

# Determinants of MSME Workers' Well-Being: A Structural Equation Modeling Approach

*Determinants of  
MSME Workers'  
Well-Being*

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## ABSTRACT

*Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in Indonesia's economic growth and social development by creating jobs, reducing poverty, and fostering an inclusive and resilient society. The primary aim of this research is to empirically examine the contribution of human, social, physical, financial, and natural capital towards enhancing the well-being of MSME workers. With a quantitative method, data from 250 respondents were collected by using a structured questionnaire based on measurements on a 1–5 Likert scale. The analysis was carried out using Structural Equation Modeling–Partial Least Squares (SEM-PLS). The findings reveal that all five types of capital have a positive and significant impact on the well-being of workers, with human capital and financial capital as the most dominant contributors, followed by social capital, physical capital, and natural capital. The model accounts for 67% of the variance in workers' well-being with high predictive validity. These results validate that fostering welfare among MSMEs needs holistic solutions with individual, financial, social, infrastructure, and environmental aspects. The study offers actionable suggestions to policymakers, MSME managers, and development agencies to enhance holistic capital-based programs to foster employees' welfare and productivity.*

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## INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are vital to Indonesia's economic growth and social development, generating jobs, reducing poverty, and supporting inclusive, resilient communities. In Palembang City, MSMEs sustain household incomes and local economies, contributing over 60% of the national GDP and employing more than 97% of the workforce. However, workers face welfare challenges, including limited education and training, low financial capacity, inadequate infrastructure, and vulnerability to environmental changes (Aprilia et al., 2025). Addressing these issues requires a holistic approach that leverages multiple forms of capital. MSME growth is also constrained by limited access to capital and technology, low entrepreneurial capacity, and weak integration into global value chains (Wahyudi et al., 2024).

In development studies, capital extends beyond financial resources, encompassing human, social, physical, financial, and natural forms that shape well-being. Human capital reflects employees' knowledge, skills, and competencies enhanced through education and training (Goodwin, 2003; Lisi, 2024). Social capital involves trust, cooperation, and networks that foster cohesion and collective action (Carciente & Varnagy, 2011). Physical capital includes infrastructure and technology, financial capital enables economic activity through credit and savings, and natural capital comprises environmental assets essential for sustainable growth (Zulvikri, 2024).

In Palembang City, rapid urban growth and the strategic role of MSMEs create both opportunities and challenges for workers' welfare, as government empowerment programs remain uneven due to disparities in access to and use of various forms of capital.

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Employee well-being in MSMEs is closely linked to the efficient utilization of human, social, financial, physical, and natural capital, which collectively enhance productivity, sustainability, economic stability, and employment generation. Human capital, through training and capacity development, improves employees' skills and knowledge, although technical issues such as non-synchronized schedules persist (Putri et al., 2024). Social capital facilitates communication between MSME stakeholders and the government, strengthening networks and community empowerment (Fizzanty, 2024; Kandis et al., 2024). Access to financial capital remains critical, significantly affecting MSME success, productivity, and export performance (Berutu et al., 2024; Wicaksono & Hermawan, 2024). Infrastructure and zoning influence MSME spatial patterns and prosperity (Carciente & Varnagy, 2011; Wulandari & Mardiana, 2024). While natural capital is less explicitly discussed, it may still impact environment-dependent MSME activities.

Alternatively, MSMEs have a crucial role to play in building community welfare and income, where financial access, entrepreneurial training, and government support have been determinants of success (Kennedy, 2024; Maria et al., 2024). In Palembang, policy development and strategic planning founded on complete SME mapping can turn into vital tools for formulating economic sustainability while consolidating workers' welfare (Wulandari & Mardiana, 2024; Grace et al., 2024; Zulfadhli et al., 2024; Zunairo & Wijaya, 2024). Physical and natural capital are also significant, as infrastructure and environmental resource use sustainability can underpin operating effectiveness and business sustainability.

Previous studies have given much attention to the effect of individual capitals, be it financial or human capital, for example, on welfare circumstances (Sumastuti et al. 2024; Sirait et al., 2024). However, there has been limited exploration of the combined and holistic influence of all five capitals on welfare by MSME workers, particularly in the urban context of Palembang. The novelty of this study lies in its holistic approach, which empirically investigates how all five capitals jointly contribute to employee welfare, productivity, and sustainability in MSMEs. The application of green finance and infrastructure investment, for instance, directly affects financial performance and employees' well-being (Sani, 2021; Sumastuti et al. 2024; Herlin et al., 2025).

Despite the acknowledgment of MSMEs as being pivotal to poverty reduction and employment creation, empirical research on how different types of capital contribute to the overall welfare of workers is limited. Human capital in the shape of motivation, education, and skills plays a crucial role in maximizing productivity and business sustainability, where training programs have been identified to provide workers with new skills and inspire creativity. Social capital in the shape of relationships and networks also plays a significant role since it increases access to resources and information that trigger business performance and worker well-being. Robust networks even enable MSMEs to survive market adversity and bring forth new prospects. The primary aim of this research is to empirically examine the contribution of human, social, physical, financial, and natural capital towards enhancing the well-being of MSME workers in Palembang City.

## **LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT**

### **The Effect of Human Capital on Workers' Well-Being**

Human capital, encompassing workers' skills, knowledge, education, and health, plays a crucial role in enhancing productivity, creativity, and the overall welfare of MSME workers. Evidence from the Migori River watershed highlights that workforce skill enhancement is essential for improving productivity and sustainable livelihoods (Goodwin, 2003; Opiyo et al., 2024). Investment in human capital is therefore vital for strengthening MSME performance and competitiveness, as education, skills, and health directly influence productivity, income, and business resilience. Training and entrepreneurship programs equip workers with competencies that foster innovation and creativity, ultimately improving firm performance and employee welfare (Brinckmann et al., 2013; Musthafa et al., 2024). In addition, business planning facilitates the effective utilization of human capital by translating education and skills into tangible performance

outcomes. Entrepreneurial capabilities such as innovation, creativity, and opportunity recognition further enable MSME actors to overcome challenges and seize market opportunities, reinforcing the role of human capital in improving workers' economic well-being (Suroso & Anggraeni, 2017).

Empirical studies consistently show a positive relationship between human capital and MSME performance. Evidence from China indicates that entrepreneurial human capital strongly correlates with business success and productivity (Chen et al., 2017). Education and training help MSMEs overcome knowledge gaps and market constraints, improving decision-making and operational efficiency, which boosts income and labor productivity (Ismail, 2018). Managerial, professional, and technical skills drive innovation, communication, and collaboration, enhancing productivity and worker welfare (Ismail, 2018). Employee health and well-being support sustainable performance (Musthafa et al., 2024), while investment in research, development, and information and communication technology strengthens adaptability and labor productivity (Sutrisno et al., 2023). Stronger human capital significantly improves MSME workers' productivity, income, and long-term welfare.

H1: Human capital has a positive effect on workers' well-being.

### **The Effect of Social Capital on Workers' Well-Being**

Social capital plays a crucial role in strengthening the welfare, resilience, and sustainability of MSMEs, particularly in community-based contexts such as Palembang. In Palembang, MSMEs heavily rely on personal trust and local networks, making social capital a vital resource for sustaining livelihoods and worker welfare. Empirical evidence shows that social capital enhances MSME competitiveness by fostering collaboration and innovation, especially in sectors such as tourism, where cooperation supported by social networks strengthens resilience amid uncertainty (Kussudyarsana et al., 2023; Kawulur et al., 2025). During periods of crisis, including the COVID-19 pandemic, social capital combined with innovation and resource capabilities has been shown to positively influence MSME resilience and income stability, which directly affects workers' welfare (Imanuella et al., 2025).

Beyond resilience, social capital significantly contributes to MSME workers' welfare through improved information exchange, cooperation, and collective action. Trust-based networks enable MSMEs to adopt digital technologies, integrate innovations, and improve business performance, thereby creating more stable employment and income opportunities for workers (Prayoga et al., 2024). Collaborative marketing innovations rooted in social capital further enhance market access and promotion efficiency through shared resources and collective strategies (Muna et al., 2024). Additionally, bonding, bridging, and linking social capital facilitate strategic alliances, innovation diffusion, and sustainable growth, which positively affect firm performance and occupational security (Kanini et al., 2022; Sufa et al., 2024). Strong social networks also allow MSMEs and social enterprises to access finance, expand markets, and build adaptive capacity, contributing to improved income stability, job security, and overall well-being of MSME workers (Nafisa et al., 2024; Imanuella et al., 2025). Social capital exerts a positive and significant influence on MSME workers' welfare by enhancing resilience, innovation, and sustainable economic opportunities.

H2: Social capital has a positive effect on workers' well-being.

### **The Effect of Physical Capital on Workers' Well-Being**

Physical capital plays a vital role in enhancing the productivity, competitiveness, and welfare of micro, small, and medium enterprises by encompassing infrastructure, machinery, equipment, and technology that improve efficiency and reduce production costs. Empirical evidence shows that investment in physical assets such as machinery and buildings significantly increases MSME productivity, export volumes, and overall

economic contribution, which indirectly improves employee income and welfare (Prayoga et al., 2024). Efficient utilization of physical capital and technology, including planning systems and inventory control, has also been proven to increase profitability and operational efficiency, as observed among MSMEs in Gauteng, South Africa (Brinkerink et al., 2018; Mboniyane et al., 2023). However, access to physical capital remains constrained for many Indonesian MSMEs due to bureaucratic complexity and high financing costs, limiting their ability to expand and improve working conditions (Umam & Abdurokhim, 2024; Rahman et al., 2024).

Adequate infrastructure and technological facilities are essential for reducing operational constraints and enhancing MSME efficiency and sustainability. Investment in infrastructure and digital technology has been shown to improve productivity, export performance, and national economic contribution of MSMEs in Indonesia (Prayoga et al., 2024). Digital infrastructure also supports competitiveness by narrowing the digital divide and enabling MSMEs to adopt innovative business models, thereby strengthening economic growth (Hutami & Riani, 2022). Access to reliable infrastructure, such as electricity, has been linked to increased SME efficiency and poverty reduction, as evidenced in Liberia (Barchue & Aikaeli, 2015; Fahrati et al., 2024). Furthermore, access to capital, networks, and financial literacy enables MSMEs to invest in necessary physical assets, improving productivity and business performance (Barchue & Aikaeli, 2015; Yustisi, 2024). For MSME workers, improved physical capital directly enhances productivity, workplace conditions, income stability, and overall welfare.

H3: Physical capital has a positive effect on workers' well-being.

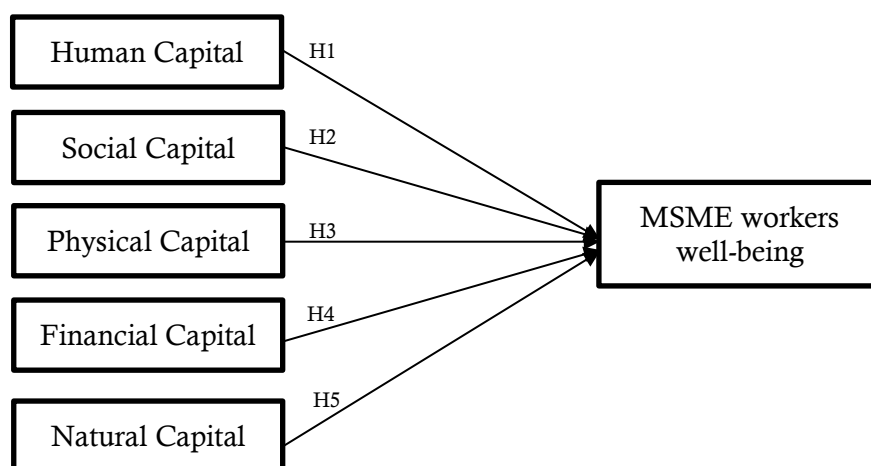
#### **The Effect of Financial Capital and Natural Capital on Workers' Well-Being**

Availability of financial capital is crucial for MSME development and worker welfare in Palembang, as it enables business expansion, technology adoption, and income stability. However, many MSMEs face persistent barriers to accessing formal credit due to strict collateral requirements and low financial literacy. Financial literacy plays an important role in shaping entrepreneurial and financial market orientation that supports MSME sustainability, although it often requires complementary applied financial education to translate into welfare improvements. Financial inclusion through access to credit, insurance, and alternative financing models such as fintech and equity crowdfunding has been shown to enhance MSME growth and performance (Sulaiman & Depayanti, 2024). Access to finance facilitates investment in technology and business expansion, thereby improving labor productivity, sales, and profitability (Ratnawati, 2020; Kumarasamy et al., 2024). Financial capital, supported by financial literacy, social networks, and moderate government intervention, positively influences financial behavior, firm survival, productivity, and workers' living standards (Masnila et al., 2024; Ruswandi et al., 2024; Dahlima et al., 2024).

Natural capital plays a crucial role in sustaining MSME production, especially in resource-based sectors such as food processing, handicrafts, and agriculture, by providing essential inputs like land, water, and raw materials. Its sustainable management supports long-term economic viability and worker welfare, while rapid urbanization, as seen in cities like Palembang, threatens ecosystem services and productivity, highlighting the need to integrate natural capital into economic policy through sustainable resource management and environmental valuation (Fezzi et al., 2020; Meraj et al., 2021; Evrendilek, 2014). Evidence from MSMEs using local resources and sustainable practices, such as in Tawangharjo Village and palm sugar production in Majalengka, shows that effective natural resource management helps maintain production continuity and improve community welfare (Thackway et al., 2005; Nurfitriana, 2023; Abinaya et al., 2023; Wibowo et al., 2024).

H4: Financial capital has a positive effect on workers' well-being.

H5: Natural capital has a positive effect on workers' well-being.



**Figure 1.** Research Framework

Figure 1 illustrates the conceptual framework of the study, demonstrating the influence of five forms of capital on the well-being of MSME workers. These five forms of capital are human capital, social capital, physical capital, financial capital, and natural capital, each of which is directly directed towards the MSME workers' well-being. This framework demonstrates that the well-being of MSME workers is not influenced by a single factor, but rather is the result of the convergence of various forms of capital, including workforce capabilities and skills, social networks and trust, infrastructure and technology, financial access, and sustainable use of natural resources. This model underlies the research hypothesis that each type of capital has a positive and significant influence on the well-being of MSME workers.

## RESEARCH METHODS

This study employs a quantitative research strategy to empirically investigate the effects of human, social, physical, financial, and natural capital on the welfare of MSME workers in Palembang City. Survey was chosen as the approach because it allows systematic data collection from a large number of respondents, while data analysis employed Structural Equation Modeling–Partial Least Squares (SEM-PLS) to evaluate measurement and structural models at the same time. The population under study in this research is all the employees who work in Micro, Small, and Medium Enterprises (MSMEs) in Palembang City. Because of the size and diversity of the MSME sector, purposive sampling was adopted and focused on employees who are actively engaged in MSMEs for at least a year. The sample size of 250 respondents was chosen to satisfy the requirement of SEM-PLS analysis, which proposes a minimum of 5–10 respondents per indicator.

The main data were collected using a pre-drafted questionnaire designed on a 1–5 Likert scale (1 = strongly disagree to 5 = strongly agree). The questionnaire was administered directly to MSME workers with the assistance of field enumerators. The instrument is divided into six parts: demographic profile, human capital, social capital, physical capital, financial capital, natural capital, and worker welfare. For the sake of ensuring reliability and comprehensiveness, the survey was pre-tested with a sample of MSME employees before full implementation.

This study measures five capitals and worker well-being using a Likert scale of 1–5. Human Capital (HC) includes education level, skills, training participation, and health conditions (Sari & Kusumawati, 2022; Fizzanty, 2024; Hanifah & Innayah, 2024). Social Capital (SC) includes trust between workers, social networks, cooperation, and shared norms (Kanini et al., 2022; Prayoga et al., 2024; Kawulur et al., 2025). Physical Capital (PC) is measured through access to infrastructure, production facilities, and technology (Hutami & Riani, 2022; Prayoga et al., 2024; Yustisi, 2024). Financial Capital (FC) access includes credit, savings ability, income stability, and financial literacy, while Natural

Capital (NC1) and MSME Worker Well-Being (WW1) are also important indicators (Thackway et al., 2005; Buckwell & Morgan, 2022; Chaidir et al., 2023; Abinaya et al., 2023). All constructs were operationalized using a battery of indicators from previous studies and pertinent to the Palembang MSME context.

Data analysis was performed with SEM-PLS version 3.0, and the software can analyze complex models using a high number of variables and comparatively smaller sample sizes. Descriptive analysis was the first step, where the objective was to describe respondents' demographic information and give an overview of research variables. The reason for performing this step is to acquaint oneself with the context of the data prior to more complicated model testing. The second phase was the measurement model testing (outer model), whereby reliability and validity of the constructs were examined against criteria such as factor loadings (>0.7), composite reliability (>0.7), and average variance extracted (AVE >0.5). Then, a structural model testing (inner model) is performed to examine hypothesized relationships' strength and significance with path coefficients, t-statistic values (more than 1.96 in the case of a 95% confidence level), and p-values (<0.05).

## RESULTS

Descriptive analysis was used to present an overview of demographic information of the respondents and the central tendency of the study variables. 250 workers from Palembang City MSMEs were involved in the research. Their demographic profile is presented in Table 1.

**Table 1.** Respondent Demographics

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	100	40.0%
	Female	150	60.0%
Age	< 25 years	25	10.0%
	25–40 years	113	45.2%
	41–55 years	87	34.8%
	> 55 years	25	10.0%
Education	Elementary/Junior High	50	20.0%
	Senior High	125	50.0%
	Diploma/Bachelor	65	26.0%
	Postgraduate	10	4.0%
Work Experience	< 5 years	70	28.0%
	5–10 years	115	46.0%
	> 10 years	65	26.0%

Table 1 presents the demographic profile of the 250 respondents. The sample was predominantly female (60.0%), with males accounting for 40.0%. Most respondents were in productive working ages, particularly 25–40 years (45.2%) and 41–55 years (34.8%). In terms of education, the majority had completed high school (50.0%), followed by diploma or bachelor's degrees (26.0%), elementary/junior high school (20.0%), and postgraduate education (4.0%). Regarding work experience, most respondents were at the mid-career stage, with 46.0% having 5–10 years of experience, while 28.0% had less than 5 years and 26.0% more than 10 years. All research variables were measured using a 1–5 Likert scale, and descriptive statistics are presented in Table 2.

**Table 2.** Descriptive Statistics of Variables

Variable	Mean	Std. Deviation	Minimum	Maximum	Category
Human Capital	3.85	0.62	2.40	4.90	Moderately High
Social Capital	3.90	0.58	2.50	4.80	Moderately High
Physical Capital	3.70	0.65	2.20	4.85	Moderate
Financial Capital	3.65	0.68	2.10	4.80	Moderate
Natural Capital	3.55	0.70	2.00	4.70	Moderate
Worker Welfare	3.80	0.61	2.30	4.85	Moderately High

Table 2 presents the descriptive statistics of social, physical, financial, human, and natural capital, as well as worker welfare. Mean values indicate moderate to moderately high levels across variables, suggesting generally positive conditions with room for improvement. Social capital shows the highest mean (3.90; SD = 0.58), reflecting strong networks, trust, and cooperation, followed by human capital (mean = 3.85; SD = 0.62) and worker welfare (mean = 3.80; SD = 0.61), which indicate relatively good employee capability and well-being. In contrast, physical capital (mean = 3.70; SD = 0.65), financial capital (mean = 3.65; SD = 0.68), and natural capital (mean = 3.55; SD = 0.70) remain at moderate levels, highlighting constraints related to infrastructure, financing access, and sustainable resource use, with noticeable variation in respondents' perceptions.

**Table 3.** Measurement Model Results

Construct	Indicator	Loading	CA	CR	AVE
Human Capital	HC1: Education level	0.816	0.845	0.896	0.672
	HC2: Skills and competencies	0.851			
	HC3: Training participation	0.792			
	HC4: Health condition	0.827			
Social Capital	SC1: Trust among workers	0.844	0.831	0.885	0.652
	SC2: Networking	0.866			
	SC3: Cooperation	0.808			
	SC4: Shared norms	0.782			
Physical Capital	PC1: Infrastructure access	0.833	0.795	0.871	0.697
	PC2: Production facilities	0.816			
	PC3: Technology use	0.851			
Financial Capital	FC1: Access to credit	0.823	0.822	0.885	0.662
	FC2: Savings ability	0.807			
	FC3: Income stability	0.843			
	FC4: Financial literacy	0.796			
Natural Capital	NC1: Access to raw materials	0.773	0.766	0.852	0.627
	NC2: Sustainability practices	0.816			
	NC3: Environmental support	0.762			
Worker Well-being	WW1: Income level	0.848	0.871	0.913	0.681
	WW2: Job security	0.852			
	WW3: Work satisfaction	0.821			
	WW4: Skills development opp.	0.803			
	WW5: Quality of life	0.867			

Table 3 indicates that all constructs meet the required validity and reliability criteria. Factor loadings range from 0.76 to 0.86, exceeding the 0.70 threshold and confirming that all indicators adequately represent their respective constructs. Reliability is supported by Cronbach's Alpha values between 0.76 and 0.87 and Composite Reliability values between 0.85 and 0.91, indicating strong internal consistency. Convergent validity is also established, with Average Variance Extracted (AVE) values ranging from 0.62 to 0.69, all above the recommended minimum of 0.50, demonstrating that the constructs explain a substantial proportion of indicator variance and are both valid and reliable for analysis.

The result of discriminant validity test through Fornell-Larcker criteria in Tabel 4 reveals that the AVE square root values (diagonally occurring, i.e., HC = 0.821; SC = 0.815; PC = 0.832; FC = 0.815; NC = 0.791; WW = 0.823) are higher than correlations between constructs in respective rows and columns such a way that each construct of the model is in a better position to explain its own indicators instead of other constructs. For example, the AVE root value of human capital (0.821) is higher than social capital (0.542) and worker welfare (0.635), proving that all constructs have high discriminant validity according to the Fornell-Larcker criteria. This homogeneity is also backed by heterotrait-monotrait ratio test results, which show that all the values fall short of the 0.90 mark, even dipping below <0.75, having a range of 0.552–0.742. The highest value of htmt was found in human capital - worker welfare (0.742), and the lowest in social capital - natural capital (0.552). So, it can be said that in this research model, no issues of multicollinearity or deficiencies in discriminant validity between constructs are present.

Table 4. Discriminant Validity

Construct	Fornell-Larcker Criterion					HTMT						
	HC	SC	PC	FC	NC	WW	HC	SC	PC	FC	NC	WW
Human Capital	0.821						–					
Social Capital	0.542	0.815					0.661	–				
Physical Capital	0.494	0.502	0.832				0.615	0.642	–			
Financial Capital	0.527	0.466	0.485	0.815			0.658	0.597	0.633	–		
Natural Capital	0.443	0.413	0.462	0.433	0.791		0.571	0.552	0.606	0.581	–	
Worker Well-Being	0.635	0.581	0.565	0.617	0.495	0.823	0.742	0.715	0.681	0.736	0.621	–

Table 5 hypothesis testing results confirm that all independent variables., human capital, social capital, physical capital, financial capital, and natural capital, have significant effects on the well-being of MSME workers. The first hypothesis (H1) that human capital has an impact on worker welfare is accepted, with an os value of 0.282, a t-statistic of 4.002, and a p-value of 0.000. This indicates that the greater the education, the greater the skills and good health, the higher the welfare of workers. The second test of hypothesis (H2) for social capital was also upheld (OS = 0.223; t = 2.756; p = 0.006), validating the fact that trust, networks, and cooperation among individuals can increase social and economic support, enhancing the welfare of workers.

Table 5. Hypothesis Test

Hypothesis	Path	Original Sample	T-Statistics	P-Values	Results
H1	Human Capital → Worker Well-Being	0.282	4.002	0.000	Accepted
H2	Social Capital → Worker Well-Being	0.223	2.756	0.006	Accepted
H3	Physical Capital → Worker Well-Being	0.186	2.574	0.011	Accepted
H4	Financial Capital → Worker Well-Being	0.262	4.332	0.000	Accepted
H5	Natural Capital → Worker Well-Being	0.151	2.146	0.033	Accepted

Also, physical capital (H3) plays an important role in the well-being of workers with OS = 0.186, t = 2.574, and p = 0.011, and reflects the function of infrastructure, manufacturing structures, and technology for improving work efficiency and earning income. Financial capital (H4) has a strong influence (OS = 0.262; t = 4.332; p = 0.000), in the sense that credit availability, saving, and income stability are extremely crucial in helping in business continuity and employees' welfare. Finally, natural capital (H5) is also significant (OS = 0.151; t = 2.146; p = 0.033). While its contribution is comparatively minor compared to other forms of capital, it still indicates that access to raw materials and management of natural resources on a sustainable basis does have a significant bearing on the promotion of long-term welfare.

Table 6. f<sup>2</sup> Results

Exogenous Variable	f <sup>2</sup> Value	Effect Size
Human Capital	0.181	Medium
Social Capital	0.102	Small
Physical Capital	0.075	Small
Financial Capital	0.201	Medium
Natural Capital	0.053	Small

Effect size ( $f^2$ ) reflects the contribution of each exogenous construct to the  $R^2$  of the endogenous variable, with thresholds of 0.02 (small), 0.15 (medium), and 0.35 (large) as proposed by Cohen (1988). Table 6 shows that financial capital ( $f^2 = 0.201$ ) and human capital ( $f^2 = 0.181$ ) exert medium effects on worker welfare, highlighting the strategic importance of income security, access to finance, education, skills, training, and health. In contrast, social capital ( $f^2 = 0.102$ ), physical capital ( $f^2 = 0.075$ ), and natural capital ( $f^2 = 0.053$ ) exhibit small effects, indicating that while networks, infrastructure, technology, and natural resources contribute to welfare, their influence is relatively weaker. The model explains 67% of the variance in worker welfare ( $R^2 = 0.67$ ), with the remaining 33% attributed to factors outside the model, while the  $Q^2$  value of 0.421 from the blindfolding procedure confirms strong predictive relevance of the model for explaining worker welfare.

## **DISCUSSION**

Human capital emerged as the most influential determinant of worker welfare in MSMEs in Palembang. Consistent with Human Capital Theory, education, training, skills, and health significantly enhance productivity, employment stability, and income levels (Cahyadi, 2024). Formal education at primary to tertiary levels contributes positively to labor productivity, although higher education may yield mixed long-term effects (Baharin et al., 2020). Continuous training and skill development strengthen MSME resilience and employee well-being (Nafisa et al., 2024; Musthafa et al., 2024). Beyond education, health status, experience, motivation, creativity, and digital skills are crucial factors influencing productivity, income, and MSME performance (Widarni & Malang, 2015; Putra et al., 2023). Investment in human capital provides direct and sustainable returns in improving worker welfare.

Financial capital also plays a vital role in determining worker well-being, as access to credit, savings, income stability, and financial literacy enable MSME workers to meet daily needs, expand businesses, and withstand economic shocks. Financial inclusion studies consistently show that improved access to financial services enhances welfare and business sustainability (Harahap et al., 2024; Hanifah & Innayah, 2024). The COVID-19 pandemic further highlighted MSMEs' vulnerability due to limited cash reserves and credit access, underscoring the importance of financial resilience (Dzoboku, 2025). Studies in Sumatra indicate that financial access supports MSME growth, often mediated by business expansion. Financial literacy, while not always directly affecting MSME growth, fosters entrepreneurial orientation and market awareness essential for long-term success (Zulfadhli et al., 2024).

In Palembang, the synergy between access to capital and financial knowledge significantly supports MSME development and sustainability. However, access to finance remains constrained in many low- and middle-income contexts due to limited collateral and credit history. Therefore, policy interventions aimed at expanding inclusive financial services are necessary to improve MSME performance and worker welfare (Dela et al., 2025). Empirical findings from Banyumas reinforce this conclusion, showing that financial literacy, inclusion, and access to funding complement each other in driving MSME growth and welfare improvements (Sirait et al., 2024; Tubastuvi et al., 2024).

Social capital positively influences MSME workers' well-being through trust, networks, cooperation, and shared norms. In line with Social Capital Theory, strong social ties reduce transaction costs, improve collaboration, and facilitate access to resources (Putnam, 2000). Empirical studies demonstrate that networking and trust enhance marketing performance and sales, as observed in MSME clusters such as the sago cracker industry (Arifin & Rosyadi, 2024). Social networks also promote digital technology adoption, which is critical for competitiveness and innovation (Sara et al., 2022). Cooperative culture and shared norms strengthen resilience, social protection, and innovation capacity, contributing not only to economic outcomes but also to broader social well-being (Laksmi & Arjawa, 2023; Sufa et al., 2024).

Physical capital, including infrastructure, production facilities, and technology, significantly affects worker well-being by improving productivity, efficiency, job satisfaction, and workplace safety. Infrastructure development enhances MSME competitiveness by improving market access and reducing logistics costs (Bado, 2024; Setyawati et al., 2024). In Palembang, infrastructure improvements related to the Asian Games stimulated MSME growth and employment opportunities (Suwarni & Mirza, 2016). While human capital investment shows more consistent productivity gains than physical capital in Indonesia, infrastructure remains central to inclusive growth (Hutami & Riani, 2022). However, governance weaknesses and inefficient project management can limit its effectiveness, highlighting the need for sound governance and adaptive strategies (Setyawati et al., 2024; Bado, 2024).

Natural capital, though less influential than other forms, remains essential for long-term worker welfare, particularly in agriculture, food processing, and handicraft MSMEs. Access to natural resources and a supportive environment directly affect income stability and employment security. Natural capital underpins economic activity by providing essential ecosystem services (Ausat et al., 2023). Sustainable management principles, such as polluter pays and net environmental gain, are crucial to maintaining resource quality for future generations (Helm, 2019). Natural capital also contributes to broader socioeconomic outcomes, including poverty reduction and gender equality, depending on national context (Dai et al., 2024). Thus, sustainable resource management is vital to ensuring MSME sustainability and worker well-being in the long term.

## CONCLUSION

This study finds that the well-being of MSME employees in Palembang is determined by the interaction of human, financial, social, physical, and natural capital. Among these, human and financial capital exert the strongest influence, particularly through education, skills, training, and access to finance, which directly shape income stability and job satisfaction. Social and physical capital play supportive roles by strengthening cooperation, networks, and infrastructure that enhance productivity and working conditions, while natural capital contributes to long-term sustainability through the availability of raw materials and environmental resilience. These findings confirm that worker welfare is multidimensional and cannot be explained by a single form of capital alone.

From a practical perspective, the results suggest that policymakers and MSME stakeholders should adopt integrated development strategies. Priority should be given to strengthening human capacity through education and training, improving financial literacy, and expanding access to affordable credit. At the same time, efforts to enhance social networks, cooperative linkages, and infrastructure support are essential to reinforce productivity and resilience. Sustainable natural resource management should also be encouraged to ensure long-term business continuity and employment security, particularly for resource-based MSMEs.

This study supports the Sustainable Livelihood Framework by demonstrating that sustainable welfare outcomes emerge from the synergy of multiple forms of capital. It contributes to the literature on MSME development in developing and urban contexts by providing empirical evidence from Palembang that integrates economic, social, and environmental dimensions of welfare. However, the study is limited by its focus on selected capital variables and its cross-sectional design, which may not fully capture dynamic changes over time. Future research should incorporate institutional support, technological advancement, and cultural factors, as well as longitudinal approaches, to provide a more comprehensive understanding of the determinants of MSME worker welfare.

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