MEASURING DIGITAL LITERACY AMONG MICRO AND SMALL ENTERPRISES (MSEs) IN INDONESIA: CASE STUDY FROM PONTIANAK CITY

Arninda[1], Darusman, Fathia Alya Supandih

Faculty of Economics and Business, Muhammadiyah University
Jl. Jenderal Ahmad Yani No.111, Bangka Belitung Laut, Pontianak Tenggara, Pontianak, West Kalimantan 78123, Indonesia

Article history:

Received
5 June 2024

Revised
4 August 2024

Accepted
8 January 2025

Available online
24 January 2025

Abstract

Background: The rapid changes in people's consumption behavior resulting from technological and information advancements require business actors to have a high level of digital literacy to increase sales performance.
Purpose: This study aims to measure the level of digital literacy among micro and small-scale businesses particularly in the vibrant region of Pontianak City.
Design/Methodology/Approach: Primary data are taken from non-formal MSEs category of business as they make up the largest share of business ownership category in the region. This study employs descriptive qualitative research through grand mean methodology which is accurate to analyze the distinct characteristic across multiple groups of samples, as well as to facilitate interpretation of unchanging effects by controlling of inclusive variability.
Conclusion: This study finds that the level of digital literacy among MSEs in Pontianak City is categorized into upper-middle group with average total score of 3.64 where micro-scale enterprises are found to have lower level of literacy as compared to small enterprises. It is also found that imbalance of digital literacy within variables used in this study. Internet searching variable (X1) and hypertextual navigation (X2) and knowledge assembly (X4) variable are found to be in the category of upper-middle group, while content evaluation variable (X3) is found to be lower at medium group.
Originality/value (state of the art): This study provides a nascent overview of digital literacy level in Pontianak City, highlighting significant differences between micro and small enterprises. These findings serve as a critical reference for policymakers in designing localized strategies to improve digital literacy and foster economic growth.

Keywords: digital literacy, MSEs, non-formal business, digital business

How to Cite:
Arninda A., Darusman, & Supandih F. A. (2025). Measuring Digital Literacy Among Micro and Small Enterprises (MSEs) in Indonesia: Case Study From Pontianak City. Indonesian Journal of Business and Entrepreneurship (IJBE), 11(1), 250. https://doi.org/10.17358/ijbe.11.1.250

[1] Corresponding author:
Email: arninda@unmuhpnk.ac.id

INTRODUCTION

The rapid changes in people's consumption behavior resulting from the process of technological and information advancement require business actors to adapt to survive and progress in modern contexts (Bintariningtyas et al. 2021). Business owners are required to understand various new skills and knowledge, one of which is understanding the function and use of digital technology to serve consumers and increase sales as well as increasing the overall performance of the business (Farhan et al. 2022). Adopting science and technology is vital to achieving success for businesses, particularly MSMEs, in maintaining their establishment and increasing income by targeting new markets (Firmansyah & Saepuloh, 2022). Additionally, integrating digital technology with a strong entrepreneurial mindset can significantly enhance business performance, particularly in adapting to modern customer demands and the shift toward digital marketing (Aryani & Tuti, 2023). Therefore, literacy in a digital context is no longer an option but is a must for every entrepreneur.

Digital literacy among business owners is critical to mitigating uncertainty as well as increasing their productivity (RVSPK et al. 2020). Furthermore, digital literacy has been shown to positively influence SME business performance, especially when combined with strong entrepreneurial skills that act as a significant mediator in driving growth and innovation (Novela et al. 2024). However, studies on the level of technological literacy among business owners, particularly non-formal MSME entrepreneurs in Indonesia, are still rarely conducted. Previous studies conducted found that the level of digital literacy among SMEs in Indonesia is in the middle group category. As Indonesia is a profoundly diverse nation with 514 regents and cities and non-linear access to the internet, conducting further study is critical to understand the matter in more specific regions and methods. Thus, authorities can implement the most suitable strategy to increase digital literacy among business owners in the region. Moreover, these non-formal business actors are often underestimated because they are inefficient, the scale of their business is relatively small to measure, as well as it is difficult to level up the business (T. T. H. Tambunan, 2012). Despite its relatively small scale, from the perspective of the volume, this category of business ownership is significantly high in Indonesia, particularly in Pontianak City (Dinas Koperasi dan UKM Provinsi Kalimantan Barat, 2023). Thus, the potential of encouraging business actors in this sector is vital to contributing to the economy as a whole and is important to be explored deeper.

In the context of business, digital literacy can be seen as the level of understanding and mastery of technology and information by business actors. This is measured through several variables based on Gilster's theory of digital literacy, the first founding theory in digital literature, which include knowledge assembly, internet searching, content evaluation, navigation. xtual navigation.These variables become the basis to determine the level of digital literacy among MSME players, especially for non-formal micro businesses, to get a comprehensive picture (Onwubuya & Odogwu, 2023). Through analyzing these core competencies, researchers can assess the digital literacy level of non-formal MSMEs in Indonesia, particularly in the region of Pontianak City. The roles of MSMEs in promoting development and economic growth have been long addressed by researchers around the world (Gade, 2018). Multiple different studies have found that MSMEs have been positively impacting both developing and developed countries by spurring their economies for decades (Mpi, 2019). They also play significant roles in increasing income per capita, thus progressing the overall economic well-being in the region (Juminawati et al. 2021). Furthermore, MSMEs can also alleviate poverty as well as reduce the poverty gap among the population, which describes how vital they are to achieving a welfare state (Nursini, 2020).

Classification of micro, small and medium enterprises (MSMEs) vary among countries in the world. In China, a business is categorized into MSMEs if it employes 20 or less labor (Liu et al. 2013). Meanwhile in Australia, a business is categorized into MSMEs group if it has equal to or less than 200 employes and annual income of $200 million or less (Rola-Rubzen, 2011). These criteria demonstrate how different countries align their definitions of MSMEs with their unique economic scales and labor markets. In the context of European Union, MSMEs are defined as any businesses operating with 250 employees or less and has annual income of maximum EUR 50 million (Dambiski Gomes de Carvalho et al. 2021). In Indonesia, the characteristics of these types of businesses are defined by the Ministry of Cooperation, Micro, Small, and Medium Enterprises of the Republic of Indonesia (Undang-Undang (UU) Nomor 20 Tahun 2008 Tentang Usaha Mikro, Kecil,

Dan Menengah, 2008). As shown in Table 1, the classification of MSMEs in Indonesia is based on specific criteria, including net worth (excluding land and buildings) and annual sales proceeds, which help distinguish micro, small, and medium enterprises.

Meanwhile Central Bureau Statistic of the Republic of Indonesia (T. Tambunan, 2019) provides an alternative classification method for MSMEs based on the number of employees. This classification highlights workforce size as a key indicator of the scale and operational capacity of a business. Unlike financial metrics such as net worth or annual revenue, the number of employees serves as a simple and practical measure to categorize businesses. This approach is particularly relevant in regions with high levels of informal employment, as it captures the labor-intensive nature of many micro and small enterprises. By focusing on workforce size, the classification reflects Indonesia's socioeconomic conditions, where MSMEs are critical in creating employment opportunities. The detailed classification is outlined in Table 2.

According to the official definitions above, micro-scale business is defined as an individual or entity that generates income of less than 300 million per year with a number of employees under 5 people. The population of this type of business in Indonesia reaches 99% of the total business ownership across the country (T. Tambunan, 2019). In Pontianak City, as the subject of research, this number reaches 95% of the total business ownership in the city's administrative area (Dinas Koperasi dan UKM Provinsi Kalimantan Barat, 2023). This significant figure illustrates how vital the position of these entrepreneurs is to move the wheels of the economy and contribute greatly to national economic growth. Based on the official data from the West Kalimantan Province Cooperatives and MSMEs Service (Dinas Koperasi dan UKM Provinsi Kalimantan Barat, 2023), the number of MSMEs in 14 city and districts in the West Kalimantan Province region reaches 197,022 business ownerships, of which 168,989 businesses are classified into micro-scale businesses. Pontianak City, as the scope of the research, has a total of 39,697 micro-scale businesses. Of this number, only 2,825 businesses were recorded as having risk-based permits (NIB). This shows how big the roles this category of business play to the economic development in the region.

Table 1. Business classification according to ministry of cooperatives and MSMEs

Type of Business	Classifications
Micro-Business	have a net worth of a maximum of IDR50,000,000 excluding land and buildings for business premises; or
	have annual sales proceeds of a maximum of IDR300,000,000
Small Business	have a net worth of more than IDR50,000,000.00 up to a maximum of IDR500,000,000.00 excluding land and buildings where the business is located;
	have annual sales proceeds of more than IDR300,000,000.00 up to a maximum of IDR2,500,000,000
Medium Business	have a net worth of more than IDR500,000,000 up to a maximum of IDR10,000,000,000 excluding land and buildings for business premises; or
	has annual sales proceeds of more than IDR2,500,000,000 up to a maximum of IDR50,000,000,000

Table 2. BPS RI Classification of MSMEs

Type of Business	Number of Employee
Micro-Business	0–4
Small Business	5–19
Medium Business	20–99

Source: BPS RI (2008); T. Tambunan (2019)

The purpose of this study conducted is to gain deeper comprehension toward the level of digital literacy among MSEs in Indonesia, particularly in Pontianak City. Understanding digital literacy level will be beneficial for researchers as the basis to conduct related and profounder studies to spur economic growth in both local and national level. This research employs qualitative descriptive approach using grand mean methodology to measure the level of digital literacy among MSMEs in Pontianak City. This approach is used as it provides overview of the object under study through data or samples that have been collected as they are without carrying out analysis and making conclusions that apply to the public (Sugiyono, 2014). It is not uncommon for many of these non-formal micro businesses to shut down or forced to change the type of product to sell as well as to move the place of doing business because they cannot survive in the tight market competition. This is caused by various factors including inability to adapt to changes and unable to integrate the business into digital system (Hervé et al. 2021). Furthermore, the level of digital literacy among micro business owners has never been measured. Thus, measuring the level of digital literacy among micro entrepreneurs is very critical as the basis of further study to solve the problems facing MSMEs in Indonesia particularly in the micro category.

METHODS

This research employs descriptive analysis method in testing and interpreting research samples. The descriptive method is a method that functions to describe or provide an overview of the object under study through data or samples that have been collected as they are without carrying out analysis and making conclusions that apply to the public (Sugiyono, 2014). This approach is particularly suitable for exploring specific characteristics and conditions of non-formal micro businesses in a localized context, such as Pontianak City. The research was conducted to provide a precise and accurate picture in determining the level of digital literacy of non-formal sector micro businesses in Pontianak City. Data collection uses a purposive sampling method with specific dimensions:

- Micro scale businesses operating in the administrative area of Pontianak City.
- Businesses that are still actively selling in the last 3 months.
- Businesses that own no official/ legal permission to operate by the local government.
- Sole ownership.

This research employs descriptive research methodology based on survey of respondents where the research results can provide accurate picture of literacy levels of non-formal MSMEs business owners in Pontianak City. The population in this research is determined using Ferdinand's method which uses of total 100 samples of primary data. The respondents' locations are spread across several areas: Ampera, Danau Sentarum, Alianyang, Dr. Wahidin, Sungai Jawi, Imam Bonjol, Tanjung Pura, and Merdeka. This method is employed because of the number of populations can rapidly changes due to low level of barrier to entry and easy to exit the market (Wibowo, 2021). Research is conducted on non-formal micro business entrepreneurs in Pontianak City administrative area. The data collection and analysis technique used is by semi structured interview taken from July to December 2023.

Hypothesis

Hypothesis (H0) of this study is the level of digital literacy among MSEs in the region is in high group category. This is because Pontianak City is strategically located and holds the title as the capital city of West Kalimantan Province which access to the internet is fully covered in the entire area. In addition, various internet providers are competing to acquire customers which increase the competitiveness of internet speed which benefit the users. Respondents answered questions given by researchers to measure the level of digital literacy skills using Gilster's digital literacy competencies that includes variable such as Internet Searching (X1), Hypertextual Navigation (X2), Content Evaluation (X3) and Knowledge Assembly (X4).

Figure 1 illustrates the research framework that serves as the foundation for this study. It highlights digital literacy (Y1) as the central variable, which is measured through four key components: Internet Searching (X1), representing the ability to efficiently search for relevant information online; Hypertextual Navigation (X2), which assesses the capability to navigate through interconnected information; Content Evaluation (X3), evaluating the ability to determine the credibility and accuracy of online information; and Knowledge Assembly (X4), focusing on the ability to synthesize and apply information for business purposes. These components are integral to comprehensively measure and understand the digital literacy levels of MSMEs

in Pontianak City. These components are integral to comprehensively measure and understand the digital literacy levels of MSEs in Pontianak City. Then, it was analyzed using descriptive analysis method to find the result using the grand mean formulas as follow:

$$\text{Grand Mean} = \frac{\sum_{i=1}^{k} \sum_{j=1}^{n_i} x_{ij}}{\sum_{i=1}^{k} n_i}$$

The grand mean methodology is employed to measure the average of datapoints within datasets that group all individual samples in the cluster which then computing the mean. This methodology is accurate to analyze the distinct characteristic across multiple groups of samples, as well as to facilitate interpretation of unchanging effects by controlling of inclusive variability. This technique is used in standardized approach to understanding across multiple groups, therefore enhancing the robustness of clarity in the finding of the research. Apart from calculating the average, the next technique is to tabulate the data into a table and calculate the percentage. Then it is interpreted into an explanatory sentence based on the table category which was determined through the grand mean result of each indicator in the scale.

The analysis of digital literacy levels among MSEs in Pontianak City is based on the classification system outlined in Table 3. This system categorizes scores into five distinct groups High, Upper Middle, Middle, Lower Middle, and Low based on specific score ranges. These categories are crucial for interpreting the grand mean results and identifying the strengths and weaknesses of MSMEs' digital literacy. Furthermore, this classification provides valuable insights into which competencies, such as Internet Searching, Hypertextual Navigation, Content Evaluation, or Knowledge Assembly, require further attention and improvement. By using this system, researchers can better understand the areas where MSMEs excel and where interventions may be needed to enhance their digital literacy levels.

Table 3. Digital literacy classifications

Score	Category
4,11 - 5	High
3,41 – 4,1	Upper Middle
2,51 – 3,4	Middle
1,81 – 2,5	Lower Middle
1,0 – 1,8	Low

Source: Wibowo (2021)

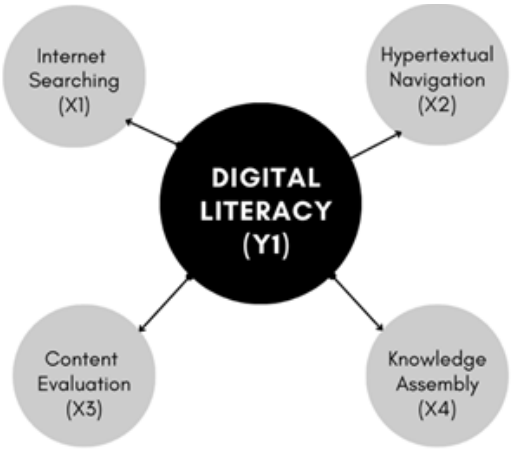

Figure 1. Research framework

RESULTS

Demographic

The presentation of data regarding the respondent's demographic is to provide an overview of the respondent's identities. The description of the respondents who are sampled in this study are classified based on age, gender, level of education, and gross daily income. This demographic analysis aims to identify patterns and characteristics that may influence the digital literacy levels of respondents. Understanding these demographic factors is essential to contextualize the findings and highlight specific challenges faced by different groups. The results are presented more specifically as follow:

Characteristic of Respondents Based on Age

Respondents in this study demonstrated a diverse age distribution, with the majority falling between 21–30 years old (35%), followed by those aged 41–50 years (23%). This indicates that younger entrepreneurs, particularly those in their 20s, are the dominant group actively running micro and small enterprises in Pontianak. Entrepreneurs aged 20 years or younger constitute 19% of respondents, highlighting the presence of a significant number of early-stage business owners. Interestingly, individuals aged above 50 years represent the smallest portion (10%), suggesting a declining participation rate in entrepreneurship as age increases. This demographic composition reflects the potential for digital literacy programs to target younger business owners, who may be more adaptable to technological advancements while addressing gaps among older entrepreneurs to ensure inclusivity. The respondents' age distribution can be seen in Table 4.

Characteristic of Respondents Based on Gender

The study found that male respondents constituted 54% of the total, while female respondents made up 46%. This relatively balanced gender representation highlights the active participation of women in entrepreneurship within Pontianak City. While men slightly outnumber women, the data shows that both genders contribute significantly to the local economy. Female entrepreneurs may face unique challenges, such as balancing business activities with household responsibilities, which could affect their engagement with digital tools. Addressing these challenges through tailored interventions could empower more women to leverage technology for business growth. This gender distribution also reflects a broader trend of increasing inclusivity in the entrepreneurial ecosystem. The gender distribution is shown in Table 5.

Characteristic of Respondents Based on Education

Educational attainment among respondents reveals that 85% have completed senior high school or lower, with only 15% holding a diploma or bachelor's degree. This suggests that most entrepreneurs in Pontianak have a basic educational background, which may influence their ability to adopt and utilize advanced digital tools. Entrepreneurs with elementary or junior high school education make up 39% of respondents, underscoring the need for simplified training programs tailored to varying educational levels. Respondents with higher education levels are more likely to embrace technology, as indicated by their reported confidence in using digital platforms. Bridging the gap in educational attainment is essential to ensuring that all business owners, regardless of their academic background, can fully benefit from digital literacy programs. This finding emphasizes the importance of accessible and practical training initiatives to address educational disparities. The education levels of respondents are shown in Table 6.

Characteristic of Respondents Based on Daily Gross Income

Respondents' gross daily income varies significantly, with 52% generating IDR820,000 or less, categorizing them as micro-businesses. Meanwhile, 48% of respondents earn between IDR820,001 and IDR6,850,000, aligning them with the small business category. This income distribution highlights the prevalence of micro-businesses in Pontianak, reflecting their dominant role in the local economy. Lower-income respondents may face additional barriers in accessing digital tools and resources, which could limit their ability to improve business operations. Addressing these barriers through subsidized training and access to affordable technology could help level the playing field for micro-businesses. The higher-income small business owners, on the other hand, demonstrate greater potential for digital adoption, which could further enhance their competitiveness in the market. The income distribution of respondents is shown in Table 7.

Table 4. Respondents characteristic based on age

Age (y.o)	Frequency	Percentage
≤ 20	19	19%
21 - 30	35	35%
31 - 40	13	13%
41 - 50	23	23%
>50	10	10%
Total	100	100%

Table 5. Respondents characteristic based on gender

Gender	Frequency	Percentage
Male	54	54%
Female	46	46%
Total	100	100%

Table 6. Respondents characteristic based on education

Education	Frequency	Percentage
Elementary School	16	16%
Junior High School	23	23%
Senior High School	46	46%
Diploma Degree	2	2%
Bachelor Degree	13	13%
Total	100	100%

Table 7. Respondents characteristic based on daily gross income

Gross Daily Income (IDR)	Frequency	Category	Percentage
≤ 820,000	52	Micro	52%
820,001 – 6,850,000	48	Small	48%
Total	100		100%

Digital Literacy Result

This study finds the average score of all variables used in this study such as internet searching (X_1), Hypertextual Navigation (X_2), Content Evaluation (X_3) and Knowledge Assembly (X_4) These variables were chosen to provide a comprehensive assessment of the ability of MSMEs to access, evaluate, and utilize digital tools for business purposes. Each variable is analyzed through specific indicators, such as daily internet use, navigation techniques, content credibility evaluation, and knowledge integration. The results for each variable are summarized using grand mean scores, highlighting areas of strength and those requiring further improvement. A detailed summary of these variables and their respective results is presented in Table 8.

Table 8. Digital literacy variables' and indicators' result

Variable	Indicator	Value			Category
		M1	S1	GM	
Internet Searching (X1)	I use the internet every day	4.77	4.89	4.83	H
	I have the ability to search for information using a search engine	3.90	3.94	3.92	UM
	I am able to use Google Chrome/ Mozilla Firefox/ Internet Explorer to search for information sources for business purposes	3.79	3.83	3.81	UM
	GM	4.15	4.22	4.19	UM
Hypertextual Navigation (X2)	I often search for information via the internet	4.55	4.79	4.67	H
	I use the internet to improve my business	3.98	4.06	4.02	UM
	I am able to use information search techniques such as using keywords or filters when searching for information	3.69	3.81	3.75	UM
	GM	4.07	4.22	4.15	H
Content Evaluation (X3)	Of the many websites that show information, I know how to choose which one is correct	3.12	3.52	3.32	M
	I know the different types of websites on the internet such as blogs, social media and scientific articles	3.11	3.27	3.19	M
	I can deepen the information further than the initial information obtained via the internet	3.51	3.71	3.61	UM
	GM	3.24	3.50	3.37	M
Knowledge Assembly (X4)	I can distinguish the source of information obtained (trustworthy or not)	3.55	3.73	3.64	UM
	I can cross check/double check information obtained via the internet	3.21	3.53	3.37	M
	I can use the internet to communicate with the community/experts in the business field	3.82	4.00	3.91	UM
	GM	3.53	3.75	3.64	UM

Description: Micro businesses (M1); Small businesses (S1); Grand Mean (GM); Middle group category (M); Upper Middle group category (UM); High group category (H)

Internet Searching (X_1)

Internet searching variable quantifies how far the engagement of businesses and in what that include daily internet use, ability to search information and confidence with using search engine to gain the information. It is found to be the highest among four indicators in this study. Grand Mean of 4.83 from respondents suggest that they utilize internet in daily basis, while 3.92 respondents are confident with their ability to find information on the internet and 3,81 respondents indicate the ability to use browser to find intended information related to business development. These results indicate the level of internet searching variable to be in in the high group category. Slightly lower figure is found in categorically smaller size enterprises in all indicators. Daily internet used is found to be average 4.77 from micro businesses as compared to 4.89 in small enterprises, despite both are in the category of high literacy. This indicates that the internet has become an integral part of the respondents' daily routine, indicating high adoption of technology. Micro businesses are also found slightly lower with 3.90 average for the ability to use internet for searching purposes, compared to 3.94 from small businesses category. Both group of businesses are found to be in the category of upper middle literacy for this indicator with 3.93 score of grand mean. This indicator reflects good level of confidence in their ability to use search engines in order to find intended information from the internet. The last indicator for X1 is the ability to use search engine to find information to support their businesses. This study confirms the grand mean of 3.81 where small business category score is 3.83 and micro businesses with 3.79 average. This indicates that respondents understand how to utilize the various features and tools in their browsers to search for relevant information to support their businesses. Overall finding of the first variable implies that the higher the daily income generated by entrepreneur, in both micro and small business category, might be in direct proportion to the daily used of internet as well as ability to use the information to support running the operation and strategy of the business. information.

Hypertextual Navigation (X_2)

Hypertextual navigation variable measures respondents' confidence with their ability to navigate through ocean of data in the internet which can be both positive and negative to the operation of their businesses. This variable employs three different indicators including intensity of daily internet use, ability to use information online to develop their business and the ability to use keywords or filters specifically to distinguish intended information. Finding from this study confirms that respondents are in the category of high level of literacy with grand mean score of 4.15. Furthermore, the indicator of internet use intensity is found to be the highest among all indicators with grand mean score of 4.67, where micro business category is found slightly lower with 4.55 average, as compared to 4.79 average found at small business category. This confirms that businesses are highly exposed to the use of the internet for both personal and business intentions. In addition, it also indicates strong involvement with various types of online content and services. The second indicator in hypertextual navigation variable is the ability of entrepreneurs to use internet to improve their businesses. It is found that the indicator is categorized into upper middle group with grand mean of 4.02. Small business category is found to perform better with 4.06 score compared to micro level business with 3.98 score. This indicates that respondents are relatively proactive in utilizing the internet for their business needs such as marketing, communication, and strategy. The third indicator employed in this variable measures the ability of respondents to use relevant keywords to search important information as well as to sort them out using filters. This study finds the indicator to be in the category of upper middle group with grand mean score of 3.75. Micro business category is found to be slightly lower as compared to small business category with 3.67 and 3.81 score respectively. This result implies of relatively decent level of ability to sort information online, despite mistakes still can be made particularly among micro business owners. The study also suggests that there are rooms for improvement in this indicator because using filters and keywords in internet searching can bring several benefits for the business including making the search process more accurate, efficient and tailored the needs of the entrepreneurs.

Content Evaluation (X_3)

The ability to evaluate contents from the internet measures critical evaluation skills among entrepreneurs which assess credibility, analyze accuracy as we as identify bias from presented online information to support business development. This variable employes three indicators that include ability to find correct information, ability to distinguish between sources of

information as well as ability to dig deeper into specific information obtained from those sources. This study finds that content evaluation variable as the lowest skill among all variables with grand mean score of 3.37 and middle group digital literacy. This finding indicates that entrepreneurs are not very confidence with their ability to evaluate relevant information they search through the internet and how to dig deeper. The first indicator in X3 variable is the ability to choose the correct information online. Micro business owners are found to be on the verge of lower group category with merely 3.12 mean score, as compared to 3.52 score obtained from small business respondents, thus putting the variable in middle group category of digital literacy with 3.32 grand mean score. This implies that despite high frequency daily use of internet, respondents hesitate with their ability to differentiate between correct and wrong information collected from the internet. The next indicator in this variable is the ability to use different sources of information such as blog, social media and journal article. It is found to perform slightly lower than the first indicator with grand mean score of 3.19, where micro business category and small business category with 3.11 and 3.29 mean score respectively, thus group them into middle level of digital literacy. This indicate that respondents care less about where they obtained information and rush to believe on the things they read online, thus open for exposure to fake news and incorrect information. The third indicator in content evaluation variable is the ability to dig deeper information obtained from the internet. It measures respondents' research skill, critical thinking and problem solving which will benefit the business. This study finds that upper medium level of literacy in this context with grand mean score of 3.61. Small business category performs slightly better than micro business category with mean score of 3.71 and 3.51 correspondingly. This indicate that the level of eagerness to dig deeper into information obtained from the internet is in moderate level. The content evaluation variable shows that despite respondents are quite capable in some aspects of content screening, there are areas that require more attention, particularly in in this era of information overload and misinformation prevalent.

Knowledge Assembly (X_4)

Variable X4 measures the ability of entrepreneurs in the region to distinguish credible and trustworthiness of information sources as well as to utilize the internet to connect with experts who can help developing their businesses. Of all three indicators, knowledge assembly variable is found to be in the category of upper middle group with grand mean score of 3.64, indicating respondents' ability to construct relevant knowledges to spur their business as well as taking advantage of the internet to gain perspectives from expert in the field with better experience and knowledge about the subject. The first indicator is the ability of entrepreneur to determine the trustworthiness of the information obtained from the internet is found to be slightly lower at micro businesses with 3.55 mean score, compared to 3.73 score obtained from small business category. This implies that entrepreneurs in the region are confident with their skill to understand information from the internet as reliable and credible in upper middle level, indicating that the information verification process can be improved. Implementing best practices in checking and verifying information will increase the reliability of the knowledge collected and help in better decision making. The second indicator of X4 variable is the eagerness and ability to compare information with other sources in order to gain second opinion from the matter. It is found that the respondents are not very sure about cross-checking information obtained with grand mean score of 3.37, where micro level business is found lower with 3.21 score and small category business with 3.53 mean score. There is a significant gap between the categories of business where entrepreneurs with higher level of income, thus categorized into small business group, tend to virtually critical and cross-checked information from the internet.

Overall Digital Literacy Level (Y1)

Using the grand mean methodology, the result confirms that the level of digital literacy among MSEs in Pontianak City is categorized into upper middle group with 3.64 score. It can be explained through shifting behavior of the entrepreneurs in the region from the old fashion ways where the internet has become part of their daily activities. Furthermore, better infrastructure of information technology in the region as compared to neighboring rural areas has become one of the reasons of the findings in this research. Despite of its relatively better literacy, however it does not imply better business performance compared to rural entrepreneurs with less infrastructure of IT in other region. It is also found that imbalance of digital literacy within variables used in this study. Internet searching variable (X1) and hypertextual navigation (X2) and knowledge assembly

(X4) variable are found to be in the category of upper middle group, while content evaluation variable (X3) is found to be lower at medium group. This implies that despite significant use of internet in entrepreneurs' business operation, the ability to evaluate information from the internet is considered weak. This indicates that there might be erroneous information consumed from the internet that will negatively affect their business strategy and operation.With a grand mean average score of 3.64, this reflects significant progress in the adoption and use of digital technology among MSEs in Indonesia particularly in vibrant region of Pontianak City. A higher level of digital literacy reflects good adaptation to new technologies and utilization of the internet in daily activities and business. However, this relatively high score does not always equate to better business performance. Other factors such as business strategy, access to markets, and internal management also play an important role in determining business success. This shows that despite digital technology provides benefits, business success requires a combination of other factors beyond just digital literacy.

Managerial Implications

The findings of this study highlight the critical importance of digital literacy in supporting the development of micro and small enterprises (MSEs). Strategic steps are needed to enhance the digital capabilities of business owners. Governments and policymakers can play a key role by providing tailored training programs on digital marketing, information evaluation, and the use of online tools, while also ensuring affordable and high-speed internet access through subsidies. Additionally, establishing digital communities for knowledge sharing and collaboration among entrepreneurs is essential, alongside offering financial and non-financial incentives to encourage participation in digital literacy programs. Training should also focus on improving content evaluation skills to prevent the spread of misinformation, as well as integrating digital tools such as e-commerce platforms and social media into business operations to boost efficiency and competitiveness. These strategies need to be implemented locally, taking into account the specific challenges of each region, such as Pontianak, to ensure optimal impact on regional and national economic growth.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study reveals that the level of digital literacy among MSEs in Pontianak City falls into the upper-middle category, with an average score of 3.64. The findings highlight strengths in internet information searching and hypertext navigation but also significant weaknesses in content evaluation, particularly in assessing the credibility of information. The digital literacy gap identified between micro and small enterprises underscores the need for more focused approaches to enhance digital capabilities among micro-enterprise owners. The implications of these findings are crucial for MSEs in Pontianak. Improving digital literacy can help MSEs optimize the use of technology to support business operations, increase competitiveness, and expand market reach. Strategic interventions, such as digital literacy training, the development of digital information platforms, and the establishment of online communities, are essential to support MSEs in overcoming these challenges. However, this study has several limitations. Its focus on non-formal enterprises in a single region means the findings may not fully represent the condition of MSEs in other regions or within the formal sector. Further research is needed to include a larger, more diverse sample across broader regions. Additionally, future studies could explore the relationship between digital literacy levels and business performance to provide deeper insights into its impact on the success of MSEs.

Recommendations

Recommendations can be implemented by authorities and interrelated stakeholders to enhance and leverage digital literacy to drive business growth and economic development include:

1. Development of continuous training programs. Conduct advanced training sessions that delve deeper into digital technology usage, covering digital marketing, asymetrix information, data analysis and evaluation, social media management, and e-commerce.
2. Develop a digital platform that serves as an information portal, business resource center, and online training hub for MSEs.
3. Encourage the formation of digital communities where business owners can share experiences, learn together, and receive technical support.

4. Carry out periodic surveys to measure the progress of digital literacy among MSEs owners and assess its impact on business growth.
5. Provide financial subsidies or assistance to MSEs participating in digital literacy training programs.

FUNDING STATEMENT: This research did not receive any specific grant from public, commercial, or not-for-profit funding agencies.

CONFLICTS OF INTEREST: The author declares no conflict of interest.

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