

Maximizing Labor Productivity in the Herbal Medicine Industry

The Impact of Training, Motivation, and Work Environment

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ABSTRACT

This study aimed to examine the impact of training, motivation, and work environment on the labour productivity of the Jamu Industry Center. The sample consisted of all 85 workers in the herbal medicine industry operation, who were selected using census sampling. A quantitative approach was utilized, and data were collected using questionnaires. Multiple linear regression analysis, partial tests, and simultaneous tests were employed to analyze the data. The results showed that training negatively and significantly affected labour productivity, while motivation and work environment had positive and significant impacts. Furthermore, training, motivation, and work environment collectively influenced labour productivity. The studied variables accounted for 68.3% of the variance in productivity. These findings suggest that improving the work environment and motivation may enhance labour productivity in the herbal medicine industry, while caution should be exercised when implementing training programs.

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Introduction

One of the goals that a company aims to achieve is to create high labour productivity. Increased labour productivity will positively impact both the company itself and the employees working in the company [1]. Efforts to improve labour productivity must align with the role of quality human resources owned by a company. Human resources are one of the drivers, thinkers, and executors to achieve the company's goals, including labour productivity [2]. According to Ref. [3], productivity is an activity to measure the quantity and quality of work using cost considerations, time, and other factors used in completing a job. Meanwhile, according to Ref. [4], productivity is a condition that describes the relationship between the number of goods and services to be produced with the number of labour, capital, wages, etc., used to carry out a production process until it becomes an expected product.

Several factors that achieve the company's goal of high labour productivity are needed to encourage the creation of labour productivity [5]. One of the factors that can promote the innovation of labour productivity is training [6]. According to Ref. [7],[8], training is an activity aimed at preparing employees to increase mastery of techniques and skills related to their current job, where training is carried out in detail and regularly. At present, technology is rapidly developing and affecting various industrial sectors. Industrial sectors that cannot respond well to the progress of technology will have difficulty competing with other industries that have responded well to the advancement of technology [9]. Therefore, training for employees is needed to match the ongoing technological developments so that they have the skills and additional knowledge appropriate to their jobs, thus improving labour performance and productivity.

The factors that contribute to workforce productivity include training [8], motivation [10], and work environment [11]. The work environment can significantly impact the manager, employees, and the quality of work produced [12]. Therefore, creating a comfortable work environment is crucial to boosting productivity. The agro-industry industry uses agricultural products as raw materials to delivering goods. One of the subsectors of the agro-industry is the traditional herbal medicine industry, which is prevalent in Indonesia [13]. Traditional herbal medicine, known as "jamu," is produced by many communities in Indonesia, either individually or in groups, using various spices and herbs such as turmeric, ginger, cinnamon, and more [14]. The demand for traditional herbal medicine in Indonesia is high because of its perceived health benefits and affordability. The industry has evolved over time, with innovations in packaging and consumption methods to meet consumers' needs. Overall, the agro-industry, including the traditional herbal medicine industry, plays a vital role in Indonesia's economy. It provides opportunities for people to earn a living while preserving the country's cultural heritage [15].

Bantul district (Yogyakarta Province, Indonesia) is known for its diverse culture and tourism. One of the famous attractions is the Sentra Industri Jamu Gendong. This centre produces traditional herbal medicine (*jamu*) and is visited by many domestic and international tourists. The majority of the local community in this village has inherited skills for producing traditional herbal medicine, making the centre a hub for the conventional industry. The Koperasi Seruni Putih (a Small and Medium Enterprise), a cooperative of local community members involved in producing traditional herbal medicine, manages the centre's operations. This unit has become a significant factor in promoting the traditional herbal medicine industry, boosting the regional economy. With the potential for the centre to become an international attraction, various efforts and innovations have been initiated in collaboration with the government, community, and academic institutions. Given the importance of the traditional herbal medicine industry in the region, the author is interested in conducting a study on the productivity of the workers in the centre, focusing on the influence of training, motivation, and work environment on the unit members. The objectives of this study are:

- To examine the influence of training on productivity.
- To analyze the effect of motivation on productivity.
- To investigate the influence of the work environment on productivity.

Methods

The population is the entire group of individuals who share a common characteristic and will be the subject of the study. In this case, the population is all 85 employees of the centre. In this study, the census technique will be used. It involves using the entire population as the sample, without selecting a subset for observation. To collect the data was used a survey or questionnaire to gather the necessary quantitative data directly from the respondents. By following this method, the researcher will be able to obtain quantitative data from the entire population without having to select a smaller sample. This approach can be particularly useful for studies involving a smaller population size or where a high level of accuracy is desired.

In this study, three independent variables were used: training (X1), motivation (X2), and work environment (X3). The dependent variable in this study was the productivity of workers (Y). In this study, data was collected using a questionnaire. A questionnaire is a method of collecting data by distributing questions related to the problem being studied to respondents so that respondents are expected to answer the questions according to their current situation. The author circulated the questionnaire and created it using a Likert scale to measure a person's attitude or opinion about a particular object. The Likert scale used in this study had five preference levels with scores from 1 (Absolutely Disagree) to 5 (Absolutely Agree).

Results

A. Validity and Reliability

The questionnaire's validity test used a comparison method between the obtained correlation coefficient (r) and the critical value (r -table). The research was conducted on 85 respondents from all workers. The level of significance used was 95% or $\alpha = 5\%$ (0.05). The criteria for the validity test were:

- If r obtained $> r$ -table, the question is considered valid.
- If r obtained $< r$ -table, the question is considered invalid.

The results of the validity test for each question in the questionnaire showed that all questions used to measure the variables of training (X1), motivation (X2), work environment (X3), and productivity (Y) are considered valid because the obtained correlation coefficients are more significant than the critical value of 0.179.

Reliability testing was conducted in the research to determine whether the measuring instrument used was reliable (consistent). Cronbach Alpha was used as the criteria, and a variable is considered reliable if the testing produces a Cronbach Alpha of more than 0.6, indicating that the questionnaire used is reliable. Based on the reliability testing, the measuring instrument used for this study's independent and dependent variables is reliable as each produced a Cronbach Alpha value greater than 0.

B. Descriptive Statistics

The descriptive analysis presented in the data provided shows the characteristics of the 85 employees. The data is presented in frequency distribution and percentage of respondents for their name, age, length of employment, and education level. Regarding the age group of the respondents, they are divided into five categories. The largest category of respondents is those aged between 56-66 years old, comprising 29.5% or 25 respondents. Most employees in the cooperative are older individuals who have been working in the industry for a long time.

Regarding the length of employment, the respondents are categorized into four groups. Most respondents have worked for 11-21 years, accounting for 42.3% or 36 respondents. It indicates that a considerable number of experienced workers have been working for the cooperative for a long time. Regarding education level, the respondents are divided into three categories. Most respondents have a middle school education (SMP) level, accounting for 40% or 34 respondents. Most employees of the cooperative have a basic education level, which may have an impact on their productivity and performance. Overall, the data presented in the descriptive analysis provides insights into the characteristics of the employees. This information could be useful for the cooperative to identify areas where they could improve their employees' skills and productivity.

C. Linear Regression

The given information is about multiple linear regression analysis, which is a statistical method used to determine the impact of multiple independent variables, such as training (X1), motivation (X2), and work environment (X3), on a dependent variable, namely, workforce productivity (Y). The regression analysis helps to determine whether the independent variables have a positive or negative relationship with the dependent variable and to predict the value of the dependent variable when the independent variables experience an increase or decrease. Based on the analysis, the constant value (α) is 2.481, the value of β for training (X1) is -0.149, the value of β for motivation (X2) is 0.272, and the importance of β for work environment (X3) is 0.474. Using this information, the multiple linear regression equation is obtained as follows:

$$Y = 2.481 - 0.149X_1 + 0.272X_2 + 0.474X_3 + e$$

From this equation, it can be concluded that:

- The constant productivity value (Y) is 2.481, which means that if the variables for training (X1), motivation (X2), and work environment (X3) are all zero, then the workforce productivity will be 2.481.
- The coefficient value for training (X1) has a negative and inverse direction effect on workforce productivity (Y), which is -0.149. It means that for every 1% increase in the variable for training (X1), the workforce productivity will decrease by -0.149 (14.9%). Conversely, if there is a 1% decrease in the variable for training (X1), workforce productivity will increase by 0.149 (14.9%).
- The coefficient value for motivation (X2) positively and directly affects workforce productivity (Y), which is 0.272. It means that for every 1% increase in the variable for motivation (X2), the workforce productivity will also increase by 0.272 (27.2%). Similarly, if there is a 1% decrease in the variable for motivation (X2), workforce productivity will also decrease by 0.272 (27.2%).
- The coefficient value for work environment (X3) positively and directly affects workforce productivity (Y), which is 0.474. It means that for every 1% increase in the variable for work environment (X3), the workforce productivity will increase by 0.474 (47.4%). Similarly, if there is a 1% decrease in the variable for work environment (X3), workforce productivity will also decrease by 0.474 (47.4%).

Based on the above explanation, the training variable (X1) has a negative effect on workforce productivity (Y). In contrast, the motivation variable (X2) and work environment variable (X3) has a positive effect on workforce productivity (Y).

D. Partial test (T-test)

Based on the information provided, a partial test (T-test) was conducted to determine the influence of training (X1), motivation (X2), and work environment (X3) variables on labour productivity (Y). The significance values, T-value, and T-table, were compared. The T-table for the test is calculated to be 1.989, and the significance values for X1, X2, and X3 are 0.013, 0.006, and 0.000, respectively. As all three significance values are less than 0.05, it can be concluded that all three variables (X1, X2, and X3) significantly influence labour productivity (Y).

The T-value for X1 is -2.531, which is less than the T-table value of 1.989. However, as the significance value is less than 0.05, it can be concluded that the variable X1 still significantly influences labour productivity (Y). The T-value for X2 is 2.818, which is greater than the T-table value of 1.989. Moreover, as the significance value is less than 0.05, it can be concluded that the variable X2 significantly influences labour productivity (Y). The T-value for X3 is 4.423, which is much greater than the T-table value of 1.989. Furthermore, as the significance value is less than 0.05, it can be concluded that the variable X3 significantly influences labour productivity (Y). In conclusion, the results of the partial test suggest that all three variables, i.e., training (X1), motivation (X2), and work environment (X3), have a significant influence on labour productivity (Y).

E. Simultaneous Test (F-test)

The purpose of this test is to determine the extent to which the independent variables of training (X1), motivation (X2), and work environment (X3) have a simultaneous effect on the dependent variable of workforce productivity (Y). In the simultaneous test (F test), the author will compare the calculated F-calculated with the tabled F-table. The independent variables are said to simultaneously affect the dependent variable if the F calculated value is greater than the F tabled value and the significance value is less than 0.05. The test results showed that the degrees of freedom (df) for X1, X2, and X3 are three, and the DF for Y is 81, which gives an F-table of 2.72. From the ANOVA output of the test results and the table above, the significance value is 0.000b. Since the significance value (0.000b) is less than 0.05, it can be concluded, based on hypothesis 4 (H4), that the variables of training (X1), motivation (X2), and work environment (X3) have a positive and significant simultaneous effect on workforce productivity (Y). F-calculated value is 61.266, which is greater than the F-table of 2.72. Therefore, based on the decision-making criteria in the simultaneous test (F-test), it can be concluded that hypothesis 4 (H4) is accepted, or in other words, the variables of training (X1), motivation (X2), and work environment (X3) have a simultaneous effect on workforce productivity (Y).

F. Determination Coefficient (R-square)

The coefficient of determination (R^2) is a statistical measure that indicates the proportion of variance in the dependent variable (Y) that can be explained by the independent variables (X1, X2, and X3) in a linear regression model. In this analysis, the R^2 test was conducted to determine the extent to which the independent variables of training (X1), motivation (X2), and work environment (X3) influence the dependent variable of labour productivity (Y). Based on the results of the R^2 calculation, the coefficient of determination (R^2) was found to be 0.683, which means that the variables of training (X1), motivation (X2), and work environment (X3) collectively explain 68.3% of the variance in labour productivity (Y). The remaining 31.7% of the variance is influenced by other variables not investigated in this study.

The R^2 value indicates a moderately strong relationship between the independent and dependent variables. However, it is important to note that the R^2 test does not establish a cause-and-effect relationship between the variables. Other factors not included in the analysis may also impact labour productivity. Therefore, it is important to exercise caution in interpreting the results of the R^2 test and consider other factors that may influence labour productivity.

Discussion

A. The effect of training (X1) on labour productivity (Y)

The analysis states that Hypothesis 1 (H1) in this study, which says that training (X1) has a positive and significant effect on employee productivity (Y), is rejected. The results showed that training (X1) negatively and significantly impacts workers' productivity (Y). This conclusion is supported by the multiple linear regression analysis, which yielded a negative beta coefficient of -0.149 for training (X1) and the partial or t-test, which showed a significance value of $0.013 < 0.05$.

The analysis further explains that training is an activity that individuals undertake intending to increase their skills and knowledge. Individuals who frequently undergo training are more likely to be efficient in their work due to the advanced knowledge and skills acquired. Each individual's mastery level varies depending on how often they undergo training and gain experience. Experience is achieved through formal education and direct learning in the field.

Based on the responses of the 85 workers, it was found that the majority of female workers felt that training could improve their skills and productivity in producing traditional herbal medicine. However, some participants felt the training has yet to improve their skills, knowledge, and productivity in creating conventional herbal medicine. It was because they found the training material and methods boring. The analysis concludes that this study is

consistent with previous research conducted by Ref. [16] which showed that skill has a negative and significant effect on employee performance.

The finding that training has a negative and significant effect on employee productivity is contrary to the widely accepted theory that training positively impacts employee performance [17]-[20]. However, some studies support the negative relationship between training and performance. For example, a survey by Ref. [21] found that over-training can decrease employee motivation and productivity. Similarly, a study by Ref. [22] found that if the training program needs to be aligned with the needs and goals of the employees, it can lead to a decrease in employee performance.

The finding that some workers found the training material and methods boring is consistent with the concept of training transfer, which suggests that for training to be effective, it should be designed in a way that is relevant and engaging to the participants. The study by Ref. [23] found that many factors influence the transfer of training. It includes the trainee's motivation and ability, the training program's design and delivery. Overall, the finding that training has a negative and significant effect on employee productivity suggests that organizations need to carefully design and deliver their training programs to ensure that they are effective and do not have unintended negative consequences. It includes aligning the training with the needs and goals of the employees, making it engaging and relevant, and ensuring that the employees have the motivation and ability to transfer the training to their work performance.

B. The effect of motivation (X2) on labour productivity (Y)

The analysis presented in the given text suggests that hypothesis H2, which states that motivation (X2) has a positive and significant effect on workers' productivity (Y), is supported by the results of multiple linear regression analysis and partial testing or T-test. The value of β for the motivation variable (X2) is 0.272, which is positively significant with a p-value of $0.006 < 0.05$. Thus, motivation has a significant positive effect on productivity. Motivation is an internal driving force that makes people willing to engage in a specific activity to achieve their goals. It further explains that motivating employees in the workplace enhances their enthusiasm, increasing their performance and productivity. The production of traditional herbal medicine by the workers, and how their productivity positively impacts their income and the community's well-being.

The findings have practical implications for managers and organizations, indicating that they should provide a conducive work environment that promotes employee motivation to improve their productivity. The analysis supports the theory of motivation as an essential factor in enhancing employee productivity. The theory suggests that motivation is an internal driving force that makes people willing to engage in a specific activity to achieve their goals

[23]. It highlights how motivation can enhance employee enthusiasm, increasing their performance and productivity [24]-[26]. Furthermore, the finding highlights the importance of providing a conducive work environment that promotes employee motivation to improve productivity. The theory of Self-Determination Theory (SDT) explains that creating a work environment that fosters autonomy, competence, and relatedness can enhance employee motivation and job satisfaction, leading to improved productivity [27]. This theory supports the practical implications of the findings for managers and organizations, emphasizing the importance of creating a supportive work environment that promotes employee motivation to enhance productivity [28]. The result is consistent with the theory of motivation and Self-Determination Theory. It has practical implications for managers and organizations to improve productivity by creating a supportive work environment that promotes employee motivation [29]-[31].

C. The effect of the work environment (X3) on labour productivity (Y)

Hypothesis H3 in this research states that the work environment variable (X3) positively and significantly affects productivity (Y). The results showed that the work environment variable (X3) has a positive and significant effect on the productivity of workers in the traditional herbal medicine centre. Hypothesis H3 is supported by multiple linear regression analysis, which yielded a beta coefficient of 0.474 (positive value) for the work environment variable (X3). Furthermore, the partial testing or t-test also shows a significance value of $0.000 < 0.05$. Therefore, it can be concluded that hypothesis H3 is accepted, indicating that the work environment variable (X3) has a positive and significant effect on the productivity (Y) of the workers in the traditional herbal medicine centre.

The work environment is a condition and place where someone performs and completes their job. A well-arranged work environment can make someone feel comfortable while working. If a comfortable work environment is created, productivity at work will also increase. Based on the average responses of 85 workers in the traditional herbal medicine centre, they feel that the relationship between members of the cooperative is harmonious and respectful towards each other. In addition, most members always use and maintain facilities and the work environment in producing traditional herbal medicine to create comfort and smoothness in work. This research is in line with Ref. [32], which examined the effect of the work environment on the productivity of employees, and concluded that the work environment has a positive and significant impact on productivity. Overall, this research highlights the importance of creating a conducive work environment in improving productivity. Organizations should invest in creating a work environment that is comfortable, supportive,

and respectful towards workers. By doing so, workers can feel motivated and engaged, increasing productivity and better overall performance [33].

D. Effects of training (X1), motivation (X2) and work environment (X3) on labour productivity (Y)

Based on hypothesis 4 (H4), which states that training (X1), motivation (X2), and work environment (X3) simultaneously affect workforce productivity (Y), the results yielded a simultaneous test value (F-test) of $0.000 < 0.05$, and a calculated F-value of 61.266. Thus, it can be concluded that hypothesis 4 (H4) is accepted. Productivity is a comparison between the amount of input and output produced. Information can come from human resources in the workplace, while production comes from completed work. Productivity can be calculated by looking at a person's work's quality, quantity, and timeliness. The higher the amount, quality, and timeliness, the higher the level of productivity that can be achieved. Based on the responses of 85 workers, when there is a demand from customers, they will first consider their ability to produce traditional medicine according to the customer's request. Suppose they can make traditional medicine according to the customer's request. In that case, they will try to complete the request within the desired time and quantity without compromising the quality of the product.

The analysis indicates that employee training, motivation, and work environment affect productivity. This finding can be explained using the Job Demands-Resources (JD-R) model, which proposes that job demands (e.g. workload, time pressure) and resources (e.g. support, autonomy) have an impact on employee well-being and work-related outcomes, such as productivity [34]. In this study, training (X1), motivation (X2), and work environment (X3) can be considered as resources that affect productivity. Training can provide workers with the necessary skills and knowledge to perform their job effectively, leading to increased productivity. As an internal resource, motivation can drive workers to achieve their goals and improve their performance [35]. The work environment, which includes physical, social, and organizational factors, can provide workers with the necessary support and resources to perform their job effectively.

The JD-R model suggests that when job resources are high, employees are more likely to experience positive work-related outcomes, such as higher productivity levels [36]. Conversely, when job demands exceed available resources, employees are more potential to experience adverse work-related effects, such as stress and burnout, leading to decreased productivity. The finding that training, motivation, and work environment simultaneously affect productivity supports the JD-R model, which suggests that resources play an important role in promoting positive work-related outcomes, including productivity [36]. It has practical implications for managers and organizations, indicating that they should provide employees

with the necessary resources and support to perform their job effectively and enhance productivity.

Conclusion

Based on the analysis and discussion of the research titled "The Effect of Training (X1), Motivation (X2), and Work Environment (X3) on Work Productivity (Y)", it can be concluded that:

- Training (X1) negatively and significantly affects work productivity (Y).
- Motivation (X2) positively and significantly affects work productivity (Y).
- Work environment (X3) positively and significantly affects work productivity (Y).
- Training (X1), motivation (X2), and work environment (X3) simultaneously affect work productivity (Y).

This finding implies that companies need to focus on enhancing their motivation and improving the work environment to improve workers' productivity in the traditional herbal medicine industry. It can be applied by providing appropriate training programs for workers to enhance their skills and knowledge and create a work environment conducive to productivity. However, it is essential to note that providing too much training may have a negative impact on productivity, so companies need to strike a balance in providing appropriate training. By improving motivation and creating a better work environment, companies can improve the productivity of their workers and increase their competitiveness in the market.

Conflict of Interest

The authors declare that there is no conflict of interest.

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