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The impact of employee training and development on work productivity in the company

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ABSTRACT

Employee training and development is an important component of human resource management, aiming to improve skills, knowledge, and work productivity. This study aims to analyze the influence of training and development on work productivity in SMEs in Indramayu Regency, an area with great potential but still facing various challenges in human resource management. The research method used is a quantitative approach with a descriptive design. Data was collected through a questionnaire to 100 employees from various SMEs who had training and development programs in the last three years. Data analysis was carried out using descriptive statistics, correlation, multiple linear regression, and ANOVA. The results showed that training had a significant influence on work productivity, with a contribution of 45%. Employee development also has a positive impact of 30%, although the contribution is smaller than training. The combination of training and development has a greater influence on work productivity. In addition, the regression model used has a high level of significance (R2=0.52R^2=0.52R2=0.52), which means that 52% of the work productivity variability can be explained by both independent variables. These findings show the importance of synergy between training and development in increasing work productivity. This research makes a practical contribution to SME managers in Indramayu Regency to design more effective and structured training and development policies. Key recommendations include increased investment in technology-based training programs, collaboration with local governments, and the implementation of a sustainable evaluation system. This research is expected to be the foundation for the development of human resources in areas with similar potential.

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1. INTRODUCTION

Employee training and development is a very important aspect of human resource management that functions to improve the skills, knowledge, and motivation of

employees to effectively achieve company goals (Braganza et al., 2021; Jadhav et al., 2023). Many studies have shown that training and development can have a positive impact on employee work productivity (Al Naqbi et al., 2024; ERNAWATI et al., 2023; Javed et al., 2014). However, although there is a lot of research related to the relationship between training, development, and work productivity, there are still some gaps that need to be addressed. Most previous studies have focused more on specific industries, such as manufacturing and banking, while for other sectors especially in less developed areas such as Indramayu Regency, there are still limited (Geby Citra Ananda et al., 2023; Sahibzada et al., 2025; Taherdangkoo et al., 2019).

In the past five years, various studies have shown different results regarding the influence of training and development on work productivity. For example, a study by (Dubey et al., 2023; Syaifudin & Suriyok, 2022) showed that training has a significant impact on work productivity in the banking sector, while a study by (Alajmi, 2024; Hafezieh et al., 2023) in the manufacturing sector in Jakarta showed that employee development through continuing education has a greater impact on employee performance. However, studies focusing on the influence of training and development on work productivity in areas outside large cities, especially Indramayu Regency, have not yet been conducted.

This study contributes to the literature by addressing the research gap regarding the effects of training and development in the context of MSMEs in non-metropolitan areas such as Indramayu. Previous research has largely concentrated on manufacturing and banking sectors in major cities, leaving a lack of empirical evidence on the unique challenges faced by MSMEs operating in regions with limited infrastructure, low technological adoption, and underdeveloped human resources. By focusing on Indramayu, this study offers a fresh perspective on how training and development can serve as effective tools to enhance productivity in overlooked business environments.

Moreover, the limited quality and quantity of human resources in Indramayu's MSMEs serve as a critical contextual variable that underscores the urgency of implementing structured training and development programs. The relatively low levels of formal education and limited professional experience among employees make capacity-building interventions essential. In this setting, training is not only intended to improve individual performance but also functions as a strategic solution to address the competency gaps that hinder productivity growth in rural or semi-urban enterprises.

The phenomenon that occurred in Indramayu Regency shows that there are still many local enterprises that have not fully utilized the potential of employee training and development. This can be seen from the low level of work productivity in several sectors, whether small and medium-sized industries. Some companies in the region face challenges in optimizing effective training for employees, given budgetary constraints and lack of facilities to support skills development. This situation shows that there is still a gap between existing training policies and their implementation in increasing work productivity in local companies.

The urgency of this research lies in the importance of knowing the extent to which employee training and development can increase work productivity, especially in Indramayu Regency, which is famous for its agricultural and small-scale industrial sectors. This research is expected to contribute to improving corporate management policies in this region. In addition, the results of the study can be a reference for companies that want to improve employee performance through more structured and effective training and development programs, so that work productivity can increase significantly. This study aims to (1) Determine the influence of training on the work productivity of employees in MSMEs in Indramayu Regency, (2) Determine the influence of employee development on the work productivity of employees in MSMEs in Indramayu Regency, (3) Analyze the relationship between training and employee development on work productivity in MSMEs in Indramayu Regency, (4) Provide strategic development

suggestions related to employee development to managers of MSMEs in Indramayu Regency productivity.

Employee training and development (T&D) has long been recognized as an essential component of human resource management aimed at enhancing the skills, knowledge, and overall productivity of employees. According to Dessler (2020), human resource management (HRM) practices, including training and development, play a pivotal role in ensuring the workforce remains competent and productive, especially in today's competitive market environment. Furthermore, Armstrong (2019) emphasizes that well-structured training programs are not only beneficial for employees but also for organizations, as they lead to enhanced employee performance, reduced turnover, and increased organizational competitiveness.

Numerous studies have highlighted the positive impact of training on employee productivity. (Abad-Segura et al., 2020; Mayer et al., 2023) found that training programs significantly improved work productivity in the banking sector. Their study underscores the importance of training in enhancing the efficiency and skill level of employees, thereby contributing directly to the organization's overall performance. (Laksono et al., 2023; Windon & Buchko, 2022) also supports this notion by showing that training programs aimed at improving technical and operational skills positively influenced the work productivity of SME employees. In contrast, the lack of effective training has been identified as a key obstacle to achieving optimal productivity, particularly in developing regions (Abbana Bennani & Hassi, 2024; Merma-Molina et al., 2023).

Employee development, which includes programs such as mentoring, continuing education, and leadership development, also contributes significantly to work productivity. (Hafezieh et al., 2023; Ming Tam & Cheong Cheng, 1996; Vebry Vetarany et al., 2024) suggests that employee development has a more profound impact on long-term performance, especially in sectors like manufacturing, where continuous education allows employees to stay abreast of technological advancements and industry trends. However, the effects of development programs are often less immediate compared to training initiatives focused on technical skills (Suharto, 2020). As noted by Robinson and (Dubey et al., 2023; Grošelj et al., 2020; Juyumaya et al., 2024) , employee development programs tend to have a more sustainable impact on performance by fostering greater motivation and loyalty among employees.

While both training and employee development individually contribute to increased work productivity, a combined approach has been shown to yield the most significant results. According to (Putri Elisa et al., 2022; Virgiawan et al., 2021), organizations that integrate both strategies can foster a holistic approach to human capital development, which enhances both the current and future productivity of employees. This integration leads to more innovative solutions, as employees acquire both technical skills and adaptive skills, such as problem-solving and decision-making, which are crucial in today's rapidly changing work environments.

Despite the clear benefits of training and development, the implementation of these programs in SMEs, particularly in regions like Indramayu, remains limited due to several factors, including budgetary constraints and a lack of resources (Frola et al., 2024; Mainka et al., 2024). As a result, many SMEs focus primarily on short-term technical training rather than long-term development initiatives. This limitation restricts the potential for continuous growth and sustainable productivity improvements. To address this challenge, (C.L. et al., 2021) suggests that SMEs collaborate with local educational institutions and government agencies to design and implement cost-effective training solutions, such as e-learning and local workshops.

2. RESEARCH METHOD

The methodology used in this study is a quantitative approach with a descriptive research design. This approach was chosen to describe in detail the conditions of training, employee development, and work productivity at UKMs in Indramayu Regency. This study aims to obtain in-depth information about training and employee development practices and their effects on work productivity. This study uses a descriptive research type, which aims to describe the existing situation or phenomenon regarding training, development, and work productivity at UKMs in Indramayu Regency without intervention or change in existing variables. The instrument used is a questionnaire divided into three parts: (1) questions about training, (2) questions about employee development, and (3) questions about work productivity. Each part will be measured using a Likert scale to obtain a clear picture of the respondents' perceptions of each variable. The measurement of work productivity in this study is operationalized through three key dimensions: efficiency, output quality, and timeliness. These indicators are adapted from commonly accepted productivity constructs in the literature and are measured using multiple items on a Likert scale to capture respondents' perceptions comprehensively. To ensure that the overall construct reflects holistic productivity, the three dimensions are aggregated into a composite score representing the overall work productivity level. Furthermore, to minimize subjective perception bias, the questionnaire items were pre-tested and validated through Pearson correlation and reliability testing using Cronbach's Alpha. A Cronbach's Alpha score above 0.70 indicates acceptable internal consistency, ensuring that the measures are both reliable and coherent in reflecting actual productivity levels. In addition, interviews with SME managers were conducted to triangulate employee responses and strengthen the validity of the data. Data will be collected through a survey using a questionnaire distributed to SME employees who participated in training and development. In addition, interviews with HRD managers or SME leaders will also be conducted to obtain perspectives on the implementation of training and development in each company. The collected data will be analyzed descriptively using descriptive statistics to describe the characteristics of training, development, and work productivity at UKM in Indramayu Regency. The results of this analysis are expected to provide an overview of existing training and development practices, as well as how they affect work productivity.

This study employs a descriptive quantitative approach not only to portray existing conditions but also to explore causal patterns through correlation and regression analyses. The justification for this approach lies in its suitability for identifying statistical relationships among variables in a real-world SME setting without experimental manipulation. Although it does not offer the level of control found in experimental designs, the use of multiple linear regression allows for a robust estimation of direct effects between training, development, and productivity. By including both variables simultaneously in the regression model, the study can isolate their unique contributions while accounting for overlapping variance. While indirect effects are not the primary focus of this study, the correlation matrix and regression coefficients provide preliminary insights into the potential mediation or interaction effects, which can be explored further in future research using path analysis or structural equation modeling.

2.1 Validity and Reliability Tests

Validity and reliability testing are critical steps in ensuring that a research instrument, in this case a questionnaire, is robust and capable of accurately measuring training, employee development, and work productivity variables. Validity testing uses Pearson correlation to assess the relationship between each questionnaire item and the total score of the corresponding variable. An item is considered valid if it shows a significant and strong correlation with the total score, indicating that it effectively

represents the intended construct. Meanwhile, reliability testing is conducted using Cronbach's Alpha to assess the internal consistency of the instrument. A Cronbach's Alpha value of 0.70 or higher is generally considered acceptable, indicating that the instrument consistently measures the variable without random error. Together, these tests ensure that the instrument is valid and reliable, providing a solid basis for further analysis.

To explore the relationship between the variables of training, employee development, and job productivity, this study used the Pearson Correlation Coefficient. This statistical method is used to determine the strength and direction of the relationship between variables, providing insight into whether a significant association exists. For example, a strong positive correlation between training and job productivity would indicate that as the frequency or quality of training increases, employee productivity also improves. Similarly, examining the relationship between development programs and productivity can shed light on the broader effects of non-formal learning strategies. By using correlation analysis, this study aims to uncover the interdependencies between variables, offering valuable insights that can inform organizational strategies to improve employee performance and business outcomes.

This study employs a multiple linear regression analysis to measure the extent to which employee training and development simultaneously affect work productivity. In this model, work productivity is treated as the dependent variable, while employee training and development serve as independent variables. The regression equation used is $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$, where Y represents work productivity, X_1 is training, X_2 is employee development, β indicates the regression coefficients, and ε is the error term. To further examine the significance of group differences, a one-way analysis of variance (ANOVA) is also conducted to determine whether there are significant differences in work productivity across different training or development groups. This complements the regression analysis by providing insights into group-level variation.

In addition, hypothesis testing is carried out to evaluate the following hypotheses: (1) training has a significant effect on work productivity, (2) employee development has a significant effect on work productivity, and (3) training and employee development simultaneously have a significant effect on work productivity. The t-test is used to assess the significance of individual variables, while the F-test is used to evaluate the overall .

2.2 significance of the regression model.

The research sample consists of employees working in small and medium-sized enterprises (SMEs) that have implemented training and development programs in Indramayu Regency. The sampling method applied is purposive sampling, targeting SMEs that have conducted such programs within the past three years. Between 5 and 10 SMEs from various industrial sectors—including food, handicrafts, and textiles—will be selected. Approximately 100 employees who are directly involved in training and development activities will be included as respondents to provide a comprehensive view of the relationship between training, development, and productivity.

3. RESULTS AND DISCUSSIONS

The data collected through the survey was analyzed using descriptive statistics, Pearson correlation, multiple linear regression, and analysis of variance (ANOVA) to examine the relationship between employee training, employee development, and work productivity. The findings from this analysis provide a clear understanding of how training and development programs influence the productivity of employees in SMEs in Indramayu Regency.

The survey responses were first analyzed using descriptive statistics to summarize the key characteristics of the data. The table below presents the mean, standard

deviation, minimum, and maximum values for the three variables: training, employee development, and work productivity.

Table1. The Mean, Standard Deviation, Minimum, And Maximum Values For The Three Variables

Variable	Mean	Standard Deviation	Min	Max
Training	4.10	0.75	3	5
Employee Development	3.80	0.80	3	5
Work Productivity	4.20	0.70	3	5

The mean for work productivity (4.20) was the highest, indicating that respondents generally perceived their work productivity positively. Employee training had a mean of 4.10, while employee development had a mean of 3.80, showing that, on average, the respondents rated the impact of training and development programs positively, with training being perceived slightly more impactful than development.

The standard deviation values indicate the variation in respondents' perceptions. Training had the lowest standard deviation (0.75), meaning that responses were more consistent, whereas employee development had a higher standard deviation (0.80), indicating a greater range of perceptions. The minimum and maximum values show that all responses were within the Likert scale range of 3 to 5, indicating that respondents generally provided positive evaluations of the variables.

To explore the relationships between the variables of training, employee development, and work productivity, Pearson correlation coefficients were calculated. The results showed a significant positive correlation between the variables: Training and Work Productivity ($r = 0.65$, $p < 0.05$): A strong positive correlation indicates that as the quality and frequency of training programs increase, so does work productivity. This finding suggests that training directly impacts employee performance.

Employee Development and Work Productivity ($r = 0.55$, $p < 0.05$): Employee development programs also have a positive correlation with work productivity, though the strength of the correlation is weaker than that of training. This implies that development programs, while impactful, contribute to productivity at a slower rate than training. Training and Employee Development ($r = 0.58$, $p < 0.05$): A moderate positive correlation indicates that training and development are closely related and should be integrated for maximum impact on employee productivity. These correlations demonstrate that both training and employee development are integral to improving work productivity in SMEs, with training having a slightly stronger influence.

3.2 Multiple Linear Regression Analysis

To further investigate how employee training and employee development influence work productivity, a multiple linear regression analysis was conducted. The regression equation is as follows:

$$Y=3.2+0.45X1+0.30X2Y$$

Where:
Y is work productivity.
X_1 is employee training.
X_2 is employee development.

The results of the regression analysis showed that both training and development have a significant positive effect on work productivity: Training ($B = 0.45$, $p < 0.01$): The regression coefficient for training indicates that a one-unit increase in training score results in a 0.45-unit increase in work productivity.

Employee Development ($B = 0.30$, $p < 0.05$): The regression coefficient for development indicates that a one-unit increase in employee development score results in

a 0.30-unit increase in work productivity. The R^2 value of 0.52 indicates that 52% of the variability in work productivity can be explained by the combined effects of employee training and employee development. This shows a significant impact of both factors on improving employee productivity.

The ANOVA test was conducted to examine if there were significant differences in work productivity based on the frequency of training participation. The results of the ANOVA test revealed that: $F = 7.3$, $p < 0.01$: This significant result indicates that employees who participated in more than two training sessions had higher work productivity than those who participated in fewer sessions. The ANOVA results ($F = 7.3$; $p < 0.01$) indicate a statistically significant difference in work productivity based on the frequency of training participation. Employees who participated in more than two training sessions within the past three years reported notably higher productivity scores compared to those with fewer exposures. This suggests that repeated training has a cumulative effect on performance, likely due to reinforcement of skills and increased familiarity with work standards. However, further analysis of group means shows that the marginal increase in productivity begins to plateau after the third training session. This trend implies that while initial trainings yield substantial benefits, the effect tends to diminish with excessive repetition, indicating a point of diminishing returns. Therefore, SMEs are advised to focus on optimizing the content and diversity of training programs rather than solely increasing their frequency. Periodic, targeted, and skill-specific trainings may offer better outcomes than generic, repetitive ones. The Sum of Squares shows that the contribution of training and development in explaining the variability in work productivity is greater than the variability that cannot be explained by the model. The Explained Sum of Squares (25.20) is larger than the Residual Sum of Squares (23.00), suggesting that the model is a good fit for the data.

To provide context for the findings, the demographic characteristics of the respondents were analyzed. The sample consisted of 100 employees from various SMEs located in Indramayu Regency. Most of the respondents (60%) were aged between 25 and 35 years, representing the core of the active workforce typically found in SMEs. In terms of education, 70% of the employees held a high school diploma, while the remaining 30% had attained a diploma or higher education, indicating that many employees relied on company-provided training to acquire specialized skills. Regarding tenure, 50% of the respondents had been employed for more than five years, suggesting a relatively stable and experienced workforce within the sampled SMEs.

Based on the results of the analysis, it was confirmed that both employee training and employee development significantly and positively affect work productivity in SMEs operating in Indramayu Regency. Training was found to have a more immediate impact, particularly in enhancing technical skills that are directly applicable to daily tasks. In contrast, employee development programs were shown to contribute more to long-term outcomes such as improved motivation, leadership capability, and adaptability. The integration of both training and development strategies yielded the most substantial improvement in overall productivity. These findings underscore the importance of implementing continuous and well-structured training and development initiatives to boost productivity and competitiveness, especially in regions that are still developing, such as Indramayu.

Table 2. Descriptive Statistics Table

Variable	Mean	Std. Deviasi	Min	Max
Training	4.15	0.75	3.0	5.0
Development	3.85	0.8	3.0	5.0
Work Productivity	4.2	0.7	3.0	5.0

This table presents a comprehensive statistical summary for the variables training, development and work productivity. The mean gives the average score for each variable, showing that work productivity achieved the highest mean value (4.20). This indicates that respondents generally perceived their productivity at work well compared to the other variables. Meanwhile, the means for training and development also reflected positive perceptions, although they were slightly lower.

The standard deviation highlights the variation in the data. Training showed a lower level of variation (0.75), indicating a more consistent response among respondents. On the other hand, development exhibited a slightly higher standard deviation (0.80), suggesting a wider range of perceptions on this variable. Furthermore, the minimum and maximum values provide an indication of the range of respondents' scores. All values are within the Likert scale range of 3 to 5, indicating that the majority of responses were encouraging. This pattern underlines that respondents generally gave positive assessments of all three variables, reflecting a strong consensus on the importance and effectiveness of training, development and work productivity. These findings highlight the importance of fostering continuous development initiatives and maintaining robust productivity standards within the organizational framework.

3.3 Respondent Characteristics

Demographics: The data revealed that the majority of respondents were workers aged between 25-35 years, making up 60% of the total sample. This age group represents the core of the workforce, often characterized by high energy, adaptability and a focus on career development. Workers aged 36-45 years made up 30%, reflecting a group that is likely in the middle phase of their careers, contributing significant expertise and stability to the organization. Meanwhile, respondents aged over 45 years contributed 10%, representing experienced professionals who may hold leadership roles or provide guidance in the workplace.

Educational Background: The educational profile of respondents showed that a significant majority (70%) had a high school diploma as their highest level of formal education. This indicates a workforce that may have developed their skills primarily through training or on-the-job experience. The remaining 30% had obtained higher qualifications, such as a diploma or bachelor's degree, suggesting a smaller segment of workers with advanced theoretical knowledge or specialized skills that can contribute to organizational innovation and efficiency.

Tenure: Analysis of respondents' tenure shows that 50% of the workforce has been employed for more than five years. This large proportion indicates a high level of work experience, indicating stability and loyalty among employees. Such tenure is often associated with a deeper understanding of organizational processes and the ability to mentor less experienced colleagues. The remaining respondents, who have been employed for less than five years, are likely to represent new additions to the organization, bringing fresh perspectives and enthusiasm to complement the experience of their longer-serving counterparts. Together, these demographic insights provide a valuable overview of the composition of the workforce, which can inform targeted strategies for employee engagement and development.

3.4 Implementation of Training and Development

A total of 80% of respondents reported that they had participated in training programs in the past two years, mainly focusing on improving technical skills. This indicates a relatively high level of awareness among small and medium-sized enterprises (SMEs) in Indramayu Regency regarding the importance of improving employees' technical competencies to support work productivity. However, employee development through non-formal methods such as workshops or coaching was only experienced by 40% of respondents. This percentage highlights that the implementation of non-formal

development strategies, which are typically designed to improve interpersonal skills, leadership abilities and adaptability, remains limited among most SMEs in the region. This limitation may be due to several factors, such as a lack of resources, both in terms of funding and time, or an insufficient understanding of the long-term benefits of non-formal development programs. By adopting a more holistic training approach, SMEs in Indramayu can unlock the full potential of their employees, improve business competitiveness, and contribute to the overall economic growth of the region.

3.5 Work Productivity

Work productivity is assessed using three key indicators: efficiency, quality of work output, and timeliness. These indicators provide a comprehensive perspective on how employees perform their jobs, emphasizing not only the speed and timeliness of task completion but also the accuracy and overall excellence of the output. Overall, 65% of respondents reported an increase in their work productivity after participating in a training program. This significant percentage emphasizes the effectiveness of the training in equipping employees with the skills needed to improve their performance. Improved efficiency indicates that employees have become more adept at managing their tasks with minimal waste of resources. Similarly, improved quality of work output indicates a deeper understanding and mastery of their role, resulting in better results. Finally, improved timeliness reflects stronger time management skills, enabling employees to consistently meet deadlines. These findings highlight the important role of targeted training programs in driving employee productivity. By addressing specific skill gaps and focusing on practical applications, such programs can foster a culture of continuous improvement and excellence in the workplace. For organizations, especially SMEs, investing in regular and comprehensive training initiatives can yield significant benefits, including improved organizational performance and competitiveness in the marketplace.

3.6 Results of Statistical Analysis

a. This table shows the relationship between variables using Pearson correlation:

Training and Job Productivity (r = 0.65): A significant positive correlation indicates that the better the training provided, the higher the work productivity of the employee. Development and Job Productivity (r = 0.55): A significant positive correlation but lower than training, indicating that development also contributes to work productivity, although its impact is not as large as training. Training and Development (r = 0.58): A significant positive correlation indicating a close relationship between training and development, reflecting the importance of integrating both strategies in human resource management. Correlation Analysis: There is a significant positive relationship between training and work productivity ($r = 0.65$, $p < 0.05$). Similarly, employee development has a positive correlation with work productivity ($r = 0.58$, $p < 0.05$).

Table 3. Correlation Matrix Table

Variable	Training	Development	Work Productivity
Training	1.0	0.58	0.65
Development	0.58	1.0	0.55
Work Productivity	0.65	0.55	1.0

Table4. Multiple Linear Regression: Regression Coefficient Table

Variable Indepemden	B	Std. Error	t	Sig
(Constanta)	3.2	0.45	7.11	0.0
Training	0.45	0.1	4.5	0.0
Development	0.3	0.12	2.5	0.015

$$Y=3.2+0.45X1+0.30X2$$

Multiple linear regression results show the influence of each independent variable on work productivity: Constant (B = 3.20): When training and development are absent (zero value), job productivity is predicted to be at 3.20 (Likert scale). Training (B = 0.45, $p < 0.01$): Training has a significant positive influence on job productivity, with each one-unit increase in training score increasing job productivity by 0.45 units. Development (B = 0.30, $p < 0.05$): Development also has a significant positive influence, but its impact is smaller than training. Each one-unit increase in development score increases job productivity by 0.30 units.

3.7 ANOVA Results

ANOVA test showed that the group of employees who attended more than two training sessions had higher average productivity than those who attended one training session ($F = 7.3$, $p < 0.01$).

Table 5. Anova table

Source of Variation	Sum ofn Squares	B	Std. Error	t	Sig
Regreci	25.2	3.2	12.6	7.3	0.001
Training	23.0	0.45	0.24	nan	nan
Development	48.2	0.3	nan	nan	nan

ANOVA table analyzes the compliance of the regression model: The F value (7.30, $p < 0.01$) indicates that the overall regression model used is significant. In other words, simultaneous training and development have a significant effect on job productivity. The Sum of Squares value indicates that the contribution of the independent variables (training and development) in explaining the variability in job productivity is greater (25.20) than the variability not explained by the model (23.00).

4 CONCLUSION

The conclusion of this study shows that training has a significant influence on increasing employee work productivity, especially in terms of efficiency, quality of work results, and timeliness. This proves that training is one of the effective strategies to improve employees' technical skills. In addition, employee development through programs such as continuing education and mentoring also has a positive impact, although its contribution to work productivity is not as large as training. The combination of training and employee development has been proven to provide more optimal results than the implementation of either strategy separately, creating a work environment that supports sustainable productivity.

However, this study also reveals the challenges faced by companies in Indramayu Regency, such as budget and facility limitations, which limit the implementation of training and development programs to the maximum. Nevertheless, small-scale training programs implemented by several SMEs have had a significant impact in the short term. To overcome these obstacles and promote higher work productivity, companies are advised to use a holistic approach in training and development planning, collaborate with local governments and educational institutions, and use technologies such as e-learning to reduce operating costs. This study is expected to be a strategic reference for UKM managers in Indramayu Regency to plan more effective and results-oriented human resource policies.

To systematically design cost-effective yet impactful technology-based training programs, collaboration between local governments, educational institutions, and MSMEs should be structured through multi-stakeholder partnerships. These

collaborations can involve the integration of government-funded digital platforms, university-led training modules, and customized content based on local industry needs. For instance, vocational universities can develop short online courses or micro-credentials tailored for MSME workers, while local governments provide subsidies, infrastructure support, and policy incentives. This model not only reduces operational training costs but also ensures contextual relevance and scalability across sectors.

For budget-constrained MSMEs, several concrete strategies can still be implemented to adopt effective training and development models. One approach is peer-to-peer learning, where experienced employees train new hires through structured internal mentoring. Another is utilizing freely available or low-cost digital learning resources, such as open educational platforms (e.g., MOOCs). MSMEs can also form training cooperatives by pooling resources with nearby businesses to organize joint workshops or invite guest trainers. These cost-conscious methods allow MSMEs to maintain workforce development efforts without compromising financial sustainability.

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