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The Influence of Self-Efficacy, Growth Mindset, and Adaptability on the Human Capital of MSME Entrepreneurs in Makassar City, with Digital Literacy as a Moderating Variable

Firman Karim[1], Akhmad[2], Andi Rustam[3]
[123]Universitas Muhammadiyah Makassar, Indonesia
Email: karimfirman60@gmail.com, akhmad.pide@unismuh.ac.id, andi.rustam@unismuh.ac.id

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Abstract

This study examines the effects of self-efficacy, growth mindset, and adaptability on human capital, with digital literacy serving as a moderating variable among Micro and Small Enterprises (MSEs) in Makassar City, Indonesia. A quantitative explanatory research design was employed. Data were collected through structured questionnaires administered to 200 MSE owners selected using purposive sampling. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The findings reveal that self-efficacy, growth mindset, and adaptability have positive and significant effects on human capital. Furthermore, digital literacy significantly strengthens the relationships between self-efficacy and human capital, as well as between adaptability and human capital. However, digital literacy does not moderate the relationship between growth mindset and human capital. The structural model demonstrates strong explanatory power, with an R^2 *value of 0.881, indicating that the proposed model explains 88.1% of the variance in human capital. These findings highlight that strengthening human capital in MSEs requires not only psychological and adaptive capabilities but also digital competencies to enhance business competitiveness in the digital transformation era. The study offers practical implications for policymakers and business development institutions in designing integrated human capital development and digital literacy programs for MSEs.*

INTRODUCTION

Digital transformation has become a major force transforming the global economic landscape (Alrasyid, Pagalung, Goso, et al., 2026). Developments in information technology, artificial intelligence, digital platforms, and the data-driven economy have driven fundamental changes in how organizations and businesses create value, innovate, and maintain competitiveness. In this context, competitive advantage is no longer solely determined by the ownership of physical assets or financial capital, but increasingly relies on the quality of human capital possessed by individuals and organizations. Quality human capital reflects a combination of knowledge, skills, learning ability, adaptability, and digital competencies that enable individuals to effectively respond to changes in the business environment (Hossain et al., 2025).

In the digital economy era, human capital development is influenced not only by education and work experience but also by individual psychological and behavioral factors (Anwar & Amrin, 2026). Numerous studies have shown that self-efficacy, a growth mindset, and adaptability are personal resources that play a crucial role in enhancing an individual's ability to learn, innovate, and navigate uncertain business environments (Botha, 2024; Brozović et al., 2025). Individuals with high self-efficacy tend to be more confident in making decisions and solving business problems. Meanwhile, individuals with a growth mindset view challenges as learning opportunities, making them more open to competency development and innovation. Furthermore, adaptability enables entrepreneurs to adjust their business strategies and behaviors to rapidly changing markets, technology, and consumer preferences.

The role of these three factors becomes even more crucial in the context of micro and small enterprises (MSEs), which have limited resources compared to larger companies (Mansyur et al., 2025). MSEs often face various challenges, such as limited capital, limited access to technology, changes in consumer behavior, and increasing market competition. In such circumstances, the quality of human resources becomes a strategic factor determining a business's ability to survive and thrive. Alshebami (2025) research shows that self-efficacy significantly influences entrepreneurs' ability to maintain business continuity during a crisis. Furthermore, Őri et al. (2024) found that adaptability and strategic flexibility contribute to the resilience and growth of MSMEs in the face of changing business environments. Strong human capital has also been shown to increase innovation capacity, technology adoption, and business growth (Chabbouh & Boujelbene, 2020).

However, the development of the digital economy requires not only psychological and behavioral skills but also the ability to utilize digital technology effectively. In this context, digital literacy is becoming an increasingly important competency because it enables entrepreneurs to access information, manage knowledge, communicate with customers, and adopt various technologies that support business activities. Nikou et al. (2022) emphasize that digital literacy plays a key role in the technology adoption process, while Jiang et al. (2025) show that digital literacy can enhance innovation capacity by strengthening digital capabilities and knowledge management. Thus, digital literacy has the potential to strengthen the relationship between individual psychological resources and human capital development in an increasingly digitalized business environment.

This phenomenon is particularly relevant in the context of Makassar City. As the largest trade and service center in Eastern Indonesia, Makassar boasts a significant economic activity supported by the MSME sector. According to Makassar City's One Data 2024 data, there are approximately 31,350 micro-enterprises and 910 small businesses operating in Makassar City. This number demonstrates that MSMEs are the backbone of the regional economy and a key player in driving local economic growth. However, the large number of MSMEs has not been fully matched by the readiness of human resources to face digital transformation. Various challenges remain, including low utilization of digital technology in business operations, limited technology-based managerial competencies, and uneven adaptability to changing consumer behavior and digital market dynamics.

This situation indicates that the main challenges facing MSMEs lie not only in capital or market access, but also in the quality of human capital possessed by entrepreneurs (Alrasyid et al., 2023; Hasanuddin et al., 2024). Low adaptability remains a major obstacle to MSME development in Indonesia. Sirajje et al. (2024) confirms that entrepreneurial behavior, supported by a growth mindset and adaptability, has a significant influence on the innovative capacity of business actors. These findings indicate that increasing the competitiveness of MSMEs requires simultaneously strengthening psychological factors, adaptive behavior, and digital competency.

Although research on self-efficacy, growth mindset, adaptability, digital literacy, and MSMEs has progressed quite rapidly, several research gaps remain. First, most previous studies examine these variables separately and focus primarily on entrepreneurial intentions, innovation, or business performance (Mondal et al., 2023; Saoula et al., 2023). Second, research that simultaneously integrates self-efficacy, growth mindset, and adaptability as determinants of human capital in MSMEs is still relatively limited. Third, the role of digital literacy as a moderating variable that strengthens the relationship between these behavioral factors and human capital has received little empirical attention, particularly in the context of MSMEs in developing countries. Fourth, studies specifically examining this phenomenon among MSMEs in Makassar City are still very limited, even though the economic characteristics of this region make it an interesting context for research.

Based on this empirical phenomenon and research gap, this study was conducted to analyze the influence of self-efficacy, growth mindset, and adaptability on the human capital of MSMEs in Makassar City, with digital literacy as a moderating variable. This research is expected to provide theoretical contributions by developing a human capital model based on psychological factors, adaptive behavior, and digital competency. Furthermore, the research findings are expected to provide practical implications for local governments, MSME support institutions, and other stakeholders in designing programs to strengthen human resource capacity and digital transformation for MSMEs to sustainably enhance regional economic competitiveness.

METHODS

Research Approach and Type

This study employed a quantitative approach with an explanatory research approach. This quantitative approach was chosen because the study aimed to test causal relationships between variables through statistically analyzed numerical data measurements (Alrasyid & Sultan, 2024). Explanatory research was used to explain the influence of self-efficacy, growth mindset, and adaptability on human capital and to examine the role of digital literacy as a moderating variable. This approach enabled researchers to obtain empirical evidence regarding the relationships between variables formulated in the conceptual model (Alrasyid, Pagalung, Amiruddin, et al., 2026). Data collection was conducted through a survey method using a structured questionnaire distributed to Micro and Small Enterprises (MSEs) in Makassar City.

Research Location and Timeline

This research was conducted in Makassar City, South Sulawesi Province. Makassar City was chosen as the research location because it is a center of economic growth and trade in Eastern Indonesia, boasting a relatively large number of MSMEs and continues to grow in line with the digital transformation of the business sector. Based on data from the Makassar City One Data Center in 2024, the number of micro-enterprises reached 31,350 and small-enterprise units reached 910, providing adequate representation for examining human capital development in the MSME sector. The research was conducted from January to May 2026, encompassing the development of research instruments, data collection, data processing, analysis of research results, and preparation of the research report.

Population and Sample

The population in this study comprised all micro-enterprises and small-enterprise operators operating in Makassar City. Based on the Makassar City One Data Center in 2024, the study population consisted of approximately 32,260 business units, including 31,350 micro-enterprises and 910 small-enterprises. Given the large population, this study employed purposive sampling, a sampling technique based on specific criteria to ensure that the selected respondents align with the research objectives (Alrasyid, Pagalung, Goso, et al., 2026). The respondent criteria included business owners or managers actively running their businesses in Makassar City, having managed the business for at least one year, being directly involved in business decision-making, and utilizing digital tools in daily business activities. Based on these considerations, the sample size used in this study was 200 MSMEs. This number was deemed sufficient for analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM) because it meets the recommendations of Hair Jr et al., (2014), who stated that PLS-SEM is suitable for use in studies with small to medium sample sizes and research models involving direct relationships and moderating effects.

Data Types and Sources

This study used two types of data: primary and secondary data. Primary data was obtained directly from respondents through questionnaires compiled based on indicators for each research variable: self-efficacy, growth mindset, adaptability, digital literacy, and human capital. Meanwhile, secondary data was obtained from various sources, such as publications from the Central Statistics Agency (BPS), the Makassar City Cooperatives and MSMEs Office, Makassar City's One Data Center, scientific books, reputable national and international journal articles, and various other documents relevant to the study. Secondary data was used to strengthen the theoretical foundation, support the development of the conceptual framework, and provide an overview of the condition of MSMEs in Makassar City.

Data Collection Techniques

Data collection in this study involved distributing questionnaires to respondents who met the research criteria (Alrasyid, Pagalung, & Anwar, 2026). The questionnaires were structured in a closed-ended manner using a five-point Likert scale, with responses ranging from 1 (strongly disagree) to 5 (strongly agree). The use of a Likert scale aims to objectively and consistently measure respondents' perceptions of each research variable indicator (Malik et al., 2026). Questionnaires were distributed both in person and online to facilitate data collection from MSMEs across various regions of Makassar City. In addition to questionnaires, this study also utilized documentation techniques and literature studies as supporting sources of information related to MSME development and digital transformation.

Operational Definition of Variables

The variables used in this study consist of independent variables, dependent variables, and moderating variables. The independent variables include self-efficacy, growth mindset, and adaptability. Self-efficacy is defined as an individual's belief in their ability to manage a business, face challenges, make decisions, and develop their own competencies. Growth mindset is the belief that an individual's abilities can continue to develop through learning, experience, and continuous effort. Adaptability is defined as an individual's ability to adjust to changes in the business environment, technological developments, and market dynamics. The dependent variable in this study is human capital, the quality of human resources that reflects the knowledge, skills, learning ability, productivity, and adaptability of business actors. The moderating variable is digital literacy, which is an individual's ability to access, understand, evaluate, and effectively utilize digital technology to support business activities. All variable indicators are measured using a five-point Likert scale.

Data Analysis Technique

Data analysis was conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) method with the assistance of SmartPLS 3 software. The PLS-SEM method was chosen because it can analyze complex relationships between latent variables, test for moderating effects, and does not require a normal data distribution (Malik et al., 2024). The analysis was conducted through two main stages: evaluation of the measurement model (outer model) and evaluation of the structural model (inner model). The evaluation of the outer model aimed to test the validity and reliability of the research instrument through convergent validity, discriminant validity, composite reliability, and Cronbach's alpha. Next, the evaluation of the inner model was conducted to test the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), multicollinearity using the Variance Inflation Factor (VIF), and hypothesis testing through a bootstrapping procedure (Qamaruddin, 2026). Hypothesis testing was conducted at a 5% significance level, so the hypothesis was accepted if it had a p-value <0.05. Furthermore, moderating variable testing was conducted by forming an interaction construct between digital literacy and each independent variable to determine whether digital literacy could strengthen or weaken the influence of self-efficacy, growth mindset, and adaptability on the human capital of MSMEs in Makassar City.

RESULTS AND DISCUSSION

Respondent Characteristics

The respondent characteristics provide a general overview of the profile of the Micro and Small Enterprises (MSMEs) sampled in this study. The presentation of respondent characteristics aims to provide information on the respondents' backgrounds based on several relevant demographic aspects, namely gender, age, highest level of education, length of business, and type of business managed. This information is crucial for understanding the characteristics of MSMEs in Makassar City and serves as a basis for interpreting the results of the research analysis. A total of 200 MSMEs who met the research criteria participated as respondents, so the characteristics presented are expected to reflect the actual conditions of the study population.

Table 1. Respondent Characteristics

Characteristics	Category	Frequency (Persons)	Percentage (%)
Gender	Male	108	54,0
	Female	92	46,0
Age	20–30 Years	42	21,0
	31–40 Years	78	39,0
	41–50 Years	56	28,0
	>50 Years	24	12,0
Last Education High	School/Vocational High School	74	37,0
	Diploma (D3)	22	11,0
	Bachelor's Degree	86	43,0
	Postgraduate Degree	18	9,0
Business Years	1–5 Years	82	41,0
	6–10 Years	61	30,5

Characteristics	Category	Frequency (Persons)	Percentage (%)
	11–15 Years	35	17,5
	>15 Years	22	11,0
Type of Culinary	Business	74	37,0
	Trade	38	19,0
	Fashion	29	14,5
	Services	42	21,0
	Crafts	17	8,5
	Total	**200**	**100,0**

Source: Processed Primary Data, 2026

Table 1 shows that, based on gender, 108 respondents (54.0%) were male, while 92 respondents (46.0%) were female. This composition indicates that entrepreneurial activities in Makassar City are carried out by both genders in relatively equal proportions, although men remain slightly more dominant in business management. Based on age group, the majority of respondents were in the 31–40 age range (78 respondents (39.0%), followed by the 41–50 age group (56 respondents (28.0%), the 20–30 age group (42 respondents (21.0%), and the 24 respondents (12.0%) over 50. This distribution indicates that the majority of MSMEs are of productive age, thus having greater potential to develop their businesses, adapt to changes in the business environment, and utilize digital technology to increase their competitiveness.

In terms of their last level of education, the majority of respondents had a Bachelor's degree (S1/D4), amounting to 86 people (43.0%). Furthermore, respondents with a high school/vocational high school education numbered 74 people (37.0%), Diploma (D3) numbered 22 people (11.0%), and Postgraduate (S2/S3) numbered 18 people (9.0%). This condition indicates that most MSME actors have a relatively good level of education, so it is expected to be able to support increased competence, business decision-making, and adoption of innovation and digital technology in carrying out business activities. Based on the length of time running a business, the majority of respondents have managed their business for 1-5 years as many as 82 people (41.0%), followed by respondents who have run a business for 6-10 years as many as 61 people (30.5%), for 11-15 years as many as 35 people (17.5%), and more than 15 years as many as 22 people (11.0%). These findings indicate that the majority of MSMEs are in the business development phase, thus still having significant opportunities to increase human resource capacity, strengthen innovation, and develop business strategies that are more adaptive to changes in the business environment.

Meanwhile, based on the type of business operated, respondents were predominantly in the culinary sector (74 individuals) (37.0%). This was followed by the services sector (42 individuals) (21.0%), trade (38 individuals) (19.0%), fashion (29 individuals) (14.5%), and crafts (17 individuals) (8.5%). The dominance of the culinary sector indicates that this sector remains the most popular business sector among MSMEs in Makassar City. This diversity of business types also indicates that the research sample represents various MSME sectors with different characteristics and business challenges. Therefore, the results are expected to provide a more comprehensive picture of the influence of self-efficacy, growth mindset, adaptability, and digital literacy on the human capital development of MSMEs in Makassar City.

Construct Validity Test

Construct validity tests were conducted to determine the ability of each construct to explain the variance of its constituent indicators. Convergent validity testing in this study used the Average Variance Extracted (AVE) value. A construct is considered to have good convergent validity if its AVE value is greater than 0.50 (Hair et al., 2011).

Table 2. Average Variance Extracted (AVE)

Variables	AVE
Self-Efficacy (X1)	0,783
Growth Mindset (X2)	0,714
Adaptability (X3)	0,737
Digital Literacy (Z)	0,726
Human Capital (Y)	0,667

Source: Processed Primary Data, 2026

Based on Table 2, all research variables had AVE values above the minimum required limit. The self-efficacy variable achieved an AVE value of 0.783, growth mindset 0.714, adaptability 0.737, digital literacy 0.726, and human capital 0.667. These values indicate that each construct is able to explain more than 50% of the variance in the indicators that form it. Therefore, all variables in this study meet convergent validity criteria, meaning the indicators used are deemed to adequately represent the constructs being measured and are suitable for use in subsequent analysis.

Reliability Test

The reliability test aims to measure the level of internal consistency of the indicators within each research construct. Reliability in this study was evaluated using Cronbach's Alpha, with the criterion that a construct is considered reliable if its value is greater than 0.70 (Hair et al., 2017).

Table 3. Variable Reliability Test

Variables	Cronbach's Alpha	Information
Self-Efficacy (X1)	0,931	Reliable
Growth Mindset (X2)	0,900	Reliable
Adaptability (X3)	0,881	Reliable
Digital Literacy (Z)	0,834	Reliable
Human Capital (Y)	0,906	Reliable

Source: Processed Primary Data, 2026

Based on Table 3, all research variables had Cronbach's Alpha values above 0.70. Self-efficacy scored 0.931, growth mindset 0.900, adaptability 0.881, digital literacy 0.834, and human capital 0.906. These results indicate that all indicators within each variable have excellent internal consistency in measuring the research constructs. Therefore, the research instrument is considered reliable, producing consistent and reliable measurements in explaining the relationships between the variables studied.

Structural Model Testing

The structural model was evaluated to determine the ability of exogenous variables to explain endogenous variables through the coefficient of determination (R^2). A higher R^2 value indicates a stronger model's ability to explain variation in the dependent variable (Hair Jr et al., 2014).

Table 4. Structural Model Testing

Variable	*R Square*	*R Square Adjusted*
Human Capital	0,881	0,877

Source: Processed Primary Data, 2026

Based on Table 4, the R Square value for the Human Capital variable is 0.881, while the Adjusted R Square value is 0.877. These values indicate that 88.1% of the variation in human capital can be explained by the variables self-efficacy, growth mindset, adaptability, and their interaction with digital literacy contained in the research model. Meanwhile, the remaining 11.9% is influenced by other factors outside the model that were not analyzed in this study. Based on the criteria of Hair et al. (2017), the R^2 value of 0.881 is categorized as very strong (substantial), thus it can be concluded that the research model has excellent predictive ability in explaining changes in the human capital of MSMEs in Makassar City.

Hypothesis Testing

Hypothesis testing was conducted to determine the direct and moderating effects between variables in the research model (Alrasyid et al., 2025). Testing was conducted based on T-statistics and P-values. The hypothesis was accepted if the T-statistics were >1.96 and the P-values were <0.05 at the 5% significance level. The results of the hypothesis testing are presented in Table 5 below.

Table 5. Hypothesis Test Results

	Standard Deviation	***T Statistics***	***P Values***
X1 -> Y	0,054	3,172	0,002
X2 -> Y	0,062	6,724	0,000
X3 -> Y	0,061	2,362	0,019
X1*Z -> Y1	0,040	3,125	0,002
X2*Z -> Y2	0,048	1,217	0,224
X3*Z -> Y2	0,049	2,809	0,005

Source: Processed Primary Data, 2026

Based on Table 5, the effect of self-efficacy on human capital shows a T-statistic of 3.172 with a P-value of 0.002. These results indicate that self-efficacy has a positive and significant effect on human capital, thus accepting the first hypothesis. This finding indicates that the higher the confidence of MSME owners in their ability to manage their businesses, the higher the quality of their human capital.

Furthermore, growth mindset had a T-statistic of 6.724 with a P-value of 0.000, indicating a positive and significant effect on human capital. Therefore, the second hypothesis was accepted. These results indicate that a mindset oriented toward learning, skill development, and readiness to face challenges can improve the quality of human resources in MSMEs. Testing the effect of adaptability on human capital yielded a T-statistic of 2.362 with a P-value of 0.019. This value met the significance criteria, thus accepting the third hypothesis. These findings indicate that MSMEs' ability to adapt to changes in the business environment, technological developments, and market dynamics contributes to increased human capital.

The results of the moderation effect test showed that the interaction between self-efficacy and digital literacy had a T-statistic of 3.125 with a P-value of 0.002, indicating a significant effect on human capital. Therefore, the fourth hypothesis was accepted. These results indicate that digital literacy can strengthen the influence of self-efficacy on human capital. MSMEs with high levels of self-efficacy will be able to optimize their potential more effectively if supported by strong digital literacy skills.

In contrast, the interaction between growth mindset and digital literacy yielded a T-statistic of 1.217 with a P-value of 0.224, thus failing to meet the significance criteria. Therefore, the fifth hypothesis was rejected. This finding indicates that digital literacy neither strengthens nor weakens the relationship between growth mindset and human capital. In other words, the influence of growth mindset on human capital tends to be direct, independent of the MSME's level of digital literacy. Meanwhile, the interaction between adaptability and digital literacy yielded a T-statistic of 2.809 with a P-value of 0.005, thus having a positive and significant effect on human capital. Therefore, the sixth hypothesis was accepted. These results indicate that digital literacy acts as a moderating variable, strengthening the relationship between adaptability and human capital. The higher the digital skills of MSMEs, the greater the impact of adaptability on improving the quality of human capital.

Overall, the results of the hypothesis testing indicate that three main variables—self-efficacy, growth mindset, and adaptability have a positive effect on human capital. Furthermore, digital literacy has been shown to strengthen the influence of self-efficacy and adaptability on human capital, but it fails to moderate the relationship between growth mindset and human capital. These findings suggest that digital competence is a crucial factor in optimizing the human resource capacity of MSMEs, especially when combined with self-confidence and adaptability to changes in the business environment.

DISCUSSION

The Influence of Self-Efficacy on Human Capital

Research results show that self-efficacy has a positive and significant impact on the human capital of MSMEs in Makassar City. This finding indicates that the higher a business owner's confidence in their ability to manage their business, solve problems, make decisions, and face business challenges, the higher the quality of their human capital. Self-efficacy encourages individuals to continuously learn, develop skills, and utilize experience as capital to increase their capacity. Therefore, MSMEs with high self-efficacy tend to be more confident in developing competencies that support their business success.

This finding aligns with Social Cognitive Theory proposed by Bandura (1997), which explains that an individual's belief in their abilities influences behavior, motivation, persistence, and success in achieving goals. Individuals with high self-efficacy are more optimistic in facing challenges, are more resilient when experiencing failure, and have a stronger commitment to improving their competencies. In the context of MSMEs, this confidence serves as psychological capital that encourages business owners to increase their knowledge, skills, and experience, ultimately developing higher-quality human capital.

The results of this study also support Human Capital Theory (Becker, 1975), which states that improving the quality of human resources is a crucial investment for individual and organizational productivity. Self-efficacy is one of the internal factors that encourages individuals to invest in themselves through learning, competency development, and increasing adaptive abilities. Therefore, the higher the self-efficacy of MSMEs, the greater their opportunity to build human capital that can enhance business competitiveness.

Empirically, the results of this study are consistent with the findings of Alshebami (2025) who showed that self-efficacy increases the capacity of entrepreneurs to maintain and grow their businesses in uncertain conditions. This study also supports the findings of Botha (2024), who stated that self-efficacy is a key determinant in increasing an individual's ability to continuously learn and develop their competencies. The practical implications of these findings suggest that MSME development programs should not only focus on improving technical skills but also need to strengthen the psychological aspects of entrepreneurs through leadership training, coaching, mentoring, and business assistance, which can increase self-confidence in facing business challenges

The Influence of Growth Mindset on Human Capital

The results of this study indicate that a growth mindset has a positive and significant effect on the human capital of MSMEs in Makassar City. This finding indicates that entrepreneurs who believe that their abilities can continue to develop through learning, experience, and continuous effort tend to have better quality human capital. This mindset encourages individuals to be open to change, unafraid of failure, and to view experiences as a learning process to improve their competencies.

This finding supports the Growth Mindset Theory developed by (Dweck & Dweck, 2006). This theory explains that individuals with a growth mindset view intelligence and abilities not as fixed but as capable of being improved through continuous learning. In the context of MSMEs, this mindset serves as a foundation for entrepreneurs to continuously improve their skills, expand their knowledge, and develop innovation as part of human capital formation. Furthermore, this study also supports Human Capital Theory, which states that the quality of human resources develops through investment in education, training, experience, and lifelong learning. A growth mindset encourages entrepreneurs to actively make these investments, resulting in increased capabilities that impact the quality of their human capital.

The findings of this study are consistent with research by Botha (2024) which states that a growth mindset enhances an individual's ability to deal with change and accelerates the learning process. These results also support research by Sirajje et al. (2024) which shows that a growth mindset influences the innovation capacity of MSMEs. Practically, these research findings indicate that MSME development needs to be directed at establishing a learning culture (learning orientation) through training, sharing experiences among business actors, and developing learning communities so that MSMEs are prepared.

The Influence of Adaptability on Human Capital

The results of this study indicate that adaptability has a positive and significant impact on the human capital of MSMEs in Makassar City. This indicates that business owners' ability to adapt to technological changes, market dynamics, consumer needs, and the business environment can improve the quality of their human resources. Adaptive MSMEs tend to learn new skills more quickly, embrace innovation, and develop business strategies that align with environmental changes.

This finding aligns with Dynamic Capability Theory, which explains that the ability of organizations and individuals to respond to environmental changes is a source of sustainable competitive advantage. Adaptability enables MSMEs to update knowledge, improve competencies, and develop skills relevant to business needs. These results also support the research of Brozović et al. (2025) which states that adaptability is a critical factor in increasing business resilience in a dynamic business environment. Furthermore, research by Őri et al. (2024) shows that individual flexibility contributes to increased innovation and competency development, which are part of human capital.

The practical implication is that local governments and MSME support institutions need to provide training programs that encourage increased adaptability to technological changes, digital business models, and market developments so that the quality of MSMEs' human capital can continue to grow.

The Role of Digital Literacy in Moderating the Effect of Self-Efficacy on Human Capital

The results of this study indicate that digital literacy can strengthen the influence of self-efficacy on human capital. This finding suggests that MSMEs' self-confidence will have a greater impact on improving human capital if supported by the ability to utilize digital technology effectively.

Entrepreneurs with high self-efficacy tend to be more confident in utilizing various digital platforms to obtain information, develop skills, expand business networks, and increase business productivity. Conversely, without adequate digital skills, the potential for self-efficacy cannot be optimally optimized to improve the quality of human resources. These research findings support the research of Nikou et al. (2022) which states that digital literacy is a key foundation for developing individual competencies in the digital economy era. These findings also align with the research of Mondal et al. (2023) which shows that digital skills strengthen the influence of individual competencies on business success.

The Role of Digital Literacy in Moderating the Effect of Growth Mindset on Human Capital

The results of this study indicate that digital literacy does not moderate the relationship between growth mindset and human capital. This finding indicates that the increase in human capital generated by a growth mindset occurs directly and is independent of the high or low level of digital literacy of MSMEs. Theoretically, a growth mindset is a psychological orientation that encourages individuals to continuously learn and develop through experience. Therefore, individuals with a growth mindset will continue to strive to improve their competencies despite varying levels of digital literacy. This explains why digital literacy has no additional effect on this relationship.

This finding suggests that the formation of a growth mindset is an internal factor that is relatively independent of technological capabilities. Therefore, increasing human capital through a growth mindset is more influenced by intrinsic motivation, learning experience, and individual commitment than by digital capabilities.

The Role of Digital Literacy in Moderating the Effect of Adaptability on Human Capital

The results of this study indicate that digital literacy strengthens the effect of adaptability on human capital. This finding indicates that adaptability will have a greater impact on improving the quality of human capital if MSMEs possess strong digital capabilities. In the era of digital transformation, adaptability is not only related to market changes but also encompasses the ability to utilize digital technology as a tool for learning, communication, marketing, and decision-making. Adaptive MSMEs with high digital literacy are more easily able to obtain new information, adopt innovations, and improve skills relevant to business needs.

This finding is consistent with research by Nikou et al. (2022) which positions digital literacy as a strategic capability for improving individual competencies in the digital era. The results of this study also support the research of H. Jiang et al. (2025) which states that digital literacy accelerates the learning process, innovation adoption, and human resource capacity development. Practically, these results demonstrate that improving the human capital of MSMEs requires not only the ability to adapt to changes in the business environment but also support the strengthening of digital literacy through technology training, business digitalization assistance, and increased access to various digital platforms. The combination of adaptability and digital literacy will strengthen MSMEs' competitiveness in facing the challenges of the digital economy and support future business sustainability.

CONCLUSION

Based on the research results, it can be concluded that self-efficacy, growth mindset, and adaptability have a positive and significant influence on the human capital of MSMEs in Makassar City. These findings indicate that the higher the self-confidence, growth mindset, and adaptability of MSMEs, the higher the quality of their human capital. Furthermore, digital literacy has been shown to strengthen the influence of self-efficacy and adaptability on human capital, but does not moderate the relationship between growth mindset and human capital. Overall, this study confirms that developing MSME human capital requires a combination of strengthening psychological aspects, adaptability, and digital literacy to increase business competitiveness in the era of digital transformation.

The government and MSME support institutions are expected to strengthen human resource development programs through training focused on improving self-efficacy, growth mindset, adaptability, and digital literacy. MSMEs also need to continuously improve their competencies and ability to utilize digital technology to be more adaptive and innovative in facing business changes. Meanwhile, further research is recommended to expand the regional coverage, increase the number of respondents, and develop the research model by including other variables, such as entrepreneurial leadership, innovation capability, or learning orientation, so as to be able to provide a more comprehensive understanding of the factors that influence the human capital of MSMEs.

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