The effects of financial literacy and digital literacy on financial resilience: Serial mediation roles of financial inclusion and financial decisions

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A B S T R A C T

The research objective was to analyze the effect of financial literacy and digital literacy on financial inclusion, financial decisions, and financial resilience of MSME's. The design of this research is explanatory quantitative research. The research is a cross-sectional study in which all research variables are measured and observed at one point in time. The sampling technique used is area purposive sampling. The reachable population in this study was 98,567 MSMEs in the Province of Bali, and the research sample was 385. The research instrument used was a questionnaire with a Likert scale. The analysis technique used is a descriptive and inferential analysis using SEM-PLS. The findings of this research reveal 1) a direct positive and significant effect of financial literacy and digital literacy on financial inclusion, financial decisions, and financial resilience of MSMEs; 2) a positive and significant effect of financial literacy and digital literacy on financial resilience of MSMEs through financial inclusion and financial decisions parallelly; and 3) a positive effect of financial literacy and digital literacy on financial resilience of MSMEs through financial inclusion and financial decisions serially, but the effect of digital literacy on financial resilience through financial inclusion and financial decisions serially is insignificant. The findings of this research show the crucial role of financial literacy and digital literacy in increasing financial resilience. Financial inclusion and financial decisions mediate the effect of financial literacy and digital literacy on financial resilience.

1. Introduction

Financial resilience is needed to deal with the VUCA environment (volatility, uncertainty, complexity, and ambiguity) (Taskan et al., 2022; World Economic Forum, 2022). Financial resilience is the ability to face, adapt, and recover from financial shocks using the right resources (Muir et al., 2016; Tengblad, 2018; Salignac et al., 2019; Saad et al., 2021). Financial resilience can reduce economic losses in crises (Alves et al., 2020; Townsend and Agachi, 2020). Financial resilience is becoming increasingly important with the increasing potential for financial shocks due to globalization supported by technological developments. Financial shocks hurt various economic sectors at the individual, household, community, regional, and country levels (Sanchez et al., 2021; OJK, 2020).

MSMEs must strengthen their financial resilience because they also have the potential to face financial resilience problems due to financial shocks. MSMEs in Bali Province are indeed experiencing development, but formal sector MSMEs experienced a decrease of 563 (0.7%) in 2019, a decrease of 6,550 (8%) in 2020, and an increase of 22,903 (30%) in 2021(Cooperative Department, SMEs Bali Province, 2022). The negative financial shock resulting from the COVID-19 pandemic caused as many as 77 percent of MSMEs to experience a decline in income (OJK, 2021). The COVID-19 epidemic afflicted up to 87.5 percent of MSMEs in Bali, with only 12.5 percent continuing to operate their enterprises (Bisnis Bali.com).

According to resilience theory, the capacity to face, maintain adaptive behavior, and recover from internal and external stress effectively requires appropriate resources (Rutter, 2006; N. Garmezy, 1991; Werner, 1989). According to the Knowledge-Based View, knowledge is the most crucial company resource for creating and maintaining a competitive advantage (Grant, 1991). Financial literacy and digital literacy (financial and digital knowledge, attitudes, and behavior) are resources that make it possible to increase financial resilience. According to the financial literacy theory of financial inclusion, financial literacy will improve people's willingness to participate in the formal financial sector (Ozili, 2020). Financial literacy and digital literacy bring through the availability of relevant information to increase financial inclusion and make rational decision alternatives under the rational choice theory, which states that logical and rational choices are based on available relevant information (Coleman, 1990).

Financial literacy and digital literacy research have been carried out previously. The research result shows that financial literacy has a positive effect on financial inclusion (Bongomin et al., 2018; Sarraf et al., 2018; Shen et al., 2018; Grohmann et al., 2018; Koomson et al., 2019; Adetunji and David-West, 2019; Lyons and Kass-Hanna, 2019; Morgan and Long, 2020; Bongomin et al., 2020). Financial literacy has a positive effect on financial decisions (Lyons and Kass-Hanna, 2019; Moreira Costa et al., 2020; Li et al., 2020; and Fong et al., 2021). Financial literacy has a positive effect on financial resilience (Hassan et al., 2018; Klapper and Lusardi, 2019; Lusardi et al., 2020; Pandin et al., 2021). Financial literacy positively influences sustainability (Miswanto et al., 2023). Digital literacy positively influences financial decisions (Amoah et al., 2020; George, 2020; Ebog and George, 2021; and Fernandes et al., 2021). Digital literacy can improve decision-making abilities (Semente and Whyte, 2020; Yuan et al., 2021). Digital literacy can increase financial resilience (Lyons et al., 2020; Mangalaraj et al., 2022; Rahmaniah and Paramita, 2021). Partial research conducted previously could not provide a comprehensive description and understanding. Therefore, it is necessary to develop a more comprehensive research model by integrating digital literacy and financial decisions in a model of the effect of financial literacy on financial inclusion and financial resilience.

Research has been carried out previously on the effect of financial literacy on financial inclusion and financial resilience. The research results of Bongomin et al. (2018), Sarraf et al. (2018), Shen et al. (2018), Grohmann et al. (2018), Koomson et al. (2019), Adetunji and David-West (2019), Lyons and Kass-Hanna (2019), Morgan and Long (2020), Bongomin et al. (2020) show that financial literacy has a positive effect on financial inclusion. The research results of Hassan et al. (2018), Klapper and Lusardi (2019), Lusardi et al. (2020), and Pandin et al. (2021) also show that financial literacy has a positive effect on financial resilience. The research by Moore et al. (2019), Hussain et al. (2019), Swamy (2019), Pomeroy et al. (2020), and Nyarko et al. (2022) shows that financial inclusion has a positive effect on financial resilience in contrast to the research by Pandin et al. (2021) that financial inclusion has a significant negative influence. The differences in research findings regarding the influence of financial inclusion on financial resilience encourage further research to clarify the direction of financial inclusion's effect on financial resilience.

Previous research on the relationship between financial decisions and its relationship with financial literacy was conducted by Lyons and Kass-Hanna (2019), Moreira Costa et al. (2020), Li et al. (2020), and Fong et al. (2021) show that financial literacy has a positive effect on financial decisions. Financial literacy has a positive effect on the intention to invest (Adow, 2023). The research model covers the deficiencies of the previous research model. Rational and quality financial decisions guide practitioners in building resilience (Belhadi et al., 2021). Making the right decision to allocate funds increases resilience (Hamurcu, 2019). Research shows the positive effect of financial decisions on financial resilience (Pandin et al., 2021).

This research is crucial for a better understanding of the relationship between financial literacy, inclusion, decisions, and resilience. Government, MSMEs owners, and other policymakers need an understanding of developing strategies or policies for managing and empowering MSMEs. This research will provide a clear direction regarding the effect of financial inclusion on financial resilience through testing the two-path and three-path. This research is needed immediately so that it is not too late to identify gaps and competency needs for financial literacy for MSMEs. Delays in identifying gaps and competency needs for financial literacy can lead to widening the gap between financial literacy and financial inclusion, which hurts the MSME's financial resilience.

2. Literature Review and Hypothesis

2.1 Resilience theory

Resilience theory is a multifaceted field of study addressed by social workers, psychologists, sociologists, educators, and many others over the past several decades (Rose, 2009). Resilience is the capacity to face, maintain adaptive behavior, and recover from internal and external stresses using appropriate resources (Rutter, 1985; Rutter, 2012; Garmezy, 1991; Werner, 1989). Carlson et al. (2012) defines resilience as the ability of an entity (asset, organization, community, region) to anticipate, resist, absorb, respond, adapt, and recover) from disturbances. Carlson et al. (2012) illustrate how the six components contained in the definition of resilience are connected to actions that describe an entity's capacity to withstand human-made or natural events. The actions related to anticipation, resistance, and absorption are carried out before an adverse event occurs, while response, adaptation, and recovery occur afterward. After an adverse event occurs, activity/well-being decreases. The resilience of the analysis object determines the amount of decline in activity/well-being and the amount of time needed to return to equilibrium before another new event or balance.

2.2 Knowledge-Based View (KBV)

Knowledge-Based View (KBV) is a view from research on enterprise Resource-Based View (RBV), evolutionary economics, organizational learning, technology management, management cognition, and systems theory. KBV identifies knowledge as crucial for creating and maintaining competitive advantage and implementing strategy through management structures and systems (Grant, 1991). The main impetus for KBV is recognition of the growing role of knowledge in the post-industrial economy. KBV plays a role in building human capital involvement to adapt to various problems more effectively and efficiently, so human resource development is more dominant and structured. Company resources are a combination of human and non-human resources. Human resources play a crucial role in managing company management. From the KBV perspective, companies develop new knowledge to build competitive advantage from the unique combination of existing knowledge. Businesses compete by creating new knowledge more quickly than their rivals to win the competition. Human capital produces something unique and difficult to imitate as an organizational characteristic (Grant, 1996).

2.3 The Financial Literacy Theory of Financial Inclusion

According to Ozili (2020), the financial literacy theory of financial inclusion is one theory of financial inclusion based on inclusion delivery. The financial literacy theory of financial inclusion states that financial inclusion is achieved through education that increases financial literacy. This theory argues that financial literacy will improve people's willingness to participate in the formal financial sector. The financial literacy theory of financial inclusion has several advantages. Financial literacy can make people aware of available financial products and services and willing to participate in the formal financial sector by having a bank account. Through increasing financial literacy, the public can use other benefits in the formal financial sector, such as investment and credit products. Financial literacy can help people become independent and can help maintain personal financial stability. Financial literacy helps distinguish between needs and wants, helps create and manage a budget, saves so one can pay bills when they are due, and retirement plans.

2.4 Rational Choice Theory (RCT)

Rational Choice Theory (RCT) assumes that in making decisions, individuals make rational and logical choices based on preferences, goals, and available information (Coleman, 1990). RCT has the basic idea that individual actions lead to a goal that is an action determined by values or preferences. RCT has two main elements, namely actors and resources. Actors are individuals who perform an action that can utilize resources properly. Actors assume as individuals who have goals, and value choices that actors use to make choices. Actors also have the power as an effort to determine choices and actions. Resources are any potential that exists or is possessed. Resources can be in the form of natural resources and human resources. Coleman also explains the interaction between actors and resources at the social system level. The minimal basis for a social system is the action of two actors. Each actor controls the resources that attract the attention of others. Actors always have goals and maximize the manifestation of their interests that characterize the interdependence of the actor's actions. Coleman admits that individuals do not always act or behave rationally (Coleman, 1990).

2.5 Relationship between Variables

According to the financial literacy theory of financial inclusion, financial literacy will increase people's willingness to join the formal financial sector. Someone who understands finances will look for formal financial services (Ozili, 2020). Financial literacy increases financial inclusion. Financial literacy has a significant positive impact on financial access (Mabula and Ping, 2018) and has a positive effect on financial inclusion (Bongomin et al., 2018; Sarraf et al., 2018; Shen et al., 2018; Morgan and Long, 2020; Bongomin et al., 2020). The research results of Grohmann et al. (2018) show that a higher level of financial literacy strengthens the effect of more financial inclusion. Based on the description of the influence of financial literacy on financial inclusion, the research hypothesis is as follows:

H$_1$: *Financial literacy has a positive effect on financial inclusion.*

Rational Choice Theory (RCT) states that individuals make rational and logical choices based on preferences, goals, and available information (Coleman, 1990). According to Lusardi, (2008a), Lusardi and Mitchell (2011), financial literacy is a tool to improve the basis for making financial decisions. Financial literacy is needed to make effective and reasonable decisions based on information (Lusardi and Mitchell, 2007; Remund, 2010; OECD, 2017; OECD, 2020b). Financial literacy is needed to make quality and sound financial decisions (Atkinson and Messy, 2012; OJK, 2016; OECD/INFE, 2018; OECD, 2020a). The research results of Lyons et al. (2019) show the impact of financial literacy on household loan decisions. Costa et al. (2020) show that numeracy and financial literacy influence decision-making. The research results of Li et al. (2020) show that financial literacy has a stronger effect on financial decision-making if financial technology penetration is above a threshold. Fong et al. (2021) show that higher financial literacy scores are associated with a greater tendency to pay off credit card balances on time, to hold stocks, and to follow age-appropriate investment paths. Based on the description of the influence of financial literacy on financial decisions, the research hypothesis is as follows:

H$_2$: *Financial literacy has a positive effect on financial decisions.*

Financial literacy is a form of knowledge that can help companies achieve competitive advantage and increase the company's resilience. Financial literacy is crucial to human capital for company resilience (Huston, 2010; Torres et al., 2019; Battisti et al., 2019). Financial literacy will increase the ability to access economic resources, financial resources, financial knowledge, and social capital thereby increasing financial resilience. The research results of Hassan et al. (2018) show that all factors related to financial literacy are significantly related to individual resilience. Klapper and Lusardi (2019) show that relatively low levels of financial literacy exacerbate consumer and financial market risks due to increasingly complex financial instruments. Lusardi et al. (2020) show that financial fragility is strongly related to financial literacy. Pandin et al. (2021) also show a positive effect of financial literacy on financial resilience. Based on the description of the influence of financial literacy on financial resilience, the research hypothesis is as follows:

H₃: *Financial literacy has a positive effect on financial resilience.*

Digital literacy is a form of knowledge that can help companies achieve competitive advantage and increase the company's financial resilience. Ebong and George (2021) stated that digital financial services can increase financial inclusion. Podgorskaya (2021) shows that low digital literacy is a significant threat to the development of financial inclusion. The research results of Amoah et al. (2020) show that consistent use of mobile money to access social and economic services goes a long way in promoting financial inclusion, financial empowerment, and the general well-being of society. George (2020) shows that digital financial literacy influences financial inclusion. The research results of Fernandes et al. (2021) emphasize the positive impact of digital financial services on financial inclusion. Based on the description of the influence of digital literacy on financial inclusion, the research hypothesis is as follows:

H₄: *Digital literacy has a positive effect on financial inclusion.*

Digital literacy is a form of knowledge that can help companies achieve competitive advantage and increase the company's financial resilience. Digital literacy can improve decision-making abilities (Yuan et al., 2021), improve the quality and effectiveness of financial decision-making (OECD, 2021), and assist decision-making to overcome financial shocks (Bracci and Tallaki, 2021). Semente and Whyte (2020) concluded that digital literacy has a significant effect on consumer decision-making styles. The research results of (Yuan et al., 2021) show that digital literacy has a significant role in improving decision-making abilities. Based on the description of the influence of digital literacy on financial decisions, the research hypothesis is as follows:

H₅: *Digital literacy has a positive effect on financial decisions.*

Digital literacy will increase the ability to access digital-based economic resources, financial resources, financial knowledge, and social capital. Digital literacy will increase financial resilience. Nedungadi et al. (2018) stated that digital literacy education is crucial to creating awareness about information technology to improve the quality of life and build resilience. Lyons et al. (2020), Drossel et al. (2020), and OECD (2021b) state that digital literacy is used to build and strengthen financial resilience. The research results of Drossel et al. (2020) show the relationship between digital literacy and school resilience. Lyons et al. (2020) obtained consistent findings showing that digital literacy is a key factor in building financial resilience. Likewise, the research results of Rahmaniah and Paramita (2021) show that one way to build community resilience is achieved by revitalizing digital literacy. Based on the description of the influence of digital literacy on financial resilience, the research hypothesis is as follows:

H₆: *Digital literacy has a positive effect on financial resilience.*

The availability of access to formal financial institutions, products, and services will provide more financial decision options. Financial inclusion will increase rational and quality financial decisions. Financial inclusion will increase the rationality and quality of financial decisions. Pomeroy et al. (2020) stated that access to various financial institutions, products, and services suitable to needs and abilities will be useful for making quality financial decisions. Ibtasam et al. (2018) stated that with the emergence of digital financial services (DFS), a growing emphasis has been placed on the possible positive impact of DFS on individuals' lives. Finally, certain women were identified who may be more ready to accept or able to adopt context-specific DFS designs for women. Research by Pandin et al. (2021) shows that financial inclusion in financial decisions is proven to have a significant effect with the support of a positive or unidirectional influence. Based on the description of the influence of financial inclusion on financial decisions, the research hypothesis is as follows:

H₇: *Financial inclusion has a positive effect on financial decisions.*

Increasing access to financial institutions, formal financial products, and services will increase financial resilience. According to Gash and Gray (2016), Moore et al. (2019), Swamy (2019), and Pomeroy et al. (2020), financial inclusion helps reduce vulnerability, empowering individuals/families to increase financial resilience. Salignac et al. (2022) stated that increasing financial inclusion is a policy priority to improve financial resilience. The ability to access financial resources (access to bank accounts, credit, and insurance) affects financial resilience. The research results of Moore et al. (2019) show evidence of the

role of financial inclusion in resilience. Sakyi-Nyarko et al. (2022) show that financial inclusion measures show that savings and formal account ownership produce more tangible resilience effects. Hussain et al. (2019) and Swamy (2019) explored the impact of financial inclusion on financial resilience. Financial inclusion strengthens the resilience of poor households. The research results of Pomeroy et al. (2020) show that financial inclusion leads to increased economic resilience. However, the research results of Pandin et al. (2021) show the opposite that financial inclusion has a negative and significant effect on financial resilience. Based on the description of the influence of financial inclusion on financial resilience, the research hypothesis is as follows:

H8: *Financial inclusion has a positive effect on financial resilience.*

Appropriate financial decisions in accessing financial resources, such as ownership and use of bank accounts and insurance, will increase financial resilience. Ardebili and Padoano (2020) state that integrating resilience and sustainability in decision-making is crucial. Belhadi et al. (2021) integrate decision-making framework guides in building resilience. Hamurcu (2019) research results show that making appropriate decisions on allocating funds increases resilience. The research results of Pandin et al. (2021) show that financial decisions have a positive and significant effect on financial resilience. Based on the description of the influence of financial decisions on financial resilience, the research hypothesis is as follows:

H9: *Financial decisions have a positive effect on financial resilience.*

According to resilience theory, the capacity to face, maintain adaptive behavior, and recover from internal and external stress effectively requires appropriate resources (Rutter, 2006; N. Garmezy, 1991; Werner, 1989). According to the Knowledge-Based View, knowledge is the most crucial company resource for creating and maintaining a competitive advantage (Grant, 1991). Financial literacy and digital literacy (financial and digital knowledge, attitudes, and behavior) are resources that make it possible to increase financial resilience. According to the financial literacy theory of financial inclusion, financial literacy will improve people's willingness to participate in the formal financial sector (Ozili, 2020). Financial literacy and digital literacy bring through the availability of relevant information to increase financial inclusion and make rational decision alternatives under the rational choice theory, which states that logical and rational choices are based on available relevant information (Coleman, 1990). Based on the description of financial literacy and digital literacy on financial inclusion, financial decisions, and financial resilience, the research indirect effect hypothesis is as follows:

H10: *Financial literacy has a positive effect on financial decisions through financial inclusion.*

H11: *Financial literacy has a positive effect on financial resilience through financial inclusion and financial decisions parallelly.*

H12: *Digital literacy has a positive effect on financial decisions through financial inclusion.*

H13: *Digital literacy has a positive effect on financial resilience through financial inclusion and financial Decisions parallelly.*

H14: *Financial inclusion has a positive effect on financial resilience through financial decisions.*

H15: *Financial literacy has a positive effect on financial resilience through financial inclusion and financial decisions serially.*

H16: *Digital literacy has a positive effect on financial resilience through financial inclusion and financial decisions serially.*

3. Methods

3.1 Research Design

The design of this research is explanatory research. In addition to testing hypotheses developed based on existing theories and concepts, this research also explains the relationships between variables in models that have not been studied or limited to in-depth research.

3.2 Variable Measurement

Financial literacy is the combination of financial knowledge, financial attitudes, and financial behavior that MSME owners or managers must have to make effective financial decisions. Financial literacy (FL) consists of three dimensions, namely financial knowledge (FLK), financial attitudes (FLA), and financial behavior (FLB) (McManus et al., 2008; OECD, 2020). Digital literacy is the capabilities of MSME owners or managers in data and information literacy, communication and collaboration, security, and the ability to use digital technology to strengthen decision-making. Digital literacy (DL) consists of four dimensions, namely data and information literacy (DLI), communication and collaboration (DLC), security (DLS), and the ability to use technology (DLT) (Law et al., 2018; Laanpere, 2019; and Kateryna et al., 2020). Financial inclusion is

the availability, ownership, and use of formal financial products/services suitable to the needs and capabilities of MSMEs. Financial inclusion (FI) includes three indicators (OECD, 2020b, 2022a). Financial decision is decisions include investment decisions, funding decisions, and dividend decisions. Financial decisions (FD) include three indicators (Scott and Bruce, 1995; Fischer et al., 2015; Douma et al., 2020; Visinescu et al., 2017). Financial resilience is the ability of MSMEs to adapt and recover from financial shocks using financial resources and social resources. Financial resilience (FR) includes two dimensions, namely financial resources (FRF) and social resources (FRS) (Muir et al., 2016; Tengblad, 2018; Salignac et al., 2019; Saad et al., 2021).

3.3 Sampling Technique

The population of this study is MSMEs (Micro, Small, and Medium Enterprises) in Bali Province. The businesses are classified into micro, small, and medium enterprises. The sampling technique used is area purposive sampling. The number distribution of samples in each district/city was proportionate. The selection of research sample members was purposive. Determining the number of research samples using the Sample Size Calculator application. The reachable population in this study was 98,567 MSMEs. The research sample, which totaled 385 MSMEs, was distributed to each district/city and distributed to micro (188), small (148), and medium businesses (49).

3.4 Analysis Technique

The technique of data analysis employed is descriptive and inferential analysis. The measures used in descriptive analysis are the minimum (Min), maximum (Max), median, mode, and quartile deviation (QD) values of the research construct. Inferential analysis uses SEM (Structural Equation Modeling) with the help of WarpPLS 7.0.

4. Results

The sample consisted of micro (48.83%), small (38.44%), and medium businesses (12.73%). Most samples were from the trade business sector (70.91%), and the remainder were agricultural industry (2.08%), non-agricultural industry (3.90%), and various services (23.12%). Most samples were from the Badung district (31.17%), and the remainder were spread across eight districts/cities (68.83%). Most of the respondents were women (55.32%), aged 26-45 years (43.38%), and had high school education (52.99%). The respondent's characteristics are in Table 1.

Table 1
Characteristics of respondents

Description	Category	Frequency	Percentage (%)
Gender	Male	172	44.68
	Female	213	55.32
Age (years)	12-25	63	16.36
	26 – 45	167	43.38
	46 – 65	151	39.22
	>65	4	1.04
Education	Elementary School	18	4.68
	Junior High School	31	8.05
	Senior High School	204	52.99
	Diploma	39	10.13
	Undergraduate	89	23.12
	Postgraduate	4	1.04

Source: Processed data (2023)

4.1 Descriptive Analysis

The median and mode of financial literacy dimension indicators show that the majority of respondents have good financial knowledge, attitudes, and behavior with the majority of responses around 3.00. Only indicators of respondents' understanding of financial records and reporting, business risks, and financial record keeping tend to be lower than other financial literacy indicators. The percentage score for all financial literacy dimension indicators shows that the financial literacy of MSMEs is moderate (70.99% in the range of 50% - 75%). The percentage score of knowledge about financial records and reporting, business risks, and attitudes toward keeping financial records is lower than other financial literacy indicators.

The median and mode of digital literacy dimension indicators show that the majority of respondents have good information literacy, communication and collaboration, security, and ability to use digital technology with the majority of responses around 3.00. Only indicators of the ability to collaborate using digital tools and technology, and solving technical problems when operating digital devices tend to be lower than other indicators of digital literacy. The percentage score for all digital literacy dimension indicators shows that the digital literacy of MSMEs is moderate (72.95% in the range of 50% and 75%). The percentage score for the ability to collaborate using digital tools and technology, as well as the ability to solve technical problems when operating devices in a digital environment, is lower than other digital literacy indicators.

The median and mode of financial inclusion indicators show that the majority of respondents have good financial inclusion with the majority of responses around 3.00. Only indicators of the use of financial institution products/services tend to be lower than other financial inclusion indicators. The percentage score for all financial inclusion indicators shows that the financial inclusion of MSMEs is high (77.21% in the range of 75% and 100%). The percentage score for indicators of the use of financial institution products/services is lower than other financial inclusion indicators.
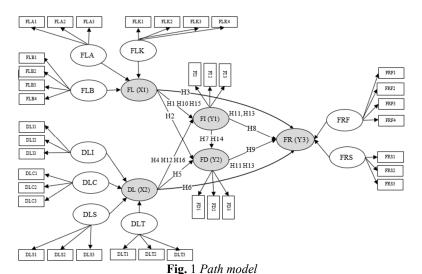
The median and mode of financial decision indicators show that most respondents make good financial decisions with the majority of responses around 3.00. Only indicators of the ability to make financial decisions that provide satisfactory results tend to be lower than other financial decision indicators. The percentage score for all financial decision indicators shows that the MSME's financial decisions are moderate (74.48% in the range of 50% and 75%). The percentage of financial decision indicator scores that provide satisfactory results is lower than other financial decision indicator scores.

The median and mode of financial resilience dimensions show that most respondents have good financial resources and social resources with the majority of responses around 3.00. Only earning capacity/profitability, and availability of funds for emergencies tend to be lower than other indicators of financial resilience. The percentage score for all financial resilience dimension indicators shows that the financial resilience of MSMEs is high (76.64% in the range of 75% and 100%). The percentage score for indicators of earning capacity/profitability and availability of funds for emergencies is relatively lower compared to the percentage score for other financial resilience indicators.

4.2 Inferential Analysis

4.2.1 Path model specifications

The path model consists of two elements, namely the structural (inner model) and the measurement model (outer model). The research path model is in Fig. 1.

Fig. 1 *Path model*

4.3 Measurement Model Evaluation

4.2.1 Evaluation of the reflective first-order measurement model

Evaluation of the reflective first-order measurement model includes testing convergent validity, discriminant validity, and internal consistency reliability. Based on the loading values, the convergent validity criteria are appropriate because all of the outer loading indicators ≥ 0.70 and significant (p values <0.05), except for DLC3, DLT3, FI1, and FRF3 each 0.692; 0.696; 0.669 and 0.681 are still acceptable. Based on the AVE value, the convergent validity criteria are appropriate because the AVE value is ≥ 0.50. Based on the cross-loading approach, the discriminant validity criteria are appropriate because the loading factor of each indicator that measures its latent variable is greater than the cross-loading value (correlation of indicators with other latent variables). Based on the Fornell Lacker approach, the discriminant validity meets Fornell Lacker's criteria because the AVE root of each construct on the diagonal elements is higher than the correlation between constructs on non-diagonal elements in the same column. Based on the Heterotrait-Monotrait ratio (HTMT) limit, the discriminant validity criteria are appropriate because the Heterotrait-Monotrait ratio (HTMT) is less than 0.90. Based on the composite reliability (CR) and Cronbach alpha values, the internal consistency reliability is appropriate because the CR and Cronbach alpha values ≥ 0.70 except for Cronbach alpha for FLA, DLC, DLT, FI, and FRS respectively 0.623; 0.689; 0.611; 0.656, and 0.612. Composite reliability and Cronbach alpha values of 0.60-0.70 are still acceptable.

4.2.2 Evaluation of the second-order formative measurement model

Evaluation of formative second-order measurement models includes convergent validity, collinearity between indicators, significance, and relevance of the outer model. Based on the testing results of the loading values, the convergent validity criteria are appropriate because all loading indicators are ≥ 0.70 and significant (p values <0.05), except for FI1=0.669 remain acceptable. Based on the AVE value, the convergent validity criteria are appropriate because the AVE value is ≥ 0.50. Each indicator has a significant value (p values <0.05), and there are no multicollinearity problems (VIF <3.3) and problems of outer model relevance. The collinearity model assessment determines whether there is a strong linear relationship between two or more independent variables in a model. The weight must be significant with a p-value <0.05 and a VIF value <2.5. All p values are <0.05, and VIF values are less than 2.5. The assessment of this collinearity model shows that there is no collinearity problem. Formative construct measurements in this model have been considered feasible. Evaluation of the second-order formative measurement model is in Table 2.

Table 2
Evaluation of measurement model

Construct	Dimension	Loadings	AVE	Sq. Rts. of AVEs	CR	CA	VIF
Financial Literacy (FL)	FLK (Knowledge)	0.810	0.583	0.764	0.807	0.641	2.265
	FLA (Attitude)	0.722					
	FLB (Behavior)	0.756					
Digital Literacy (DL)	DLI (Information)	0.757	0.603	0.777	0.858	0.78	1.451
	DLC (Communication-Collaboration)	0.832					
	DLS (Security)	0.790					
	DLT (Technology)	0.724					
Financial Inclusion (FI)	FI1	0.669	0.595	0.771	0.814	0.656	2.126
	FI 2	0.834					
	FI 3	0.801					
Financial Decision (FD)	FD1	0.751	0.616	0.785	0.827	0.686	2.157
	FD2	0.843					
	FD3	0.757					
Financial Resilience (FR)	FRF (Financial)	0.840	0.706	0.840	0.828	0.583	2.494
	FRS (Social)	0.840					

Source: Processed data (2023)

4.4 Structural Model Evaluation

4.4.1 Assessment of model collinearity problems

The collinearity model assessment is to know the possibility of a strong linear relationship between two or more independent variables in a model. The collinearity model assessment showed that there was no collinearity problem because all p values were <0.05, and the VIF values were smaller than 2.5.

4.4.2 Assessment of the significance of the structural model relationships

The significance assessment of the structural model relationship using path coefficient and p-value. The significance assessment includes the direct effect, the two-path indirect effect, and the three-path indirect effect. Assessment of the significance in Fig. 2 and Table 3 shows that all path coefficients are between zero and one.
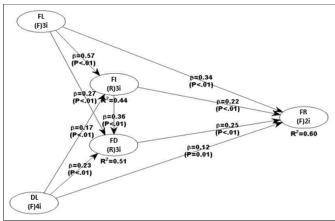

Fig. 2 Path model with path coefficients and p values

All p-values are smaller than 0.05, except the p-value of the effect of digital literacy on financial resilience through financial inclusion and financial decisions serially is greater than 0.05. This path coefficient and p-value show that direct effects (H_1-H_9) are positive and significant. The indirect effects of the two paths (H_{10}-H_{14}) are positive and significant. The indirect effect of the three paths (H_{15}) on the structural model shows a positive and significant effect of financial literacy on financial resilience through financial inclusion and financial decisions serially. The indirect effect of the three paths (H16) in the structural model also shows there is a positive effect of digital literacy on financial resilience through financial inclusion and financial decisions serially, but this effect is not significant.

Table 3
Summary of hypothesis testing results

Hypothesis	Construct	Path Coefficient	p Value	Assessment
H_1	Financial Literacy → Financial Inclusion	0.567	<0.001	Positive and Significant
H_2	Financial Literacy → Financial Decision	0.274	<0.001	Positive and Significant
H_3	Financial Literacy → Financial Resilience	0.338	<0.001	Positive and Significant
H_4	Digital Literacy → Financial Inclusion	0.167	<0.001	Positive and Significant
H_5	Digital Literacy → Financial Decision	0.229	<0.001	Positive and Significant
H_6	Digital Literacy → Financial Resilience	0.117	<0.010	Positive and Significant
H_7	Financial Inclusion → Financial Decision	0.362	<0.001	Positive and Significant
H_8	Financial Inclusion → Financial Resilience	0.223	<0.001	Positive and Significant
H_9	Financial Decision → Financial Resilience	0.250	<0.001	Positive and Significant
H_{10}	Financial Literacy → Financial Inclusion → Financial Decision	0.205	<0.001	Positive and Significant
H_{11}	Financial Literacy → Financial Inclusion/ Financial Decision → Financial Resilience	0.195	<0.001	Positive and Significant
H_{12}	Digital Literacy → Financial Inclusion → Financial Decision	0.061	0.045	Positive and Significant
H_{13}	Digital Literacy → Financial Inclusion/ Financial Decision → Financial Resilience	0.095	0.030	Positive and Significant
H_{14}	Financial Inclusion → Financial Decision → Financial Resilience	0.090	0.006	Positive and Significant
H_{15}	Financial Literacy → Financial Inclusion → Financial Decision → Financial Resilience	0.051	0.040	Positive and Significant
H_{16}	Digital Literacy → Financial Inclusion → Financial Decision → Financial Resilience	0.015	0.303	positive but not significant

Source: Processed data (2023)

4.4.3 Assessment of the model's explanatory power

Assessment of the model's explanatory power is carried out by assessing the coefficient of determination (R^2) and assessing the f^2 effect size. R-squared shows the amount of variation in the endogenous latent variable that can be explained by all the exogenous latent variables that have arrows on that variable. The summary of the assessment of the R-squared contribution and R-squared coefficients shows that the independent construct's contribution to the variation of the dependent construct on the direct effect is relatively weak. The influence of financial literacy and digital literacy on financial inclusion variations is relatively weak. The contribution of financial literacy, digital literacy, and financial inclusion to financial decision variations is moderate. Likewise, the influence of financial literacy, digital literacy, financial inclusion, and financial decisions on financial resilience is moderate. A summary of the R-squared contribution and R-squared coefficients is in Table 4.

Table 4
Summary R-squared contribution

No.	Construct			R^2	Criteria	Assessment
1	Financial Literacy	→	Financial Inclusion	0.367	<0.50	Weak
2	Financial Literacy	→	Financial Decision	0.166	<0.50	Weak
3	Financial Literacy	→	Financial Resilience	0.234	<0.50	Weak
4	Digital Literacy	→	Financial Inclusion	0.073	<0.50	Weak
5	Digital Literacy	→	Financial Decision	0.115	<0.50	Weak
6	Digital Literacy	→	Financial Resilience	0.058	<0.50	Weak
7	Financial Inclusion	→	Financial Decision	0.228	<0.50	Weak
8	Financial Inclusion	→	Financial Resilience	0.145	<0.50	Weak
9	Financial Decision	→	Financial Resilience	0.165	<0.50	Weak
10	Financial Literacy Digital Literacy	→ →	Financial Inclusion	0.439	<0.50	Weak
11	Financial Literacy Digital Literacy Financial Inclusion	→ → →	Financial Decision	0.509	<0.75	Moderate
12	Financial Literacy Digital Literacy Financial Inclusion Financial Decision	→ → → →	Financial Resilience	0.601	<0.75	Moderate

The f^2 effect size value is the absolute value of the individual contribution of each predictor latent variable to the R^2 value of the criterion variable. The f^2 effect size value shows the change in the R^2 value of the criterion variable if the predictor latent variable is removed from the model. The f^2 effect size value shows the influence of exogenous variables qualitatively at the structural level. The f^2 effect size assessment in Table 5 shows that the effect size of the effect of financial literacy on financial inclusion, financial decisions, and financial resilience is high. The f^2 effect size of the financial literacy effect on financial inclusion, financial decisions, and financial resilience is medium/large. It indicates that financial literacy has a crucial role from a practical perspective in increasing financial inclusion, financial decisions, and financial resilience.

Table 5

The results of the assessment f^2 effect size

No.	Construct	f^2 effect size	Criteria	Description
1	Financial Literacy → Financial Inclusion	0.367	$f^2 \geq 0.35$	High
2	Financial Literacy → Financial Decision	0.166	$0.15 \leq f^2 < 0.35$	Medium
3	Financial Literacy → Financial Resilience	0.234	$0.15 \leq f^2 < 0.35$	Medium
4	Digital Literacy → Financial Inclusion	0.073	$0.02 \leq f^2 < 1.5$	Weak
5	Digital Literacy → Financial Decision	0.115	$0.02 \leq f^2 < 1.5$	Weak
6	Digital Literacy → Financial Resilience	0.058	$0.02 \leq f^2 < 1.5$	Weak
7	Financial Inclusion → Financial Decision	0.228	$0.02 \leq f^2 < 1.5$	Weak
8	Financial Inclusion → Financial Resilience	0.145	$0.02 \leq f^2 < 1.5$	Weak
9	Financial Decision → Financial Resilience	0.165	$0.15 \leq f^2 < 0.35$	Medium
10	Financial Literacy → Financial Inclusion →Financial Decision	0.124	$0.02 \leq f^2 2 < 1.5$	Weak
11	Financial Literacy → Financial Inclusion/Financial Decision → Financial Resilience	0.135	$0.02 \leq f^2 < 1.5$	Weak
12	Digital Literacy → Financial Inclusion → Financial Decision	0.030	$0.02 \leq f^2 < 1.5$	Weak
13	Digital Literacy → Financial Inclusion/ Financial Decision → Financial Resilience	0.047	$0.02 \leq f^2 < 1.5$	Weak
14	Financial Inclusion → Financial Decision → Financial Resilience	0.059	$0.02 \leq f^2 < 1.5$	Weak
15	Financial Literacy → Financial Inclusion → Financial Decision → Financial Resilience	0.036	$0.02 \leq f^2 < 1.5$	Weak
16	Digital Literacy → Financial Inclusion → Financial Decision → Financial Resilience	0.007	$0.02 \leq f^2 < 1.5$	Weak

Source: Processed data (2023)

4.4.4 Assessment of the model's predictive power

Assessment of the model's predictive power examines the value of Q-squared (Q^2). Q-squared is an indicator of out-of-sample predictive power or predictive relevance. Table 6 shows Q-squared values for financial inclusion, financial decisions, and financial resilience, respectively 0.389, 0.682, and 0.608 ($Q^2 > 0$). Q^2 value is greater than zero, so the model has good predictive relevance. The model estimation results have good predictive validity.

Table 6

Q-squared for path coefficients

No.	Construct	Q^2	Criteria	Description
1	Financial Inclusion	0.389	$Q^2 \geq 0$	Good
2	Financial Decision	0.514	$Q^2 \geq 0$	Good
3	Financial Resilience	0.602	$Q^2 \geq 0$	Good

Source: Processed data (2023)

4.5 Assessment of Goodness of Fit Model

Table 7

Model fit and quality indices

No.	Classic indices	Criteria	Analysis Results	Description
1	Average path coefficient (APC)	P<0.05	0.281< P<0,001	Conditions met
2	Average R-squared (ARS)	P<0.05	0.517<P<0.001	Conditions met
3	Average adjusted R-squared (AARS)	P<0.05	0.513<P<0.001	Conditions met
4	Average block VIF (AVIF)	acceptable if ≤ 5, ideally ≤ 3.3	1.654	Ideal
5	Average full collinearity VIF (AFVIF)	acceptable if ≤ 5, ideally ≤ 3.3	2.099	Ideal
6	Tenenhaus GoF (GoF)	small ≥ 0.1, medium ≥ 0.25, large ≥ 0.36	0.566	Large
7	Sympson's paradox ratio (SPR)	acceptable if ≥ 0.7, ideally = 1	1.000	Ideal
8	R-squared contribution ratio (RSCR)	acceptable if ≥ 0.9, ideally = 1	1.000	Ideal
9	Statistical suppression ratio (SSR)	acceptable if ≥ 0.7	1.000	Accepted
10	Nonlinear bivariate causality direction ratio (NLBCDR)	acceptable if ≥ 0.7	1.000	Accepted

Source: Processed data (2023)

Evaluation of model suitability uses the fit indicators, namely average path coefficient (APC) and average R-squared (ARS). Evaluation of model fit uses adjusted R-squared (AARS), average block VIF (AVIF), average full collinearity VIF (AFVIF), GoF (GoF), Sympson's paradox ratio (SPR), R-squared contribution ratio (RSCR), statistical suppression ratio (SSR), and nonlinear bivariate causality direction ratio (NLBCDR). Based on the fit indices and quality indices models in Table 7, it stated that the goodness of fit criteria is appropriate. The research model matches the research data in explaining, predicting, or analyzing the relationship between the constructs studied.

5. Discussion

Financial literacy has a positive effect on financial inclusion in MSMEs. The results of this study are consistent with the financial literacy theory of financial inclusion. According to this theory, financial literacy will increase people's willingness to join the formal financial sector. Financial literacy can make people aware of available financial products and services. When they know that some financial products and services can increase their welfare, people are willing to participate in the formal financial sector by having a bank account. The increase in financial literacy can take advantage of other benefits in the formal financial sector, such as investment and credit products. Financial literacy can also help people become independent and can help them have financial stability, help distinguish between needs and wants, help create and manage budgets, save so they can pay bills when they are due, and plan for retirement (Ozili, 2020). The results of this study are consistent with the results of research by Mabula and Ping (2018) and Bongomin (2018), showing that financial literacy has a positive and significant impact on financial inclusion. The results of McKnight's research (2019), Shen et al. (2018), Morgan and Long (2020), Bongomin et al. (2020), Al-Sarraf et al. (2018), and Grohmann et al. (2018) also show that higher financial literacy has a positive impact on financial inclusion. Financial literacy has a positive effect on financial decisions for MSMEs. Financial literacy (knowledge, attitudes, and financial behavior) is a company resource that can improve the quality of financial decision-making to achieve corporate excellence. According to rational choice theory (RCT), individuals make rational and logical choices based on preferences, goals, and available information. Rational decision-making aims to maximize utility refers to the satisfaction or benefits derived from the choice, is consistent in preferences to achieve goals and objectives, performs a cost-benefit analysis before deciding, and utilizes all relevant information (Lovett, 2006; Meleghy, 2015). Financial literacy is a tool that assists in making financial decisions. Financial literacy is necessary to make effective and reasonable decisions based on information (Bernheim and Garrett, 2003; Lusardi and Mitchell, 2007; Remund, 2010; OECD, 2017; OECD, 2020b). Financial literacy is necessary to make quality financial decisions (Atkinson and Messy, 2012; OJK, 2016; OECD/INFE, 2018; OECD, 2020a). This study's results are consistent with the study of Lyons et al. (2019), which shows the impact of financial literacy on household loan decisions. Moreira Costa et al. (2020) show that numeracy and financial literacy influence decision-making. Li et al. (2020) show that financial literacy has a strong impact on financial decision-making. Fong et al. (2021) show that a higher financial literacy score is associated with a greater tendency to pay off credit card balances on time.

Financial literacy has a positive effect on the financial resilience of MSMEs. Financial literacy (knowledge, attitudes, and behavior) is an intangible resource that can increase financial resilience. Financial resilience is a recent consequence of the development of the resilience concept. It results from the processes and dynamics that create or maintain financial resources that enable entities to cope with unexpected events successfully. Barney (1991) states that according to the RBV perspective, a company will achieve excellence if it has superior resources. According to Grant (1991), knowledge is the most crucial resource of a company whose strategic nature has important implications for creating and maintaining competitive advantage. Chen et al. (2010) stated that KBV plays a role in building human capital involvement to enable companies to adapt to various problems more effectively and efficiently. This study's results are consistent with the research results by Hassan et al. (2018), which show that all factors related to financial literacy are significantly related to financial resilience. Lusardi et al. (2020) show that financial fragility is strongly related to financial literacy. Pandin et al. (2021) also show that financial literacy has a positive effect on resilience. Financial literacy can help companies achieve a competitive advantage and can increase the company's resilience. Financial literacy is a crucial human capital for company resilience (Huston, 2010; Torres et al., 2019; Battisti et al., 2019). According to KBV, knowledge is the most crucial resource of a company whose strategic nature has important implications for creating and maintaining competitive advantage (Grant, 1991).

Digital literacy has a positive effect on financial inclusion. According to KBV theory, knowledge is a crucial strategic company resource for creating and maintaining competitive advantage (Grant, 1991). Digital literacy is the knowledge that can increase financial inclusion. George's (2020) research shows that digital financial literacy influences financial inclusion. The research results of Fernandes et al. (2021) emphasize the positive impact of digital financial services on financial inclusion. Ebong dan George (2021) stated that digital financial services can increase financial inclusion. Podgorskaya (2021) shows that low digital literacy is a significant threat to the development of financial inclusion.

Digital literacy has a positive effect on financial decisions. According to rational choice theory (RCT), individuals make rational and logical choices based on preferences, goals, and available information. The results of the research are consistent with research conducted by Semente dan Whyte (2020), which shows a significant effect of digital literacy on decision-making styles. Yuan *et al.* (2021) show that critical thinking is a crucial factor in digital literacy.

Digital literacy has a positive effect on financial resilience. Grant (1991) states that according to KBV, knowledge is the most crucial resource of a company whose strategic nature has important implications for competitive advantage. The results of this study are consistent with the results of research conducted by Drossel et al. (2020), and Lyons et al. (2020) that there is a relationship between digital literacy and financial resilience. Nedungadi et al. (2018) stated that digital literacy education creates awareness about information technology to build resilience. Lyons *et al.* (2020), Drossel *et al.* (2020), and OECD (2021b) state that digital literacy strengthens financial resilience.

Financial inclusion has a positive effect on financial decisions. According to rational choice theory (RCT), individuals make rational and logical choices based on preferences, goals, and available information. The results of this study are consistent with research conducted by Pandin *et al.* (2021), which shows that financial inclusion has a positive and significant effect on financial decisions. Pomeroy *et al.* (2020) stated that the availability of access will be useful for making quality financial decisions. Ibtasam *et al.* (2018) show that the emergence of Digital Financial Services (DFS) has a positive effect on individual lives.

Financial inclusion has a positive effect on financial resilience. Grant (1991) states that according to KBV, knowledge is the most crucial resource of a company whose strategic nature has important implications for competitive advantage. The results of this study are consistent with research conducted by Moore *et al.* (2019), and Sakyi-Nyarko *et al.* (2022), showing evidence of the role of financial inclusion in resilience. Gash dan Gray (2016), Moore *et al.* (2019), Swamy (2019), and Pomeroy *et al.*, (2020) found that financial inclusion can increase financial resilience. The study results are different from the findings of research conducted by Pandin *et al.* (2021), which shows that financial inclusion as an intervening variable has a negative and significant effect on financial resilience. Pandin et al. (2021) conducted research during the Covid-19 pandemic, while this research was after the Covid-19 pandemic. During Covid-19, the financial resilience of MSMEs generally decreased due to worsening economic conditions.

Financial decisions have a positive effect on financial resilience in MSMEs. Financial decisions are intangible resources that can increase financial resilience. Grant (1991) states that according to KBV, knowledge is the most crucial resource of a company whose strategic nature has important implications for creating and maintaining competitive advantage. Chen et al. (2010) stated that KBV plays a role in building human capital involvement to enable companies to adapt to various problems more effectively and efficiently. According to the rational choice theory (RCT), rational decision-making aims to maximize satisfaction or benefits derived from choices to achieve goals and objectives and carry out a cost-benefit analysis by utilizing all relevant information (Lovett, 2006; Meleghy, 2015). The results of this study are consistent with the research results by Hamurcu (2019) that making the right decision to allocate funds increases resilience. The research results by Pandin et al. (2021) show that financial decisions have a positive and significant effect on financial resilience. Ardebili and Padoano (2020) state that resilience integration and sustainability in decision-making are crucial.

Financial literacy influences financial decisions positively through financial inclusion in MSMEs. The effect of financial literacy on financial inclusion and financial inclusion on financial decisions show that financial inclusion can mediate the influence of financial literacy on financial decisions. The study results can fill the previous research limitations and provide insight into future research. Financial literacy influences financial resilience positively through financial inclusion and financial decisions parallelly. Financial inclusion and decisions parallelly can mediate the influence of financial literacy on resilience. This study's results can fill the limitations of previous research and provide insight into future research on the role of financial inclusion and financial decisions mediating in parallel the effect of financial literacy on resilience.

Financial literacy has a positive effect on financial resilience through financial inclusion and financial decisions. The results of this research can fill the limitations of previous research and provide insight into future research regarding the role of financial inclusion and financial decisions in parallel mediating the influence of financial literacy on financial resilience.

Digital literacy has a positive effect on financial decisions through financial inclusion. The influence of digital literacy on financial inclusion and financial inclusion on financial decisions shows that financial inclusion can mediate the effect of digital literacy on financial decisions. The results of this research can fill the limitations of previous research and provide insight into future research on the role of financial inclusion in mediating the influence of digital literacy on financial decisions.

Digital literacy has a positive effect on financial resilience through financial inclusion and financial decisions. Financial inclusion and financial decisions in parallel can mediate the influence of digital literacy on financial resilience. The results of this research can fill the limitations of previous research and provide insight into future research regarding the role of financial inclusion and financial decisions in parallel mediating the influence of digital literacy on financial resilience.

Financial inclusion influences financial resilience through financial decisions for MSMEs. The influence of financial inclusion on resilience through financial decisions is weak from a practical point of view. Based on the previous discussion about the financial inclusion effect on financial decisions and financial decisions on financial resilience, financial decisions can mediate the financial inclusion effect on financial resilience. The study results can fill the limitations of previous research and provide insight into future research about the role of financial decisions in mediating the effect of financial inclusion on resilience.

Financial literacy influences financial resilience positively through financial inclusion and financial decisions serially for MSMEs. Financial literacy has a positive effect on financial inclusion, financial inclusion has a positive effect on financial decisions, and financial decisions have a positive effect on financial resilience. Financial inclusion and financial decisions can mediate the effect of financial literacy on financial resilience serially. The study results can fill the limitations of previous research and provide insight into future research about the role of financial inclusion and financial decisions to mediate the effect of financial literacy on financial resilience serially.

Digital literacy has a positive effect on financial resilience through financial inclusion and financial decisions serially. The research results show that digital literacy, financial literacy, and financial inclusion, are able to make a moderate contribution to explaining variations of financial decisions. Although financial inclusion and financial decisions serially do not significantly mediate the influence of digital literacy on financial resilience, the results of this research can fill the limitations of previous research and provide insight into future research regarding the role of financial inclusion and financial decisions in serially mediating the influence of digital literacy towards financial resilience.

6. Conclusions

The study results show 1) a positive effect of financial literacy and digital literacy on financial inclusion, financial decisions, and financial resilience of MSMEs; 2) a positive effect of financial literacy and digital literacy on the financial resilience of MSMEs through financial inclusion and financial decisions parallelly; and 3) financial literacy and digital literacy have a positive effect on the financial resilience of MSMEs through financial inclusion and financial decisions serially, but the effect of digital literacy on financial resilience through financial inclusion and financial decisions is insignificant serially. Financial literacy and digital literacy directly or indirectly through financial inclusion and financial decisions, can increase the financial resilience of MSMEs.

This research provides empirical evidence regarding 1) resilience theory and the concept of financial resilience; 2) Knowledge-Based View (KBV) regarding the role of knowledge as human capital in increasing financial inclusion and financial decisions and its impact on the financial resilience of MSMEs; 3) financial literacy theory of financial inclusion in explaining the relationship between financial literacy and financial inclusion and other constructs in the research model; and 4) Rational Choice Theory (RCT) in explaining the relationship between financial decisions and financial literacy, financial literacy, financial inclusion, and other constructs in the research model. This research also shows the crucial role of financial literacy, digital literacy, financial inclusion, and financial decisions in increasing the financial resilience of MSMEs.

The limitations of this study include: 1) This research is a cross-sectional study that uses observational data at a certain point in time that only reflects the situation at the time; and 2) This research was limited to MSMEs in Bali Province that are spread over eight regencies and one city with the research sample, which amounted to 385 MSMEs. Further research should consider 1) panel data research using MSME data over a certain period to overcome the weakness of cross-section research; and 2) research with a wider research area coverage with a more balanced sample between micro, small, and medium enterprises, to broaden the generalization of the research results.

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