emphasized that businesses with better financial management practices were more likely to invest in ICT solutions, thereby enhancing their operational efficiency and market competitiveness.

In a systematic review of ICT adoption among SMEs by Mishrif and Khan (2023), highlighted that financial limitations are one of the primary barriers preventing small businesses from embracing technology. They noted that many SMEs struggle with inadequate funding for technology acquisition, which restricts their ability to innovate and compete effectively in a digital economy. The researchers argue that addressing these financial barriers through targeted support programs is essential for facilitating ICT adoption among small enterprises.

Affandi et al., (2024) examined the impact of financial literacy on the digital transformation of UMSEs in Indonesia. Their research found that business owners with higher levels of financial literacy were better equipped to make informed decisions regarding technology investments.

A case study conducted by Kamaruddin et al., (2024) explored technology integration in SMEs and identified financial readiness as a critical factor influencing successful technology adoption. The study found that SMEs with robust financial planning mechanisms were more likely to adopt advanced technologies such as cloud computing and e-commerce platforms, leading to improved operational efficiency and customer engagement.

Government support

Recent literatures highlight the significance of government-led initiatives aimed at promoting digital transformation among SMEs. For instance, the Philippine government has prioritized digitalization through the MSME Development Plan 2023-2028, which focuses on leveraging technology to enhance the capabilities of micro, small, and medium enterprises (MSMEs). This plan includes strategies for improving digital infrastructure, providing training programs, and facilitating access to digital tools that can help SMEs streamline operations and expand their market reach (Gonzales, 2024).

Similarly, the Philippine Development Plan emphasizes digital transformation as a key theme, directing government agencies to digitize essential public services. These initiatives aim

to create a supportive environment for SMEs to adopt ICT by reducing bureaucratic barriers and enhancing service delivery through digital platforms (Department of Trade and Industry, 2024).

The research of Kossaï and Piget (2024) indicates that financial assistance from the government significantly enhances the likelihood of small businesses adopting ICT solutions, as it reduces the perceived risks associated with technology investments.

A study conducted by Chandra (2022) examined how Indonesian SMEs leveraged government programs during the COVID-19 pandemic to adopt digital technologies effectively. The research found that government assistance in training and infrastructure development enabled these enterprises to transition online quickly, ensuring their survival during challenging economic conditions.

Information and communication technology adoption

The adoption of Information and Communication Technology (ICT) among small businesses has become increasingly vital for enhancing operational efficiency, competitiveness, and resilience, particularly in the wake of global challenges such as the COVID-19 pandemic (Mishrif & Khan, 2023).

The COVID-19 pandemic has accelerated the need for small businesses to adopt digital technologies as a survival strategy. A study by Mishrif and Khan (2023) examined how SMEs adapted their operations during the pandemic through increased technology use. The research found that many small businesses shifted to online platforms for sales and customer engagement, highlighting a significant transformation in operational practices driven by external pressures. This shift not only helped businesses survive during challenging times but also positioned them for future growth through enhanced digital capabilities.

Mishrif and Khan (2023) conducted a systematic literature review focusing on the adoption of ICT in small- and medium-sized enterprises (SMEs). They identified several prevalent patterns and obstacles that influence ICT adoption, including limited financial resources, lack of ICT knowledge, and resistance to change. The study emphasized that while SMEs recognize the importance of ICT for improving operations, many still face significant challenges that hinder effective implementation. The authors recommend targeted strategies to optimize ICT utilization in developing nations, highlighting the need for tailored support mechanisms to address specific barriers faced by small businesses.

Paye (2024) explored the internal and sociopsychological aspects influencing technology adoption among small business operators in Houston, Texas. Utilizing the Technology Acceptance Model, the study revealed that factors such as leadership commitment, employee willingness to adopt technology, and perceived usefulness significantly affect the decision-making processes regarding technology investments. The research underscored the importance

of fostering a positive organizational culture that encourages technological innovation as a critical determinant of successful ICT adoption.

Conceptual framework

From the theoretical bases, related literature and studies, the research gaps, the research paradigm below was formulated.

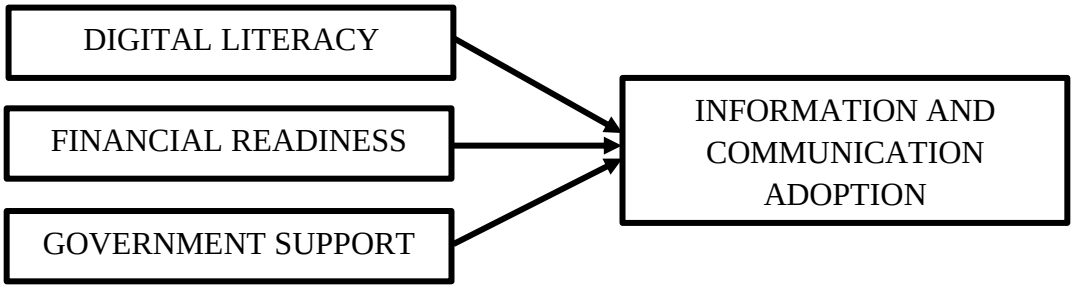

Figure 1: The research paradigm showed the relationship between digital literacy and information and communication adoption, financial readiness and information and communication adoption, and government support and information and communication adoption. The independent variables included digital literacy, financial readiness, and government support. On the other hand, information and communication adoption served as the dependent variable of this study. Specifically, it sought answers from the following questions:

Statement of the problem

1. What is the level of digital literacy among small businesses in Vigan City?

2. What is the level of financial readiness among small businesses in Vigan City?

3. How do small businesses in Vigan City perceive the level of government support?

4. What is the extent of information and communication technology (ICT) adoption among small businesses in Vigan City?

5. Is there a significant relationship between digital literacy, financial readiness, government support, and ICT adoption among small businesses in Vigan City?

Hypothesis

1. There is no significant relationship between the digital literacy and the information and communication technology adoption.
2. There is no significant relationship between the information and communication technology adoption and financial readiness.

3. There is no significant relationship between the information and communication technology adoption and government support.

Scope and limitation of the study

This study was focused on determining the significant relationship between the information and communication technology adoption and digital literacy, information and communication technology adoption and financial readiness, and information and communication technology adoption and government support. It determined the level of digital literacy, the level of financial readiness, the level of government support, and the level of information and communication technology adoption among small businesses in Vigan City. The respondents of this study were the managers and employees of small businesses in Vigan City. The researchers limited the setting of the study to Vigan City's small businesses only. This study used the descriptive and correlational research designs.

Research methodology

Research design

The relationship between the information and communication technology adoption and the digital literacy, financial readiness, and government support was determined by this study using the descriptive and correlational methods of research.

Population and sampling

The respondents of the study were composed of 150 small business owners and employees in Vigan City, chosen using the quota sampling technique (Appinio, 2024).

Data gathering procedure

To gather the necessary data, the researchers asked for the endorsement of the program head of the Graduate School to float the survey questionnaire to the respondents. After the endorsement letter was signed, the survey questionnaire attached to the request letter was personally distributed to the respondents. It was considered important that the prospective respondents gave their consent before answering the survey questionnaire. The completed survey questionnaire was then be retrieved by the researchers.

Tools for data analysis

Data needed for this study were gathered through a survey questionnaire developed by the researchers. The gathered data were treated using weighted mean, and Pearson product moment of correlation. The following were used to analyze the mean ratings:

Norms	Statistical Range	Descriptive Rating	Overall DR
4	3.26 – 4.00	Strongly Agree (SA)	Very High (VH)
3	2.51 – 3.25	Agree (A)	High (H)

2	1.76 – 2.50	Disagree (D)	Low (L)
1	1.00 – 1.75	Strongly Disagree (SD)	Very Low (VL)

Data presentation and analysis

This research aimed to investigate the factors that contribute to ICT adoption. The findings are organized and analyzed thematically into themes aligned with the research questions.

Digital literacy of the small businesses in Vigan City

Table 1. Level of Digital Literacy

Indicators	**Mean**	**DR**
1. I am comfortable using digital devices such as computers, tablets, and smartphones.	3.86	SA
2. I know how to use basic software applications such as word processors, and spreadsheets.	3.73	SA
3. I can effectively navigate the internet to find information relevant to my work.	3.81	SA
4. I regularly use email and messaging applications for professional communication.	3.66	SA
5. I can collaborate effectively with team members using online platforms such as shared documents, and project management tools.	3.63	SA
Overall Mean	**3.74**	**VH**

Source: Mark Antony R. Divina (2025).

The composite mean of 3.74, as shown in Table 2, falls within the range of 3.26 to 4.00, indicating a very high level of digital literacy among small business owners and employees in Vigan City.

Individually, each item received ratings ranging from 3.63 (the lowest) to 3.86 (the highest), with a descriptive rating of "strongly agree." The results further show that small business owners and employees in Vigan City are highly comfortable using digital devices such as computers, tablets, and smartphones ($\bar{x}$ = 3.86). They are also proficient in navigating the internet to find work-related information ($\bar{x}$ = 3.81), using basic software applications like word processors and spreadsheets ($\bar{x}$ = 3.73), and regularly utilizing email and messaging platforms for professional communication ($\bar{x}$ = 3.66). Additionally, they can effectively collaborate using online tools like shared documents and project management platforms ($\bar{x}$ = 3.63).

Financial readiness of the small businesses in Vigan City

Table 2. Level of financial readiness

Indicators	Mean	DR
1. There is a comprehensive plan that includes financial projections.	3.46	SA
2. There are available funds for the acquisition of business tools and technologies.	3.38	SA
3. There are available funds for the maintenance, updating, and/or upgrading of business tools and technologies.	3.37	SA
4. There are available funds to train employees in the use of business tools and technologies.	3.36	SA
5. There is a contingency plan in place dedicated for ICT-related expenses.	3.38	SA
Overall Mean	**3.39**	**VH**

Source: Mark Antony R. Divina (2025).

The composite mean of 3.39, as shown in Table 3, falls within the range of 3.26 to 4.00, indicating a very high level of financial readiness for ICT adoption among small businesses in Vigan City.

Individually, each item received ratings between 3.36 (the lowest) and 3.46 (the highest), all corresponding to a “strongly agree” rating. The findings further reveal that small businesses in Vigan City possess a comprehensive financial plan that includes projections for future expenses ($\bar{x}$ = 3.46). Additionally, they have allocated funds for acquiring business tools and technologies ($\bar{x}$ = 3.38), set aside a contingency fund for ICT-related expenditures ($\bar{x}$ = 3.38), reserved funds for the maintenance, updates, and upgrades of these tools and technologies ($\bar{x}$ = 3.37), and also have financial provisions for training employees to use these tools effectively ($\bar{x}$ = 3.36).

Government support to the small businesses in Vigan City

Table 3. Level of government support

Indicators	Mean	DR
1. The government offers support and assistance for small businesses to invest in information and communication technologies.	3.19	A
2. Small businesses are well-informed about the available funding or grants from the government for	3.15	A

investments in information and communication technologies.		
3. The application process for government funding or assistance is straightforward and user-friendly.	3.04	A
4. The government provides adequate training programs on information and communication technologies for small businesses.	3.07	A
5. Government assistance is sufficient for investing in an maintaining information and communication technologies.	3.08	A
Overall Mean	**3.11**	**H**

Source: Mark Antony R. Divina (2025).

The composite means of 3.11, as shown in Table 4, falls within the range of 2.51 to 3.25, indicating a high level of government support for ICT adoption among small businesses in Vigan City.

When taken singly, each item received ratings ranging from 3.04 (the lowest) to 3.19 (the highest), with a descriptive rating of "agree." It was further revealed that the government offered support and assistance for small businesses to invest in information and communication technologies ($\bar{x}$ = 3.19), small businesses were well-informed about the available funding or grants from the government for investments in information and communication technologies ($\bar{x}$ = 3.15), government assistance was sufficient for investing in and maintaining information and communication technologies ($\bar{x}$ = 3.08), the government provided adequate training programs on information and communication technologies for small businesses ($\bar{x}$ = 3.07), and the application process for government funding or assistance was straightforward and user-friendly ($\bar{x}$ = 3.04).

Information and communication technology adoption

Table 4. Level of information and communication technologies adoption

Indicators	**Mean**	**DR**
1. The business regularly uses computers and other similar tools and technologies for daily operations.	3.53	SA
2. The business has licensed and up-to-date software applications to manage its processes.	3.22	A
3. Employees are trained to use information and communication technology tools effectively.	3.48	SA
4. The business utilizes digital communication tools for correspondence.	3.49	SA
5. The business maintains an active online presence.	3.27	SA

Overall Mean	**3.40**	**VH**

Source: Mark Antony R. Divina (2025).

The composite mean of 3.40, as shown in Table 5, falls within the range of 3.26 to 4.00, indicating a very high level of information and communication technology adoption among small businesses in Vigan City.

When assessed separately, each item received ratings ranging from 3.22 (the lowest) to 3.53 (the highest), with descriptive ratings of "agree" and "strongly agree," respectively. It was further revealed that small businesses regularly used computers and other similar tools and technologies for daily operations ($\bar{x}$ = 3.53), utilized digital communication tools for correspondence ($\bar{x}$ = 3.49), trained employees to use information and communication technology tools effectively ($\bar{x}$ = 3.48), maintained an active online presence ($\bar{x}$ = 3.27), and have licensed and up-to-date software applications to manage their processes ($\bar{x}$ = 3.22).

Relationship between the digital literacy, financial readiness, and government support, and the information and communication technology adoption

Table 5. *Relationship between the digital literacy, financial readiness, and government support, and the information and communication technology adoption*

Information and Communication Technologies Adoption	**Pearson's r**	**Interpretation**	**p-value**	**Decision (H_0)**	**Interpretation**
Digital Literacy	0.550***	A moderate linear relationship	<0.001	Reject	Significant
Financial Readiness	0.726***	A moderate linear relationship	<0.001	Reject	Significant
Government Support	0.596***	A moderate linear relationship	<0.001	Reject	Significant

*Note: * p <0.05, ** p <0.01, *** p <0.001*

Source: IBM SPSS.

The Pearson correlation coefficient measured the strength and direction of the relationship between variables. The results revealed that there was a moderate positive linear correlation ($r=0.550$, $p<0.001$) between the information and communication technologies adoption and

digital literacy, which suggested to reject the null hypothesis. Similarly, there was a moderate positive linear correlation ($r=0.726$, $p<0.001$) between the information and communication technologies adoption and financial readiness, which suggest to reject the null hypothesis. Furthermore, there was a moderate positive linear correlation ($r=0.596$, $p<0.001$) between the information and communication technologies adoption and government support, which suggest to reject the null hypothesis. The results also indicated that the correlations were statistically significant at 0.001 level of significance.

Results and discussion

The study revealed a strong relationship between digital literacy, financial readiness, government support, and ICT adoption among small businesses in Vigan City. Business owners and employees demonstrated high digital literacy, effectively using tools like Microsoft Office and social media for operations and marketing, aligning with Damai et al. (2024), who found that digital literacy enhances small business performance.

Additionally, businesses exhibited solid financial readiness, with clear financial plans for ICT investments, employee training, and ongoing technology maintenance. This supports Kumar et al. (2022), who noted that businesses with strong financial resources are better positioned to adopt digital tools.

ICT tools were widely used, with businesses regularly employing digital communication and maintaining an active online presence. Mishrif and Khan (2023) highlighted similar trends during the pandemic as SMEs shifted to digital platforms for sales and engagement.

Government support was also reported as sufficient, with training, access to digital tools, and infrastructure development. This aligns with Maynard's (2007) view on the importance of government policies in promoting ICT adoption.

Higher digital literacy was positively correlated with ICT adoption, as businesses with greater digital skills were more likely to integrate ICT into their operations. This finding echoes Wardani et al. (2022), who observed that digital literacy boosts the adoption of e-commerce solutions.

Moreover, financial readiness was crucial for ICT adoption, with businesses better equipped to invest in technology. This is consistent with Affandi et al. (2024), who found that businesses with strong financial literacy are more likely to adopt digital solutions.

Government initiatives, such as subsidies and training, also facilitated ICT adoption by reducing financial and logistical barriers. This finding supports Kossaï and Piget (2024), who showed that government assistance increases ICT adoption likelihood.

These results are consistent with Eshet-Alkalai's Digital Literacy Framework, the Finance Readiness Framework, and the Advocacy Coalition Framework, highlighting the importance of digital literacy, financial preparedness, and stakeholder support in ICT adoption.

In summary, this study provides a foundation for enhancing digital literacy, financial readiness, and government support in fostering ICT adoption among small businesses in Vigan City.

Conclusions

This study explored the interplay between digital literacy, financial readiness, and government support in facilitating the adoption of Information and Communication Technology (ICT) among small businesses in Vigan City. It highlighted how these factors collectively create a supportive ecosystem that encourages ICT adoption, enhancing business efficiency and competitiveness. Small businesses in Vigan City demonstrated an ability to leverage digital platforms and exhibited strong financial readiness, while government initiatives provided crucial support. The study recommended targeted digital literacy training, financial planning workshops, strengthened government support, continued ICT utilization by businesses, and future research into additional factors influencing ICT adoption. These recommendations aim to further enhance the digital transformation of small businesses in similar contexts.

Author's contribution: This paper was conceptualized, written, collected data, and analyzed by Mark Anthony R. Divina. Lord Jan T. Rodiris helped in the conceptualization, writing, review, and supervision of the paper. They express their heartfelt gratitude to Dr. Elita B. Valdez, Dr. Francisco G. Alcalde, and Prof. Marie Joy G. Encarnacion for their invaluable support and guidance in reviewing this research work and providing insightful suggestions to enhance its quality.

Conflict of interest statement: All authors declare no conflict of interest.

Ethical review statement: The study followed the ethical conduct of research. It does not involve human-sensitive issues.

Funding: the study is funded by the authors.

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