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The Effects of Education Level, Work Environment, and Work Motivation on Employee Productivity

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Abstract

In an increasingly volatile landscape, conventional human resource management models heavily favor formal sectors, creating a critical empirical shortage regarding inclusive, community-driven agricultural systems that support vulnerable groups. This study aims to examine and elucidate the isolated and simultaneous effects of education level, work motivation, and work environment on work productivity. Employing a quantitative associative design, this research conducted a census on a saturated sample of 30 active farmers, utilizing structured Likert-scale questionnaires alongside secondary institutional documentation for data collection. The data were analyzed through multiple linear regression diagnostics using IBM SPSS Statistics 23. The empirical results demonstrate that education level, work motivation, and work environment each exert a positive and statistically significant effect on work productivity, both partially and simultaneously. Notably, education level emerged as the most dominant individual predictor. Consequently, these findings imply that local stakeholders must prioritize adaptive vocational training modules, retrofit agricultural infrastructure to enhance physical accessibility, and strengthen communal psychological mentorship to foster sustainable economic self-reliance among disabled farmers.

Keywords

Agricultural Community, Disabled Farmers, Education Level, Inclusive Workspace, Work Motivation, Work Productivity.

1. Introduction

In an increasingly volatile global landscape, human capital serves as the primary anchor determining an organization's strategic trajectory and overall quality. Employees are no longer viewed merely as operational inputs; rather, they constitute indispensable assets whose collective output dictates institutional success (Mudiansyah et al., 2025). Conversely, a deficient workforce inherently degrades organizational performance, yielding substandard outcomes across operational channels (Yasa & Mayasari, 2022). Consequently, cultivating and managing workforce competencies has become a cornerstone strategy for organizations striving to sustain a competitive edge amid intensifying market pressures.

Workplace productivity stands as a benchmark metric to evaluate the efficiency and effectiveness with which personnel execute their responsibilities under strict resource constraints. Organizations capable of optimizing employee contributions tend to achieve robust operational stability, minimize resource redundancy, and successfully navigate shifting markets. Formal education plays a pivotal role in refining technical aptitude, analytical sharpness, and cognitive flexibility, which in turn accelerates an individual's adaptability to workplace innovations (Ika & Sitompul, 2022; Holy et al., 2023; Rohmawati et al., 2025). However, educational background must be coupled with sustained work motivation, the internal and external drive that mobilizes human potential toward collaborative and productive goals. This internal framework is further augmented by the work environment, wherein favorable physical and psychological conditions foster a sense of security and significantly mitigate operational errors (Sukirno, 2003; Syahputra et al., 2022; Karauwan et al., 2024).

While previous research by Rampisela and Lumintang (2020) establishes motivation, education, and environmental factors as primary drivers of performance, contemporary empirical focus remains heavily skewed toward formal sectors such as corporate environments, manufacturing industries, or public bureaucracies (Sedarmayanti, 2009). There is a distinct shortage of empirical inquiries validating these productivity models within faith-based, community-driven agricultural sectors, particularly those catering to vulnerable demographics such as individuals with disabilities. The Jamaah Tani Muhammadiyah (JATAM) in Bejen Village, Sleman, Yogyakarta, presents a highly unique organizational phenomenon, given that a significant portion of its member base consists of farmers with physical disabilities. Navigating agricultural labor with physical limitations and varied educational backgrounds introduces complex challenges regarding inclusive motivational strategies and accessible agrarian working conditions.

This evident research gap underscores the urgency of the present study. The novelty of this research lies in its contextualized examination of how educational background, environmental factors, and work motivation intersect to influence productivity within an inclusive, disabled-led agricultural community, a socio-economic locus that has historically been overlooked by traditional human resource management models. Addressing these realities, this study aims to examine and elucidate the explicit empirical effects of educational background, the work environment, and work motivation on the productivity of JATAM members in Bejen Village, Sleman, Yogyakarta. The analytical framework is designed to assess these dynamics through both isolated, partial dimensions and a comprehensive, simultaneous model.

This inquiry enriches human resource management literature by expanding performance paradigms to encompass informal, community-based, and inclusive organizations. The insights derived from this study are intended to serve as a strategic roadmap for JATAM administrators and local policymakers. It provides actionable evidence to design adaptive agricultural training modules, improve the

accessibility of farming infrastructure, and formulate targeted motivational interventions that foster sustainable economic self-reliance among farmers with disabilities.

2. Literature Review and Hypothesis Development

2.1. The Influence of Education Level on Work Productivity

Educational level attainment serves as a primary foundation for developing human capital, directly expanding an individual's cognitive capacity, technical expertise, and problem-solving skills in the workplace (Simoes et al., 2017). In agricultural and community-driven settings, a worker's education level is typically measured through formal credentials achieved, years of schooling, and participation in non-formal vocational training programs. Higher educational levels equip individuals with the conceptual clarity needed to process complex operational instructions, adopt modern farming technologies, and adapt to unpredictable environmental shifts (Djibu & Duludu, 2020; Dewa, 2023). Consequently, well-educated workers demonstrate a superior capacity to minimize resource wastage and optimize operational efficiency, which are critical components of aggregate performance.

Empirical evidence consistently demonstrates that formal and informal knowledge acquisition significantly upgrades an individual's output capacity. When analyzing agrarian communities, the structured training and analytical skills gained through formal schooling allow individuals to manage daily tasks with greater precision and autonomy (Ika & Sitompul, 2022; Holy et al., 2023). Furthermore, a robust educational background enhances cognitive flexibility, making workers more receptive to structural innovations and collaborative problem-solving strategies (Rohmawati et al., 2025). By elevating both technical mastery and adaptive learning capabilities, formal education directly drives institutional efficiency and elevates individual output.

H1: Education level has a positive and significant effect on work productivity.

2.2. The Influence of Work Motivation on Work Productivity

Work motivation represents the psychological driving force originating from both internal desires and external incentives that compels individuals to invest their energy, focus, and persistence into their daily tasks (Fau & Buulolo, 2023). To operationalize this variable within community organizations, measurement scales generally focus on intrinsic dimensions, such as personal fulfillment, a sense of purpose, and the drive for self-reliance, alongside extrinsic dimensions like peer recognition, organizational support, and economic rewards. In an inclusive work setting, motivation acts as the ultimate catalyst that converts potential capability into actual performance. When workers possess a high degree of goal-directed energy, they exhibit greater resilience, lower absenteeism, and a stronger commitment to achieving organizational benchmarks (Sofyan, 2013; Suprapto et al., 2023).

High levels of employee enthusiasm and engagement are foundational to sustaining operational momentum and achieving target goals (Hasibuan, 2000; Rampisela & Lumintang, 2020). When individuals are driven by clear personal or communal milestones, they optimize their time management and apply greater discretion to solve localized operational challenges (Dwijayanti et al., 2023). Thus, reinforcing positive behavioral stimuli directly mitigates performance plateaus and fosters a culture of continuous improvement.

H2: Work motivation has a positive and significant effect on work productivity.

2.3. The Influence of Work Environment on Work Productivity

The work environment encompasses the multi-dimensional surroundings within which individuals execute their daily professional responsibilities (Mariana, 2020; Madjidu et al., 2022). This variable is empirically evaluated through physical attributes such as spatial layout, infrastructure accessibility, safety equipment, and ergonomics, as well as non-physical or psychosocial elements, including peer relationships, communication transparency, and managerial support. For workers operating in community-based agricultural frameworks, particularly those navigating physical vulnerabilities, a supportive and accessible workspace is vital. A well-designed environment minimizes physical strain, reduces operational barriers, and directly prevents fatigue, allowing workers to sustain their focus and efficiency throughout their shifts (Hairo & Martono, 2019; Indra et al., 2024).

Sustained organizational efficiency is deeply contingent upon the quality of the immediate workplace surroundings. Substandard spatial conditions and rigid infrastructures increase task friction, heighten stress levels, and elevate error rates during daily execution (Supardi, 2003; Syahputra et al., 2022). Conversely, a highly supportive, inclusive, and physically accommodating workspace fosters a profound sense of operational security, unlocking the workforce's full productive potential (Karauwan et al., 2024). Eliminating physical and social stressors within the immediate workspace allows organizations to systematically enhance labor efficiency and secure long-term operational consistency.

H3: Work environment has a positive and significant effect on work productivity.

2.4. The Simultaneous Effect on Work Productivity

Work productivity is a multi-faceted construct that rarely responds to isolated individual or environmental factors; rather, it represents the joint outcome of individual capability, psychological readiness, and environmental compatibility (Panjaitan, 2018; Perkasa et al., 2023). In empirical research by Renah and Setyadi (2014) and Segoro and Pratiwi (2021), productivity is measured via output quality, time efficiency, task accuracy, and resource optimization. Examining these variables together reveals that education provides the necessary technical and cognitive competencies, work motivation supplies the behavioral energy to deploy those skills, and the work environment offers the physical and social platform required to execute tasks without unnecessary constraints. If any of these pillars are missing, the overall efficiency of the workforce is severely compromised.

Integrated human resource models show that the interplay between internal competencies and external conditions creates a powerful synergistic effect on aggregate performance. The combination of strong educational foundations, robust internal motivation, and an accommodating physical space significantly enhances an organization's overall resilience and competitive advantage (Sedarmayanti, 2009). When these critical determinants are aligned simultaneously, they create an optimal ecosystem that helps workers overcome physical limitations, maximize daily output, and drive sustainable growth (Mudiansyah et al., 2025). Therefore, a holistic management strategy that simultaneously addresses capability, drive, and setting is essential for maximizing community performance.

H4: Education level, work motivation, and work environment simultaneously have a positive and significant effect on work productivity.

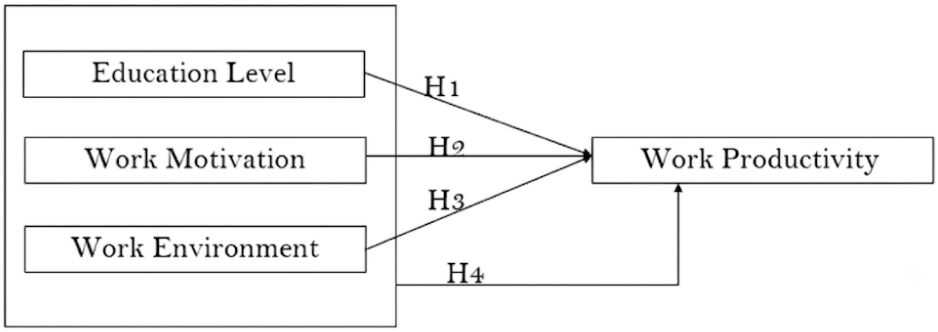

Figure 1. Conceptual Framework

Figure 1 shows the conceptual framework of the study, which analyzes the influence of education level, work motivation, and work environment on work productivity as the dependent variable. The relationships between variables are tested using hypotheses H1, H2, H3, and H4 to determine whether each factor influences work productivity. This model illustrates that individual and organizational environmental factors can play a role in shaping a person's level of work productivity, thus providing a basis for analysis in human resource management research.

3. Methods

This study employed a quantitative approach with an associative and explanatory research design. The quantitative approach was selected to examine the relationships and causal effects among variables, while the explanatory design aimed to explain the influence of independent variables on the dependent variable. The study investigated the effects of education level, work environment, and work motivation on work productivity, both partially and simultaneously. Through this approach, the research sought to provide empirical evidence regarding the factors that contribute to the productivity of members of the Muhammadiyah Farmers Congregation in Bejen Village, Sleman Regency, Special Region of Yogyakarta. The research was conducted over a period of three months at JATAM Bejen, a disability-based agricultural community actively engaged in farming activities and community empowerment programs.

The population of this study consisted of all members of JATAM Bejen, totaling 31 individuals. According to Sugiyono (2017), a population refers to a generalized area consisting of objects or subjects possessing specific characteristics determined by the researcher for investigation and conclusion drawing. Given the relatively small population size, this study applied a saturated sampling (census) technique, in which all members of the population were included as research respondents. The use of saturated sampling ensured comprehensive representation of the population and minimized sampling bias. Based on the available data, 31 respondents successfully participated in the study and provided complete responses for analysis.

Data collection was conducted using two primary techniques, namely questionnaires and documentation. The questionnaire served as the main research instrument and was designed to measure respondents' perceptions regarding education level, work environment, work motivation, and work productivity. The instrument employed a five-point Likert scale ranging from 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), to 5 (strongly agree). Documentation techniques were also utilized to obtain secondary data, including organizational structure, membership records, and other relevant institutional documents.

Data analysis was performed using IBM SPSS Statistics version 23. Prior to hypothesis testing, instrument validity and reliability tests were conducted to ensure the quality of the research instrument. An item was considered valid when its item-total correlation coefficient exceeded 0.30 (≥ 0.30), while reliability was established when Cronbach's Alpha coefficient exceeded 0.60 (≥ 0.60). Furthermore, classical assumption tests, including normality tests, were conducted to verify the suitability of the regression model. The hypotheses were tested using multiple linear regression analysis, supported by F-tests and t-tests. The regression model used in this study is expressed as follows:

$$Y = b0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \varepsilon t$$

Where:

b0	= Constant
β1, β2, β3	= Regression coefficients of X1, X2, and X3
X1	= Education Level
X2	= Work Environment
X3	= Work Motivation
εt	= Error term
Y	= Work Productivity

The F-test was employed to determine the simultaneous effects of the independent variables on work productivity, while the t-test was used to examine the partial effects of each independent variable. A significance level of 0.05 was adopted as the decision criterion, indicating that hypotheses were accepted when the significance value was less than or equal to 0.05 (≤ 0.05).

4. Results

Validity testing is conducted to determine the validity of a questionnaire used in primary data collection. Using a pilot sample, the r-table value limit, set based on certain degrees of freedom, is 0.355. If the calculated r-value obtained by an item is above this figure, then the item is declared valid and suitable for use in further data analysis. The results of this empirical testing are summarized in detail in Table 1 below.

Table 1. Validity Test

Variable	Item	r-count	r-table	Description
Education Level	EL1	0.873	0.355	Valid
	EL2	0.814	0.355	Valid
	EL3	0.841	0.355	Valid
	EL4	0.831	0.355	Valid
	EL5	0.761	0.355	Valid
Work Motivation	WM1	0.882	0.355	Valid
	WM2	0.850	0.355	Valid
	WM3	0.863	0.355	Valid
	WM4	0.862	0.355	Valid
	WM5	0.765	0.355	Valid
Work Environment	WE1	0.745	0.355	Valid
	WE2	0.782	0.355	Valid
	WE3	0.734	0.355	Valid
	WE4	0.859	0.355	Valid
	WE5	0.870	0.355	Valid
Work Productivity	WP1	0.802	0.355	Valid
	WP2	0.899	0.355	Valid

Variable	Item	r-count	r-table	Description
	WP3	0.869	0.355	Valid
	WP4	0.853	0.355	Valid
	WP5	0.833	0.355	Valid

Based on the empirical results presented in Table 1, all 20 questionnaire items across the four research variables were declared structurally valid for further hypothesis testing. Statistically, each individual indicator achieved a Pearson correlation coefficient (r-count) ranging from 0.734 to 0.899, which far exceeded the critical product-moment (r-table) threshold set at 0.355. Since each observed item met the r-count > r-table criteria, the instrument demonstrated strong internal consistency and accurately measured each target construct in this study.

Table 2. Reliability Test

Variable	Cronbach's Alpha	Description
Education Level	0.881	Reliable
Work Motivation	0.893	Reliable
Work Environment	0.859	Reliable
Work Productivity	0.900	Reliable

Table 2 presents the reliability test results for all research variables. The Cronbach's Alpha values range from 0.859 to 0.900, indicating strong internal consistency among the measurement items. Work productivity has the highest reliability coefficient (0.900), followed by work motivation (0.893), education level (0.881), and work environment (0.859). Since all Cronbach's Alpha values exceed the acceptable threshold of 0.60, the measurement instruments are considered reliable and appropriate for further analysis.

Table 3. Normality Test

Statistic	Value
N	31
Mean	0.0000000
Standard Deviation	1.14281383
Absolute Difference	0.116
Positive Difference	0.116
Negative Difference	-0.075
Test Statistic	0.116
Asymp. Sig. (2-tailed)	0.200
Monte Carlo Sig. (2-tailed)	0.355
99% Confidence Interval (Lower Bound)	0.342
99% Confidence Interval (Upper Bound)	0.367

The empirical data in Table 3 confirm that the model's error terms satisfy the assumption of normality. In statistical diagnostics, a residual distribution is deemed normal if the asymptotic significance value (Asymp. Sig. 2-tailed) exceeds the conventional threshold of 0.05. Here, the test statistic yields an asymptotic significance of 0.200, which is comfortably above the baseline. Furthermore, because the sample size is relatively compact (N = 31), the more robust Monte Carlo significance test was applied, yielding a value of 0.355 with a strict 99% confidence interval bounded between 0.342 and 0.367. Since both significance indicators are substantially greater than 0.05, the null hypothesis cannot be rejected, confirming that the regression residuals are normally distributed and structurally sound for subsequent parametric regression analysis.

Table 4. Hypothesis Testing

Variable	B	Std. Error	Beta	t-statistic	Sig.
Constant	-0.374	1.699	–	-0.220	0.827
Education Level→ Work Productivity	0.643	0.103	0.648	6.231	0.000
Work Motivation→ Work Productivity	0.182	0.075	0.178	2.414	0.023
Work Environment→ Work Productivity	0.265	0.102	0.270	2.601	0.015

Table 4 presents the results of the multiple regression analysis examining the effects of education level, work motivation, and work environment on work productivity. The regression model indicates that all independent variables have positive regression coefficients and statistically significant effects on work productivity. The constant value is -0.374 with a significance level of 0.827, indicating that the intercept is not statistically significant. However, the significance of the independent variables suggests that changes in these factors are associated with variations in employee productivity.

Among the predictors, education level exhibits the strongest influence on work productivity, with a regression coefficient (B) of 0.643, a standardized coefficient (Beta) of 0.648, and a t-statistic of 6.231. The significance value of 0.000 confirms that the effect is statistically significant at the 5% level. These findings indicate that employees with higher educational attainment tend to demonstrate greater productivity, reflecting the importance of knowledge, skills, and competencies acquired through education in enhancing work performance.

In addition, work motivation and work environment also show positive and significant relationships with work productivity. Work motivation has a coefficient of 0.182 (Beta = 0.178; t = 2.414; p = 0.023), suggesting that increased motivation contributes to higher productivity levels. Similarly, work environment records a coefficient of 0.265 (Beta = 0.270; t = 2.601; p = 0.015), indicating that supportive workplace conditions positively affect employee performance. Comparing the standardized coefficients, education level emerges as the most influential factor, followed by work environment and work motivation. The results support all proposed hypotheses, demonstrating that these variables significantly contribute to improving work productivity.

Table 1. F-Test

Source	Sum of Squares	df	Mean Square	F-test	Sig.
Regression	252.561	3	84.187	58.015	0.000
Residual	39.181	27	1.451	–	–
Total	291.742	30	–	–	–

Based on the F-test summary presented in Table 5, the model yielded an F-statistic of 58.015 with a significance value of 0.000. Because this probability falls substantially below the conventional significance threshold of 0.05 (0.000 < 0.05), the fourth hypothesis (H4) is formally accepted. This confirms that educational attainment, work motivation, and the work environment simultaneously exert a positive and statistically significant effect on the work productivity of JATAM members in Bejen Village, Sleman. This empirical finding underscores that a synergistic alignment between the farmers' cognitive capacities, robust psychological drive, and the provision of physically accessible agricultural infrastructure is collectively paramount to fostering an efficient and optimal operational ecosystem, particularly for individuals with disabilities.

5. Discussion

The findings indicate that education level, work motivation, and work environment each have a positive and significant effect on the work productivity of members of JATAM in Bejen Village, Sleman. These results suggest that improvements in employee competencies, motivation, and workplace conditions contribute to higher productivity levels. In the context of an inclusive agricultural community, productivity is influenced not only by individual capabilities but also by psychological and environmental factors that support the effective completion of daily tasks. Trisnawaty and Parwoto (2021) stated that efforts to improve productivity should address these factors simultaneously rather than focusing on a single aspect.

The results show that education level has a positive and significant effect on work productivity, suggesting that educational attainment contributes to the development of knowledge, skills, and problem-solving abilities that support better work performance. Individuals with higher levels of education are generally more capable of understanding work procedures, adopting new techniques, and responding to challenges in agricultural activities, consistent with human capital theory, which views education as an investment that enhances productivity. This finding aligns with previous studies by Ika and Sitompul (2022) and Holy et al. (2023), which reported that education improves task performance effectiveness. In the case of JATAM, members with broader educational exposure tend to be more adaptive in applying agricultural knowledge and utilizing resources efficiently. Among all variables, education level is the most influential factor (Beta = 0.648), highlighting its critical role in strengthening decision-making, problem-solving, and innovation adoption, particularly for members with physical limitations who rely heavily on knowledge to sustain productivity.

The analysis further reveals that work motivation has a positive and significant effect on work productivity. This finding indicates that individuals who possess stronger motivation tend to demonstrate greater commitment, persistence, and effort in carrying out their responsibilities. Motivation encourages members to remain engaged in productive activities and to overcome challenges encountered during agricultural work. The result is in line with the arguments of Hasibuan (2000) and Rampisela and Lumintang (2020), who emphasize the importance of motivation in improving employee performance. Within JATAM, motivation may originate from both internal factors, such as the desire for economic independence, and external factors, including social support and community encouragement. These motivational factors help members maintain consistent performance and contribute positively to organizational objectives.

The results also confirm that the work environment has a positive and significant effect on work productivity. A supportive work environment enables members to perform their activities more comfortably and efficiently. This finding supports previous studies by Supardi (2003), Syahputra et al. (2022), and Karauwan et al. (2024), which reported that favorable workplace conditions contribute to improved employee performance. In JATAM, accessible agricultural facilities and a supportive social atmosphere help reduce physical and psychological barriers faced by members with disabilities. As a result, individuals can focus more effectively on their work activities, leading to higher levels of productivity.

The simultaneous test results further demonstrate that education level, work motivation, and work environment collectively have a positive and significant effect on work productivity. This finding indicates that productivity is not determined by a single factor but rather by the interaction of individual capabilities, motivational factors, and workplace conditions. Education equips members with the knowledge and skills necessary to perform their tasks, motivation encourages them to apply these abilities consistently, and the work environment provides the support needed

for effective task execution. When these three factors are present simultaneously, they create conditions that enable members to achieve better work outcomes. Therefore, Ulum et al. (2018) stated that improving productivity requires an integrated approach that combines capacity development, motivational support, and the provision of a conducive work environment.

The findings of this study have several practical implications for JATAM administrators and local policymakers. Efforts to improve productivity should include the provision of continuous training and educational programs to strengthen members' competencies. In addition, initiatives that maintain and enhance motivation through community support, recognition, and empowerment programs are equally important. Furthermore, improving the accessibility and safety of agricultural facilities can help create a more inclusive working environment for members with disabilities. Through these combined efforts, JATAM can strengthen its capacity to achieve sustainable productivity and improve the welfare of its members.

6. Conclusion

This study examined the effects of education level, work motivation, and work environment on the work productivity of members of Jamaah Tani Muhammadiyah (JATAM) in Bejen Village, Sleman. The findings reveal that all three variables have positive and significant effects on work productivity, both partially and simultaneously. Among the independent variables, education level emerged as the most influential factor, indicating the importance of knowledge, skills, and learning capacity in supporting productive work behavior. These results suggest that productivity within an inclusive agricultural community is shaped by the combined influence of individual competencies, motivational factors, and supportive workplace conditions. The findings imply that JATAM administrators and local stakeholders should prioritize continuous education and training programs, strengthen motivational support mechanisms, and improve the accessibility of agricultural facilities to enhance productivity and community welfare.

Despite its contributions, this study has several limitations. The research was conducted within a single disability-based agricultural community and involved a relatively small number of respondents, which may limit the generalizability of the findings to other contexts. In addition, the study focused only on three determinants of productivity, whereas other factors may also influence employee performance. Therefore, future research is encouraged to involve larger and more diverse samples, including agricultural communities from different regions. Further studies may also incorporate additional variables, such as leadership, job satisfaction, organizational commitment, or technological adoption, to provide a more comprehensive understanding of the factors affecting productivity in inclusive and community-based organizations.

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