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The Influence of Knowledge on Performance Mediated by Human Resources in Micro, Small, and Medium Enterprises (MSMEs)

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Abstract: Micro, Small, and Medium Enterprises (MSMEs) in West Java face significant challenges in sustaining their operations amidst digital disruption and increasing market uncertainty. In this environment, knowledge is no longer merely an informational asset but a strategic driver of efficiency, innovation, and customer satisfaction. However, the strategic value of knowledge cannot be fully realized without the support of high quality human resources (HR) capable of interpreting, managing, and applying it in day-to-day business activities. This study aims to examine the influence of knowledge on MSME performance, with HR quality as a mediating variable. Employing a quantitative approach and Partial Least Squares Structural Equation Modeling (PLS-SEM), data were collected from 93 MSME actors in West Java. The findings reveal that both knowledge and human resource quality significantly influence MSME performance, both directly and indirectly. These results underscore that knowledge management when grounded in capable human resources is a critical strategy for driving competitiveness and sustainable growth among MSMEs in the era of digital transformation.

Keywords: Knowledge, Human Resources, Performance, MSMEs, PLS-SEM.

INTRODUCTION

In the midst of an increasingly dynamic digital economy and relentless global competition, Micro, Small, and Medium Enterprises (MSMEs) often resemble small farmers weathering the storms of corporate giants. These enterprises persist, take root, and grow albeit often under strain (Santoso et al., 2023). The resilience of MSMEs, however, is not solely predicated on financial capital or market access. Instead, a critical determinant of their sustainability and performance lies in the depth of knowledge possessed by business owners and the quality of human capital that undergirds their daily operations (Business, 2020).

Knowledge within the context of MSMEs transcends the ability to interpret financial reports. It encompasses a broader spectrum of capabilities, including managerial acumen, technological literacy, and market adaptability. These dimensions of knowledge are not static; they evolve with the volatility of consumer preferences and the acceleration of digital

transformation (Li, 2022). Entrepreneurs who embrace continuous learning and knowledge acquisition are better equipped to innovate and reposition their businesses in saturated or shifting markets (Lomineishvili, 2021).

Human capital, on the other hand, serves as the operational backbone of MSMEs. It breathes life into strategic initiatives, transforms abstract ideas into tangible products or services, and fosters organizational culture. Yet, in many emerging economies, MSMEs struggle with low workforce competence and limited access to essential information and training. This gap in human capital often leads to operational inefficiencies and stunted growth, hindering the ability of MSMEs to scale or compete effectively (Borazon et al., 2024).

This study aims to investigate the intertwined roles of knowledge and human capital in shaping MSME performance, particularly in terms of productivity, innovation, and competitiveness. While both elements are theoretically recognized as drivers of firm success, empirical validation—particularly within the context of small-scale enterprises in developing economies—remains limited(Santoso, 2022). By examining knowledge as both a direct contributor and an enabler through human capital, this research contributes to the growing discourse on MSME development and offers strategic implications for policy and capacity building interventions (Mohammed Shebeen et al., 2024).

1. Knowledge as an Intangible Strategic Asset

In the knowledge based economy, the strategic value of human capital lies not only in what employees know, but also in how well their knowledge aligns with the demands of their organizational roles. In the context of MSMEs, the effective mobilization of knowledge is closely tied to several critical employee attributes. These include the educational background relevance to job roles, the depth of employee knowledge regarding task procedures, and a comprehensive understanding of how to execute those procedures effectively. Additionally, work experience, achievement records, and emotional composure while working are equally vital in determining how knowledge is translated into performance (Reus & Liu, 2021). A mismatch between formal education and job function often leads to inefficiency and miscommunication, especially in smaller enterprises where multitasking is common. Likewise, without clear procedural knowledge and calm execution, employees may struggle to make optimal decisions under pressure. In this regard, MSMEs must view these human factors as integral components of their knowledge assets. Proper documentation, experience sharing, and emotional intelligence training could substantially enhance knowledge transfer, reduce operational friction, and strengthen institutional learning capabilities, ensuring that tacit knowledge is both preserved and strategically harnessed (Zhang, 2024).

2. Human Capital in the Resource Based Perspective

Human capital serves as the backbone of organizational capability, especially within MSMEs, where resource constraints necessitate optimal utilization of internal strengths. Extending the lens of the Resource Based View (RBV), the quality of human capital is not only shaped by its intangible nature but also by measurable indicators such as educational attainment, numeracy skills, work capacity, and tenure. Education enhances cognitive ability and decision making, equipping individuals with the capacity to interpret and utilize knowledge effectively in dynamic contexts. Numeracy skills, often overlooked, are critical in managing financial transactions, budgeting, and interpreting performance metrics core competencies for business sustainability (Harmonia & Agustina, 2023). Furthermore, work capacity reflects physical and mental readiness to execute tasks efficiently, especially in high pressure environments common in MSMEs. Length of service (tenure) contributes to the accumulation of tacit knowledge and organizational memory, which significantly impacts the firm’s capacity to learn and adapt (Nugraha & Rukhviyanti, 2024). These human capital dimensions not only mediate the application of knowledge but also reinforce the firm's ability to convert it into meaningful

performance improvements, positioning HR as a strategic conduit in the knowledge performance nexus (Nugraha & Rukhviyanti, 2024).

3. Defining and Measuring MSME Performance

Performance in MSMEs should be viewed as a multidimensional construct that goes beyond financial outcomes to capture the essence of daily operational excellence. In addition to traditional indicators such as profit margins, customer satisfaction, and innovation capacity (D'Amato et al., 2024), internal performance metrics like quality of work, quantity of work, work discipline, and timeliness are critical for capturing the real productivity and reliability of MSME operations. Quality of work reflects the precision and consistency with which tasks are executed, often tied to customer perceptions of value. Quantity of work measures output volume relative to time and resources, highlighting operational efficiency. Work discipline encompasses adherence to procedures, commitment to organizational goals, and accountability, while timeliness reflects the organization's ability to meet deadlines and respond promptly to market demands. These internal dimensions are especially vital for MSMEs, which often operate with limited oversight and tighter margins. As emphasized by Kaplan and Norton (1996) in the Balanced Scorecard, aligning internal processes and employee performance with broader strategic goals enables MSMEs to navigate uncertainty while sustaining stakeholder value (Ruhviyanti et al., 2022).

4. Linking Knowledge, Human Capital, and Performance

A growing body of empirical research has emphasized the positive influence of knowledge on organizational performance, especially when mediated by human resource capabilities. Rezaei et al. (2021) found that knowledge management practices significantly enhance performance outcomes when supported by competent human capital. Similarly, Le & Ha (2024) demonstrated that strategic human resource management moderates the relationship between knowledge sharing and innovation performance.

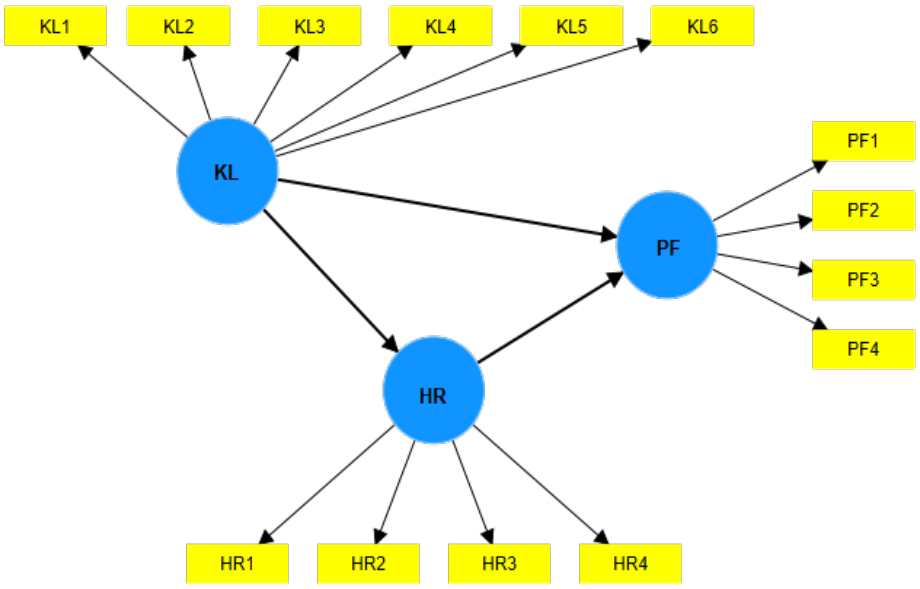
These studies suggest a mediating pathway in which knowledge affects performance indirectly through the quality of human capital. In MSME contexts, where resource limitations are common, the role of human capital becomes even more critical. Effective knowledge utilization depends on the cognitive, emotional, and behavioral capabilities of the workforce. Therefore, fostering a knowledge driven and human centered organizational culture is essential for sustaining MSME competitiveness in the knowledge economy (Adinda et al., 2025).

5. Conceptual Framework and Research Questions

The micro, small, and medium enterprise (MSME) sector remains a critical engine of economic resilience, particularly in developing economies. However, its sustainability and performance are highly contingent upon the ability to manage and leverage knowledge as a strategic resource. In knowledge based economies, knowledge is not merely an input it functions as a catalyst for innovation, productivity, and organizational learning (Liyanage & Netswera, 2021). The conceptual model developed in this study integrates the role of knowledge as a direct and indirect determinant of MSME performance, mediated through human resources (HR).

The theoretical underpinning of this model draws on the Resource Based View (RBV), which posits that firms can gain sustainable competitive advantage by effectively managing valuable, rare, inimitable, and non substitutable resources (Zvarimwa & Zimuto, 2022). Knowledge, when institutionalized through systems, processes, and people, becomes an organizational capability that propels superior performance. Nevertheless, the mere possession of knowledge does not guarantee organizational success. Its impact must be channeled through the human capital that applies, contextualizes, and translates it into actionable outcomes (Fatonah & Haryanto, 2022).

Based on this view, the proposed model consists of a direct path from knowledge to MSME performance, and an indirect path mediated by human resources. The direct path hypothesizes that organizations that invest in and utilize knowledge management practices are likely to experience enhanced performance outcomes. The indirect path acknowledges that the translation of knowledge into performance is dependent upon the quality and capability of human resources who operationalize such knowledge. Human capital thus functions as a mediating construct that explains the mechanism by which knowledge impacts organizational performance (Rezaei et al., 2021).
Graphically, the model can be represented as follows:



Source: Results of research data processing

Figure 1. Conceptual Framework

This dual path framework prompts two central research questions:

1. To what extent does knowledge and human resource quality directly affect the performance of MSMEs?
2. Does human resource quality mediate the relationship between knowledge and MSME performance?

These questions aim to dissect the structural dynamics between intangible resources and organizational output within MSMEs, an area that remains underexplored in many emerging market contexts. Addressing them is crucial for policymakers and practitioners striving to optimize the knowledge–performance nexus through strategic HR development and capacity building.

METHOD

This study adopts a quantitative research approach employing Partial Least Squares Structural Equation Modeling (PLS-SEM) as the primary analytical method. The choice of PLS-SEM is grounded in its robustness for analyzing complex models involving mediation, as well as its flexibility in handling small to medium sample sizes and non normal data distributions (Russo & Stol, 2021). This methodological approach is particularly suitable for exploratory research that seeks to examine causal relationships among latent constructs in a theoretically underexplored area such as micro, small, and medium enterprises (MSMEs).

Data were collected using a structured questionnaire administered to 93 MSME practitioners operating in West Java, Indonesia. The sampling method employed was purposive

sampling, targeting business owners or managerial level personnel who possess adequate knowledge of their enterprise's strategic operations. The instrument was developed by adapting and modifying indicators from prior validated scales, ensuring contextual relevance to the MSME setting.

The study operationalized three core constructs:

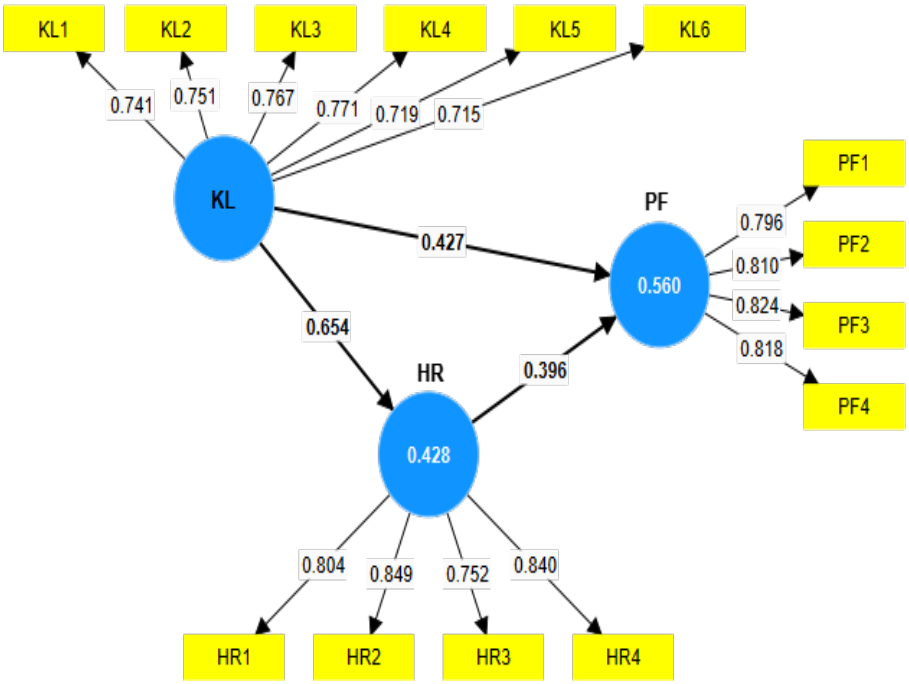
1. Knowledge (KL), measured through dimensions of knowledge management, continuous learning, and technology adaptation. These indicators reflect the capacity of MSMEs to acquire, disseminate, and apply knowledge to enhance business innovation and efficiency (Agasty et al., 2023).
2. Human Resources (HR), treated as a mediating variable, comprising indicators of competence, training, and human capital development. This construct captures the strategic role of human resource capability in mediating the translation of knowledge into organizational performance (Alfawaire & Atan, 2021).
3. MSME Performance (PF), assessed using three sub indicators: operational efficiency, sales growth, and customer satisfaction. These are widely recognized metrics in performance measurement models for small enterprises (Mio et al., 2022).

To ensure the construct validity and reliability, the measurement model was evaluated using Average Variance Extracted (AVE), Composite Reliability (CR), and factor loadings. All constructs were required to exceed threshold values of AVE > 0.5 and CR > 0.7, with item loadings ideally above 0.7. Discriminant validity was assessed through the Fornell Larcker criterion and HTMT ratio.

The structural model was tested using the bootstrapping technique with 5,000 subsamples to evaluate the significance of path coefficients and to examine the mediating effect of the human resources variable. The significance of indirect effects was interpreted based on confidence intervals and p-values as recommended by Tibbe & Montoya (2022).

This methodological framework was rigorously designed to enhance the reliability of inference and to contribute credible empirical insights into the knowledge-performance linkage within the MSME sector.

RESULTS AND DISCUSSION



Source: Results of research data processing

Figure 1. Outer Model

Based on the structural model analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM), the results indicate that knowledge (KL) has a direct and positive influence on MSME performance (PF), with a path coefficient of 0.427. Additionally, knowledge significantly affects human resources (HR) with a coefficient of 0.654, and HR, in turn, contributes to improving performance with a coefficient of 0.396. These findings provide empirical evidence of an indirect (mediated) effect, suggesting that human resources play a crucial role in translating knowledge into practical actions that enhance operational efficiency, sales growth, and customer satisfaction in MSMEs. Therefore, HR acts as a strategic bridge that strengthens the relationship between organizational knowledge and performance outcomes.

Table 1. Construct realiability and validity

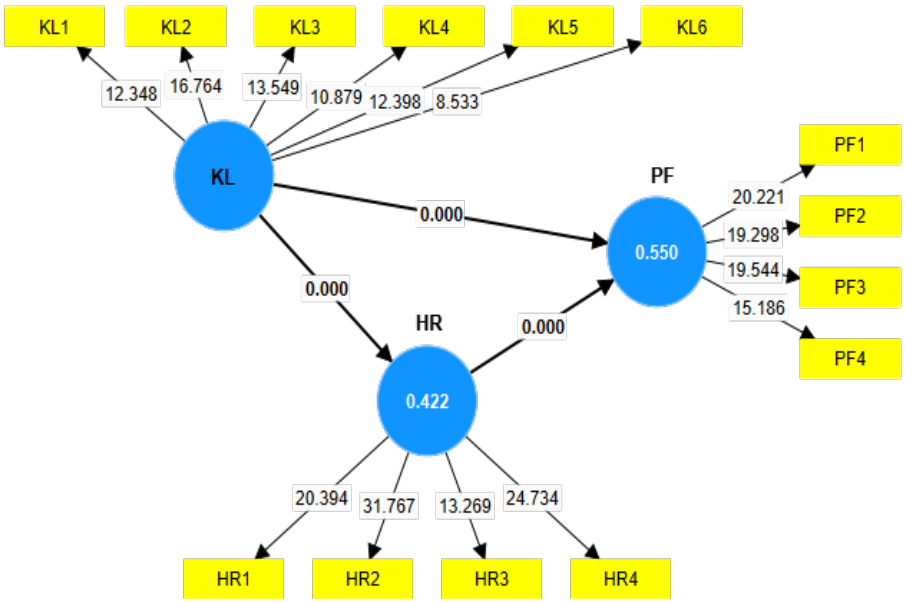
	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
HR	0.827	0.829	0.885	0.659
KL	0.839	0.84	0.881	0.554
PF	0.828	0.829	0.886	0.659

Source: Results of research data processing

In terms of construct reliability and validity, all variables demonstrate strong psychometric properties. The Cronbach's Alpha values for each construct exceed 0.8 (KL = 0.839; HR = 0.827; PF = 0.828), indicating high internal consistency (Hair et al., 2021). Moreover, the Composite Reliability (CR) values surpass the recommended threshold of 0.7 (KL = 0.881; HR = 0.885; PF = 0.886), and all Average Variance Extracted (AVE) values are above 0.5, affirming convergent validity (Fornell & Larcker, 1981). These results confirm that the indicators effectively capture their respective latent constructs. Overall, the findings underscore that knowledge, when coupled with strategic human resource development, can significantly enhance MSME performance, especially in the context of increasing competition and digital transformation.

Based on the model fit assessment, the structural model employed in this study demonstrates an acceptable level of fit. The Standardized Root Mean Square Residual (SRMR) value of 0.07 for both the saturated and estimated models falls below the recommended threshold of 0.08, indicating that the discrepancy between the observed and predicted correlation matrices is minimal (Hu & Bentler, 1999). Additionally, the Chi-square statistic is 110.768, and the Normed Fit Index (NFI) is 0.825, suggesting a reasonably good fit between the model and the data. The identical values for d_ULS (0.513) and d_G (0.205) across both model types reflect a stable and well specified model structure, which supports the reliability of the hypothesized relationships among constructs.

Furthermore, the R-square coefficients provide strong empirical support for the mediating role of human resources (HR) in the relationship between knowledge (KL) and performance (PF). The R-square for HR is 0.428, indicating that knowledge explains approximately 42.8% of the variance in HR. More notably, the R-square for PF is 0.560, demonstrating that the model explains 56% of the variance in MSME performance. The adjusted R-square values (0.422 for HR and 0.550 for PF) show only slight deviations, affirming the model's stability and explanatory power. These findings confirm that HR acts as a significant mediator, strengthening the indirect impact of knowledge on performance. In essence, well managed human capital serves as the mechanism by which knowledge is transformed into improved operational outcomes, highlighting its pivotal role in enhancing MSME competitiveness and sustainability.



Source: Results of research data processing

Figure 1. Inner Model

Based on the total effects analysis in the PLS-SEM model, the results show that knowledge (KL) has a significant influence on MSME performance (PF) both directly and indirectly through the mediation of human resources (HR). The direct effect of KL → PF yields a path coefficient of 0.686, with a t-statistic of 10.718 and a p-value of 0.000, indicating a strong and statistically significant relationship. Moreover, the effect of KL on HR is also significant, with a coefficient of 0.654, a t-statistic of 8.610, and a p-value of 0.000, suggesting that well-managed knowledge contributes substantially to improving HR quality and capacity. HR itself significantly influences performance (PF) with a path coefficient of 0.396, confirming its mediating role in the structural model.

Table 2. Specific indirect effects and total effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
HR > PF	0.396	0.402	0.093	4.237	0.000
KL > HR	0.654	0.664	0.076	8.61	0.000
KL > PF	0.686	0.687	0.064	10.718	0.000
KL > HR > PF	0.259	0.266	0.066	3.939	0.000

Source: Results of research data processing

Furthermore, the indirect effect of KL on PF through HR is confirmed with a coefficient of 0.259, a t-statistic of 3.939, and a p-value of 0.000. This confirms that HR serves as a statistically significant partial mediator, accounting for approximately 25.9% of the total effect of knowledge on performance. This implies that a considerable portion of knowledge's impact on MSME performance is channeled through improvements in human resource competence and development. These findings underscore the notion that translating knowledge into actual performance outcomes depends not only on access to information but also on the readiness and capability of human capital to utilize it effectively, which is particularly critical in MSMEs facing resource constraints and dynamic market environments.

CONCLUSION

The findings of this study reveal that both knowledge and human resource quality have a significant direct impact on the performance of MSMEs. Effectively managed knowledge contributes to more efficient operations, adaptability to change, and a stronger focus on customer satisfaction. Meanwhile, the quality of human resources emerges as a critical factor in the successful application of knowledge within daily business practices. The results further confirm that the quality of human resources plays a mediating role in the relationship between knowledge and MSME performance. This implies that the transformation of knowledge into competitive advantage is highly dependent on the capacity of human capital to interpret, implement, and sustain that knowledge in practice. Therefore, investing in human resource development is a strategic imperative that cannot be separated from efforts to enhance overall MSME performance.

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