

# The Effect of Digital Financial Literacy and Digital Financial Inclusion on Women's Entrepreneurship Empowerment

Khaerunnisa Nur Fatimah Syahnur<sup>1\*</sup>, Rahmat Syarif<sup>2</sup>, Arianti<sup>3</sup>

<sup>1\*,2,3</sup> Retail Management Kalla Institute, Lt. 5 – 6 Nipah Park Office Building Makassar, Indonesia

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### Email Correspondence:

khaerunnisasahmur@kallainstitute.ac.id

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## ABSTRACT

The majority of the contributions of entrepreneurs to the Indonesian economy come from small and medium-sized enterprises (SMEs), and female entrepreneurs dominate 99% of UMKM in Indonesia. Women entrepreneurs face the challenge of being able to survive the evolution of the digital age. Women entrepreneurs have a high level of digital inclusion but have low literacy, making them vulnerable to fraud. The relationship of women with the digital world is still far from ideal. Therefore, this study aims to test the impact of digital financial literacy and digital financial inclusion on the empowerment of women entrepreneurs. The study uses a survey method with a sample of female entrepreneurs in South Sulawesi Province. Respondents of this study represented 7 districts or cities spread across the South Sulawesi Province. The results of this study prove that digital financial literacy and digital financial inclusion have a significant positive impact on the empowerment of women entrepreneurs. Female entrepreneurs very much need digital literacy and financial inclusion in view of the very rapid digital development. This research responds to the urgency of research topics on literature and financial inclusion with digital concepts that are still very limited in Indonesia.

## ABSTRAK

Mayoritas kontribusi yang diberikan oleh wirausaha terhadap perekonomian Indonesia berasal dari Usaha Kecil dan Menengah (UMKM) dan 99% UMKM di Indonesia didominasi oleh pelaku wirausaha perempuan. Wirausaha perempuan menghadapi masalah untuk dapat bertahan di perkembangan era digital. Wirausaha perempuan memiliki tingkat inklusi digital yang tinggi namun memiliki literasi yang rendah, sehingga rentan terhadap penipuan. Relasi kaum perempuan dengan dunia digital dinilai masih jauh dari kata ideal. Oleh karena itu penelitian ini bertujuan untuk menguji pengaruh literasi keuangan digital dan inklusi keuangan digital terhadap pemberdayaan wirausaha perempuan. Penelitian ini menggunakan metode survei dengan sampel wirausaha perempuan di Provinsi Sulawesi Selatan. Responden penelitian ini mewakili 7 Kabupaten atau Kota yang tersebar di Provinsi Sulawesi Selatan. Hasil penelitian ini membuktikan bahwa literasi keuangan digital dan inklusi keuangan digital berpengaruh positif signifikan terhadap pemberdayaan wirausaha perempuan. Literasi dan inklusi keuangan digital sangat dibutuhkan oleh wirausaha perempuan mengingat perkembangan digital yang sangat cepat. Penelitian ini menjawab urgensi topik penelitian pada literatur literasi dan inklusi keuangan dengan konsep digital yang masih sangat terbatas di Indonesia.



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## INTRODUCTION

In the recent decades, the entrepreneurs' contribution toward the economic development has become a popular topic in the entrepreneurship field. Indonesian Coordinating for Economic Affairs reports that entrepreneurs have contributed 60,5% to Indonesian Economic in 2022 in which 99% of the contributions, equivalent of 64,2 Million Businesses, have been dominated by Small and Medium Enterprises (SMEs) (Kementerian Koordinator Bidang Perekonomian, 2023; Kominfo, 2022). Interestingly, around 37 millions of those enterprises are women entrepreneurs. This number has confirmed some studies elaborating the significant roles that women entrepreneurs play for economic development (Baporikar & Akino, 2020; Ozturk & Ullah, 2022).

Simply described, as explained by Kumar and Mohan (2013), a woman entrepreneur is a woman or group of women who start, manage and run an enterprise. Some important factors, such as the need to earn additional income, the desire to escape poverty, the dissatisfaction with the work environment, the desire to implement work-life balance and family conflict related to women's working hours, lead women entrepreneurs becoming the most rapidly growing category of entrepreneurs worldwide (Cardella et al., 2021; Lladós-Maslloréns & Ruiz-Dotras, 2022). Additionally, women's role models are also the strong motivation for women to establish business (Bullough et al., 2022).

The success of women entrepreneurs can be achieved from the ease of accessing financial needs (Kim et al., 2018) obtained from financial literacy and inclusion or referred to as women's entrepreneurship empowerment (Suwana, 2017). Women's entrepreneurship empowerment aims to provide opportunities for women in developing competencies to improve the family economic conditions (Riana et al., 2022). The development and increasing use of technology has been empirically proven to affect business processes and provide new challenges for entrepreneurs, including women entrepreneurs (Oggero et al., 2020). The shift in business models from traditional to digital has increased the need for digital financial literacy and inclusion for women entrepreneurial groups (Fauzi et al., 2020). Research related to women and the digital world elaborates that the relationship between women and the digital world is still far from ideal. The main problems faced by many women with the digital world are the lack of digital competence and the digital gap. Digital literacy and inclusion programs are important to be studied more deeply (Oggero et al., 2020). Previous research (Suwana, 2017) successfully proved that the obstacles faced by women can be overcome with empowerment efforts, one of which is increasing digital literacy competencies.

In recent decades, researchers significantly pay attention to the women's entrepreneurship research. One of the gender equality issues attracted much attention from academics is women empowerment (Cardella et al., 2020). Most studies have defined empowerment as a process showing the development from a state of powerlessness to empowerment (Miniesy et al., 2022). Suwana & Lily (2017) states that women empowerment aims to develop women's managerial and leadership ability so that they can organise the business in an excellent manner which will consequently lead into job creation.

This aim can be achieved through the digital literacy. Similarly, research on women's empowerment in developing countries has stated that a potential solution that can support women's entrepreneurial activities is to provide education, training, use of technology that can be obtained from digital literacy and inclusion (Fauzi et al., 2020; Hendriks, 2019; Zhang & Zhou, 2021).

The explanation regarding the positive relation between financial inclusion and financial literacy on women's entrepreneurship empowerment is proof of a strong relationship between three variables. However, the massive technological development and the global increase of internet users every year (Suwana & Lily, 2017) make digital literacy and inclusion a necessity that must be considered by many stakeholders. This research will respond the aforementioned urgency and some previous studies' suggestion to examine the influence of digital literacy and inclusion on the women's entrepreneurship empowerment that still receive less attention. Additionally, this research is also expected to be consideration for policy makers and other stakeholders to immediately adopt digital education and training for empowering the women entrepreneurs.

## **THEOROTICAL FRAMEWORK**

### ***Digital Financial Literacy***

Even though financial literacy is known having the same aim as digital financial literacy, both actually possesses fundamental differences in conceptual frameworks incorporating traditional and internet utilisation elements (Hasan et al., 2022). Bibliometric study done by Goyal and Kumar (2021) analysing financial literacy literatures from 2000 to 2019 conclude the difference between digital financial literacy and conventional financial literacy in which the former is the combination result of financial literacy and the ability to utilise digital tools to handle financial transaction. Research on digital financial literacy has grabbed much attention and still need further research (Kass-Hanna et al., 2022). As it integrates numerous literacies and abilities such awareness towards the presence of digital payment tools, the capacity to perform digital transactions and the ability to detect and avoid fraud in digital transactions, digital literacy possesses a vast and comprehensive scope (Lyons & Kass-Hanna, 2021).

Although access toward the technology becomes more common to women, there is still lack of digital literacy competency among women. It has been found that women entrepreneurs in Indonesia ineffectively use digital media or the internet due to a lack of digital financial competence (Suwana, 2017). Further, the lack of knowledge in the use digital technology also drives women to be scam targets. The comprehensive scope of digital literacy makes women groups to be the main target of digital literacy program in Indonesia

### ***Digital Financial Inclusion***

In some studies, financial inclusion is explained as the provision of financial services accessible manner for attracting the poor into the formal economy (Sastiono & Nuryakin, 2019). The Indonesian Financial Services Authority's (OJK) survey (2018) has found that financial inclusion in Indonesia experiences an increasing trend since 2013 but the survey

shows that men are more financially inclusive than women. Another research regarding to women empowerment toward digital media literacy shows that global Gross Domestic Product (GDP) may increase as the increase of women's internet usage (Suwana & Lily, 2017). However, 2.2 billion women are still not connected to the digital ecosystem (McKinsey Global Institute, n.d). Therefore, empowering women entrepreneurs through financial inclusion is considered as an essential factor and should be improved (Suwana & Lily, 2017).

### ***Women's Entrepreneurship Empowerment***

In recent decades, research on women's entrepreneurship significantly becomes a popular topic. Specifically, women empowerment is the topic receiving significant attention from academics (Cardella et al., 2020). Many studies have defined empowerment as a process showing the development from a state of disempowered to being empowered (Miniesy et al., 2022). Suwana and Lily (2017) explains that women empowerment aims to develop women's managerial and leadership ability in order to manage business in an excellence manner which consequently drives to job creation. This aim can be achieved through the digital literacy. Other studies about women empowerment in developing countries discover that the potential solution for supporting women's business activities is through the provision of education, training, and usage of technology which can be obtained through digital literacy and inclusion (Fauzi et al., 2020; Hendriks, 2019; Zhang & Zhou, 2021). The explanation regarding the effect of financial literacy and inclusion on women's entrepreneurship empowerment has become an evidence that those variables have strong connection. However, the topic of digital literacy and inclusion still becomes important for various stakeholders due to the increase trend of technological development and internet user (Suwana & Lily, 2017).

## **RESEARCH METHODS**

This study is hypothesis testing research aiming to evaluate the effect of digital financial literacy and inclusion on the women's entrepreneurship empowerment. The population are female entrepreneurs in Indonesia. the purposive sampling method is used in order to limit the research sample. The research instruments are adopted from some previous studies some previous studies (Andriamahery & Qamruzzaman, 2022; Hasan et al., 2022; Tumba et al., 2022) and developed to be suitable with the research context (Table 1). This research uses two independent variables, digital financial literacy and digital financial inclusion, and one independent variable, women's entrepreneurship empowerment. the questionnaire is distributed to get the respondent individual opinion. Further, the data from the questionnaire is analysed using SPSS software.

**Table 1 Research Instruments**

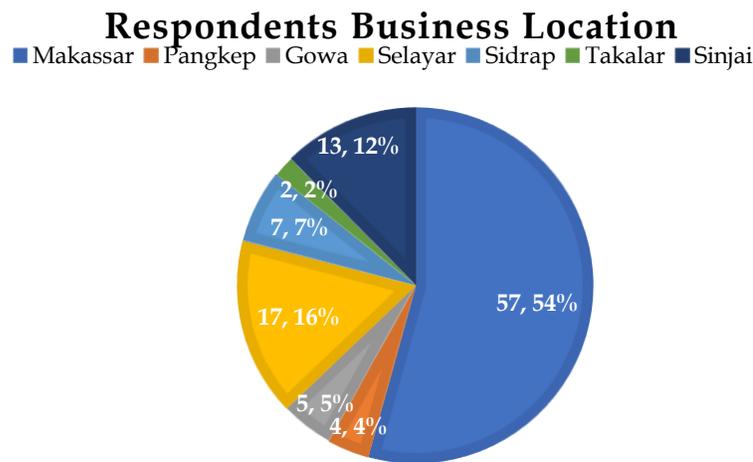
No.	Variable	Questionnaire
1.	Digital Financial Literacy (Tumba et al. 2022)	<i>I have an experience in regard to the used of debit/credit car I goodly experience the use of digital payment platforms I goodly experience the use of alternative payment method, such as Kredivo, Shopee Paylater, Go-Paylater</i>

		<i>I goodly experience the use of service from digital financial providers in protecting the customers right and solving the customers' complaints</i>
2.	Digital Financial Inclusion (Hasan et al. 2022)	<i>I have debit/credit card I have used debit/credit card as a payment method I have used an online lending I have used online financial investment services and products such as saving gold or buying and selling shares</i>
3.	Women's Entrepreneurship Empowerment (Andriamahery & Qamruzzaman, 2022)	<i>I can access and control my business' assets and finances I have proper access to facilities (seminars, workshops, workshops, etc.) for entrepreneurship I have control over decisions related to my business Availability of policies (working hours, conditions, and wages) to promote equality in the workplace</i>

Source: Researcher's (2023)

## RESULTS and DISCUSSION

The data analysis shows that the respondents are the women entrepreneurs from 7 cities/districts across South Sulawesi. 57, 4, 5, 17, 7, 2, and 13 respondents are from Makassar, Pangkajene Kepulauan, Gowa, Selayar, Sidrap, Takalar, and Sinjai, respectively with the majority of culinary business types.



**Figure 1 Respondents' Business Location**

### *Validity and Reliability Test*

Validity and reliability tests are conducted to examine whether the research instruments in the questionnaire are able to measure what should be measured as well as to evaluate the respondents' consistency in answering the research questionnaire (Julie, 2020).

**Table 2 Validity Test Result**

Variable	Indicator	Correlation	Description
<b>Digital Financial Literacy</b>	LKD1	0.387	Valid
	LKD2	0.495	Valid
	LKD3	0.613	Valid
	LKD4	0.795	Valid
<b>Digital Financial Inclusion</b>	IKD1	0.576	Valid
	IKD2	0.609	Valid
	IKD3	0.651	Valid
	IKD4	0.680	Valid
<b>Women's Entrepreneurship Empowerment</b>	PWP1	0.751	Valid
	PWP2	0.696	Valid
	PWP3	0.721	Valid
	PWP4	0.502	Valid

Source: Researcher's (2023)

Validity test uses 29 sample of respondents in which the r table value or the item-rest correlation is 0.367 and the significant value is 5%. The data analysis conducted through SPSS Software shows the value for all research instruments are above 0.367 in which it can be concluded that all the research instruments are valid.

**Table 3 Reliability Test Result**

Cronbach's Alpha	N of Items
0.863	12

Source: Researcher's (2023)

Alike validity test, the reliability test uses 29 sample of respondent and 12 of questionnaire indicators. Since the Cronbach alpha for each indicator is above 0.367 with 5% of significant level, it can be concluded that the questionnaire indicators are reliable (Julie, 2020). Therefore, all of research indicators pass the validity and reliability test and can be use.

### **Classical Assumption Tests**

The classical assumption tests, including normality, heteroscedasticity and multicollinearity test, is conducted prior to the hypotheses test. Since the value is 0.10 higher than 0.05 as the normality tolerance value, it can be concluded that the research data is normally distributed, based on normality test. Further, the multicollinearity test shows that the VIF value is  $0.165 \leq 10$  explaining that the correlation between the indicators do not exist (Field, 2018). Lastly, based on the heteroscedasticity test, it is found that heteroscedasticity does not exist.

### **Hypothesis Testing**

Hypotheses testing, including t-test and f-test, is conducted after the classical assumption test. The t-test in the first hypothesis aims to examine the effect of digital financial literacy on women's entrepreneurship empowerment, while the t-test in the

second hypothesis examines the effect of digital financial inclusion on women's entrepreneurship empowerment.

**Table 4 t-test**

Model	Coefficients <sup>a</sup>			t	Sig.
	Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta		
1 (Constant)	6.165	1.664		3.705	.000
Digital Financial Literacy	.312	.105	.270	2.958	.004***
Digital Financial Inclusion	.300	.089	.308	3.384	.001***

significant \*10% \*\*5% \*\*\*1%

Source: Researcher's (2023)

The t-test result shows that the first and second hypotheses are significant on 0,004 and 0.001 respectively. Therefore both hypotheses are accepted. Table 5 shows the f-test result in which it aims to simultaneously examine the effect of the independent variables on dependent variable (Field, 2018). Based on the result, it is known that both independent variables, digital financial literacy and digital financial inclusion, are simultaneously positive and significant toward the dependent variables, women's entrepreneurship empowerment.

**Table 5 F-test**

Model	ANOVA <sup>a</sup>				Sig.
	Sum of Squares	df	Mean Square	F	
1 Regression	413.879	2	206.940	16.147	.000***
Residual	1384.085	108	12.816		
Total	1797.964	110			

significant \*10% \*\*5% \*\*\*1%

Source: Researcher's (2023)

The R<sup>2</sup> value is shown in the table 6. It shows that R<sup>2</sup> value in this research is 0.216 (21%) which elaborates that the utilised independent variables are able to predict the 21% of the dependent variable. Therefore, the women's entrepreneurship empowerment is also influenced by 79% of other variables that are not included in this current research framework.

**Table 6 Coefficient of Determination**

Model	Model Summary			
	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.480 <sup>a</sup>	.230	.216	3.580

Source: Researcher's (2023)

## DISCUSSION

The hypotheses testing shows that both proposed hypotheses are positive and significant. The first hypothesis discovers the positive and significant effect of digital

financial literacy on women's entrepreneurship empowerment in South Sulawesi. It confirms previous research (Lyons et al., 2020) explaining that women as a minority group needs digital financial literacy to be empowered and to deal with the digital challenge in entrepreneurship. Digital financial literacy as one of empowerment method for entrepreneur is believed as the essential factor to be conducted massively. Previous study, conducted by Zhang and Zhou (2021) elaborates that the developing countries need education to escape from poverty.

The digital financial literacy indicator with the highest correlation value lies at point 4, which shows respondents understand the rights and protection and the procedures for complaining services of digital financial maintenance. A good understanding of rights and protections and complaint procedures related to digital financial services are important aspects of increasing public digital financial literacy. With a deep understanding of their rights as consumers, individuals can better understand the responsibilities of the digital financial service provider and recognize the potential risks and protection available. In addition, the ability to file complaints accurately and effectively is also an important step in the security and reliability of digital financial services. Thus, increased literacy in this field improves individual knowledge and provides better protection for consumers in an ever-expanding digital financial ecosystem.

The lowest correlation of the digital financial literacy variable is shown on the first proxy, knowledge related to the use of debit/credit cards. This shows that, although individuals have sufficient knowledge about using digital payment tools, it does not significantly impact female entrepreneurs' contribution. It should be noted that although knowledge about debit/credit cards provides a solid foundation for managing financial transactions digitally, it does not directly create equal opportunities or access for female entrepreneurs. Therefore, it is important to pay attention to additional factors that can affect the empowerment of women entrepreneurs in the context of digital finance and become the agenda for further research. Additional factors that may influence include efforts to improve access to entrepreneurial training, support policies that promote gender equality in access to capital and resources, and build networks and communities that support the development of women's enterprises in the digital sphere.

The second proposed hypothesis aims to examine the effect of digital financial inclusion on women's entrepreneurship empowerment. Digital financial inclusion enables women entrepreneurs to access financial services easily, quickly and cheaply (Xun et al., 2020). Digital financial inclusion also provides equal access to financial services that were previously difficult for women to reach. Increasing digital financial inclusion activities for women entrepreneurs is expected to empower women by gaining skills in using e-commerce platforms and digital business networks to expand their market reach. Previous research also suggests that empowering women entrepreneurs through digital financial inclusion is a key agenda for development in Turkey (Aziz et al., 2022).

This study showed the highest correlation outcome of the digital financial inclusion variable shown on the fourth proxy and the lowest Correlation displayed on the first proxy,

having a debit/credit card. This indicates that women who actively use digital financial investment services and products tend to have higher levels of empowerment. The explanation for this relationship may be that active use of digital financial services can provide wider access to the information, training, and financial resources needed to start or develop a UMKM business. Thus, participation in digital financial investments opens up opportunities for wealth growth and can enhance women's ability to manage financial risk, build decision-making skills, and access networks that support their business development. Therefore, the role of online investment in digital financial inclusion in empowering women entrepreneurs emphasizes the importance of financial inclusiveness in creating equal opportunities in the digital economy.

Simultaneous analysis shows that digital financial literacy and financial inclusion can affect the empowerment of women entrepreneurs. The findings provide strong support for previous research that revealed that combining digital financial literacy and inclusion would impact women entrepreneurs' empowerment (Goyal & Kumar, 2021; Lyons & Kass-Hanna, 2021). Previous research has highlighted the importance of digital financial literacy in empowering individuals to manage their finances more effectively in the growing digital age. With a strong understanding of digital finance concepts, including online financial tools and services, women can make smarter financial decisions and take advantage of existing investment opportunities.

In addition, financial inclusion also plays an important role in empowering women entrepreneurs. With wider access to financial services such as bank accounts, business loans, and insurance, women can overcome financial barriers that may hinder their business progress. Financial inclusion also allows women to access training and resources that support their business growth. Thus, combining digital financial literacy and financial inclusion provides a solid foundation for empowering women entrepreneurs, enabling them to take a more active role in the digital economy and greater financial independence.

Integrated with an understanding of digital financial tools and greater access to financial services, women can be more confident in managing their finances, expanding, and taking controlled investment risks. In addition, financial inclusion can also help combat gender inequalities in access to financial resources and business opportunities, opening doors for women to participate actively in the global digital economy. Thus, emphasizing digital financial literacy and financial inclusiveness provides a strong foundation for empowering women entrepreneurs, advancing gender equality, and supporting inclusive and sustainable economic growth.

## CONCLUSIONS

This study answers the urgency and suggestions from previous research to evaluate the effect of literacy and inclusion on women's entrepreneurship setting. This topic has been considered crucial as entrepreneurship in Indonesia increasingly leads to digital concepts, while women still have minimal knowledge and experience related to entrepreneurship in a digital context.

This research offers a theoretical contribution to digital financial literacy and inclusion in the context of women's entrepreneurship, which is still very limited in Indonesia. This research also provides practical contributions for stakeholders who can help implement financial literacy and inclusion activities needed by women in South Sulawesi. However, this study has several limitations. Firstly, the research object is still limited to one province only in Indonesia. Additionally, the number of respondents from women entrepreneurs is still very limited and has not covered all districts/cities in South Sulawesi, so this research cannot be generalized. Future research can use a larger research object to compare one object with the others.

This study underscores the pressing need to address the gap in digital financial literacy and inclusion among women entrepreneurs, particularly in the Indonesian context. As entrepreneurship increasingly adopts digital frameworks, it becomes imperative to equip women with the necessary knowledge and skills to thrive in this evolving landscape. By evaluating the impact of literacy and inclusion on women's entrepreneurship settings, this research sheds light on the critical importance of integrating financial education and access to financial services into women's empowerment initiatives. Despite its limitations, such as the focus on a single province and a limited sample size, this study lays the groundwork for future research endeavors to expand the scope and depth of understanding in this area. Moving forward, broader studies encompassing diverse regions and larger sample sizes will be instrumental in crafting more comprehensive strategies and interventions to empower women entrepreneurs across Indonesia and beyond.

Moving forward, it is imperative to recognize the urgency of implementing tailored interventions and policies to enhance digital financial literacy and inclusion among women entrepreneurs in Indonesia. This research underscores the need for collaborative efforts among various stakeholders, including government agencies, financial institutions, non-profit organizations, and educational institutions, to design and implement targeted programs that address women's specific needs and challenges in the digital entrepreneurship ecosystem. Moreover, there is a pressing need for ongoing monitoring and evaluation of these initiatives to assess their effectiveness and identify areas for improvement. By leveraging the insights gained from this study and building upon its findings, stakeholders can work together to create a more supportive and enabling environment for women entrepreneurs to thrive in the digital age.

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