

The Influence of Education Level, Gender, and Age on Workforce Productivity at Pak Matali's Woven Bag SMEs, Junrejo District, Batu City

Maria Muda Kaka^{1*}, Nur Ida Iriani², Warter Agustim³, and Anung Prasetyo Nugroho⁴

* Correspondence Author: mariamudakaka8@gmail.com

^{1,2,3,4} Management, Faculty of Economics, University of Tribhuwana Tungadewi, Malang, Indonesia

INDEXING	ABSTRACT
<p>Keywords: Keyword 1; Education level Keyword 2; Gender Keyword 3; Age Keyword 4; Labor Productivity Keyword 5; SMEs</p>	<p>The purpose of this study is to determine the effect of education level, gender, and age on labor productivity in the Handwoven Bag SME Pak Matali, Junrejo District, Batu City, both partially and simultaneously. This research uses a quantitative method. The sample is determined using total sampling technique, so the entire population is used as the research sample consisting of 32 employees of the Handwoven Bag SME Pak Matali, Junrejo District, Batu City. The data collection technique used by the researcher is a questionnaire. The data analysis method used is multiple linear regression using SPSS 25. The research results prove that the education level has a significant effect on labor productivity in SMEs with a calculated t value of 6.176, gender has a significant effect on labor productivity in SMEs with a calculated t value of 4.562, and age has a significant effect on labor productivity in SMEs with a calculated t value of 4.286. The results simultaneously indicate that education level, gender, and age significantly affect labor productivity in SMEs with an F-count value of 5.052 or 62.9%. This finding proves that improving labor productivity is supported by education level, gender, and age.</p>

Article History

Received 22 June 2025; Revised 12 November 2025; Accepted 11 December 2025;

Publish 11 January 2026

INTRODUCTION

Labor productivity is the ability of labor to produce output (work results). Productivity determines the ability of employees to work optimally to enhance the progress of the company (Putri, 2016). High work productivity can improve the efficiency and effectiveness of work, therefore helping entrepreneurs achieve the established goals (Fadhilah, 2019).

The gender that affects labor productivity can be seen in jobs conducted at the Pak Matali Woven Bag Small and Medium Enterprises (SMEs) in Junrejo District, Batu City, which are more dominantly physical jobs that require male labor. Gender is one of the factors that determines the level of a worker's productivity (Hartoko, 2019). This is reflected in the male employees' tendency to rely on logic and physical strength when working, while female employees tend to be more emotional in their work (Putri, 2016). In addition to gender factors, age also affects productivity at work.

Age that influences labor productivity, such as younger age, tends to have strong energy, thus supporting an increase in work productivity (Febianti et al., 2023). Companies in determining employees must pay attention to age, because age determines productivity at work. Mature age has a lot of work experience, thus work productivity is also high (Noruddin et al., 2021). The study by Swarsih et al (2020) explains that the

age that affects labor productivity is the productive age, which is 20-40 years, this productive age has a positive relationship with labor productivity.

This research was conducted at Pak Matali Woven Bag SMEs in Junrejo District, Batu City, which is a business engaged in the production of woven bags, requiring high work skills. Work skills are supported by high education, male gender, and a productive working age. The importance of education is for employees to easily understand the work they are doing; gender allows employees to work according to their abilities; and productive age ensures that employees have good capabilities in completing their tasks.

Therefore, the objective of this research writing is to determine the effect of education level on labor productivity at Pak Matali Woven Bag SMEs, Junrejo District, Batu City, to determine the effect of gender on labor productivity at Pak Matali Woven Bag SMEs, Junrejo District, Batu City, to determine the effect of age on labor productivity at Pak Matali Woven Bag SMEs, Junrejo District, Batu City, and to find out the simultaneous effect of education level, gender, and age on labor productivity at Pak Matali Woven Bag SMEs, Junrejo District, Batu City.

LITERATURE REVIEW

Theoretical Foundation

According to Notoatmodjo (2019), the level of education refers to structured and graduated stages of formal education. The level of education is the stage of education determined based on the level of development of learners, the goals to be achieved, and the willingness developed. The level of education influences changes in attitudes and healthy living behaviors. A higher level of education will facilitate an individual or society in absorbing information and implementing it in daily behaviors and lifestyles, particularly in terms of work.

According to Swarsih et al (2020), gender is one of the factors that can affect work productivity, but it is not always the main determinant. Women are more likely to prefer jobs that involve people, while men are more inclined to prefer jobs that involve inanimate objects. Women are associated with feminine traits and attributes such as being gentle, polite, caring, sensitive, timid, emotional, 'beautiful', wearing jewelry, and often dressed in long fabrics or skirts. Meanwhile, men are associated with masculine traits such as being strong, brave, tough, rational, rough, dashing, assertive, muscular, active, and therefore wearing practical clothing like long/short pants and having short hair.

According to Papalia et al. (2021), age is defined as the length of time a being or living creature has existed since birth. Age is closely related to human life development; as age increases, a person becomes more mature in thinking and working. Age in work refers to the age allowed to work, whether as a permanent employee, freelancer, or intern. Age in work can also be understood as productive age, which is the age that supports a person's productivity and quality of life. The classification of productive age groups in work is divided into three categories: late adolescence (20-25 years), young adulthood (26-45 years), and late adulthood (46-59 years).

According to Amirullah (2019), productivity is the attitude and behavior of the workforce in a company towards the rules and standards set by the company, which are manifested both in behavior and actions. According to Supriyanto (2019), it is stated that to improve productivity, the business must be planned well and systematically to succeed when applied. The stage of measuring productivity is through evaluation, planning, and improvement.

RESEARCH METHOD

The research location is at the Pak Matali Woven Bag SMEs, Junrejo District, Batu City, located at Jl. Hasanudin No. 07, Junrejo Village, Junrejo District, Batu City, East Java with the postal code 65321. The reason for researching at the Pak Matali Woven Bag SMEs, Junrejo District, Batu City is due to the ease of access in collecting research data. This type of research uses a quantitative method, as it highlights the relationship between research variables and tests the previously formulated hypotheses, focusing on explaining the relationship between variables.

The population used includes all employees at the Pak Matali Woven Bag SME, Junrejo District, Batu City in 2025, totaling 32 people. The sample is a part of the population that serves as respondents. The number of samples used is 32 employees at the Pak Matali Woven Bag SME, Junrejo District, Batu City. The sampling method used in this study is total sampling, which means the sample is taken from the entire population. Data sources include primary and secondary data, and the data collection methods used are questionnaires, observation, and documentation.

RESULT AND DISCUSSION

Multiple Linear Regression

Analysis of multiple linear regression is used to determine the magnitude of the influence of education level, gender, and age on labor productivity in the UKM Handicraft of Pak Matali, Junrejo District, Batu City. The results of the multiple linear regression test are shown in the table below.

Table. 1 Multiple Linear Regression

Variable	B Unstandardized Coefficients	Descriptions
Constant	15,075	Positive
(X1)	1,155	Positive
(x2)	0,625	Positive
(X3)	0,540	Positive

Source: (Primary Data Processed, 2025)

Based on the table, a regression equation can be formed to measure the impact of the education level variable (X1), the gender variable (X2), and the age variable (X3) on the labor productivity variable (Y) using the following regression equation:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$$

$$Y = 15.075 + 1.155 X_1 + 0.625 X_2 + 0.540 X_3 + e$$

Based on the regression equation, it can be interpreted that for the value of the labor productivity variable, the constant value is 15.075. If the values of variables X1, X2, and X3 increase by 2.320, the total impact value will be 17.395, thus the meaning of the regression equation values for each variable is as follows:

Y = labor productivity variable is a dependent variable and its value will be predicted by the education level variable (X1), gender variable (X2), and age variable (X3).

X₁= regression coefficient (X1) of 1.155 with a positive sign indicates that the education level variable (X1) has a positive effect on the labor productivity variable (Y), meaning that better support for education level can improve labor productivity.

X₂= regression coefficient (X2) of 0.625 with a positive sign indicates that the gender variable (X2) has a positive effect on the labor productivity variable (Y), meaning that better gender support can improve labor productivity.

X₃= regression coefficient (X3) of 0.540 with a positive sign indicates that the age variable (X3) has a positive effect on the labor productivity variable (Y), meaning

that a better age can improve labor productivity.

Based on the multiple linear regression test, it is known that the level of education has a dominant effect on the productivity of labor in the Handwoven Bag SMEs of Pak Matali, Junrejo District, Batu City, with a regression coefficient value of 1.155.

Hypothesis Test t-Test (Partial)

t-Test is conducted to determine the extent of the partial effect of the level of education variable (X1), gender variable (X2), and age variable (X3) on the labor productivity variable (Y). The magnitude of the influence of each independent variable on the dependent variable can be seen in the table below.

Table. 2 t-Test Results

Variable	t count	t table	Sig t
(X1)	6,176		0,000
(x2)	4,562	2,040	0,000
(X3)	4,286		0,000

Source: (Primary Data Processed, 2025)

The results of the t-test calculations to determine the influence of each variable are as follows:

- 1) The level of education variable (X1) has a significant effect on labor productivity (Y) in the Tofu Factory SMEs Kres Junrejo in Batu City because the calculated t-value = 6.176 > t-table 2.040 with a significance value of 0.000 ($p < 0.05$), so H1 is accepted. This means that the higher the level of education, the more it can increase labor productivity.
- 2) The gender variable (X2) has a significant effect on labor productivity (Y) in the Tofu Factory Kres Junrejo City of Batu because the calculated t value = 4.562 > the t table value 2.040 with a significance value of 0.000 ($p < 0.05$), hence H2 is accepted. This means that gender can increase labor productivity.
- 3) The age variable (X3) has a significant effect on labor productivity (Y) in the Tofu Factory Kres Junrejo City of Batu because the calculated t value = 4.286 > the t table value 2.040 with a significance value of 0.000 ($p < 0.05$), hence H3 is accepted. This means that higher age can increase labor productivity.

F Test (Simultaneous)

The F test simultaneously is a statistical test to determine the effect of the education level variable (X1), the gender variable (X2), and the age variable (X3) on the labor productivity variable (Y) collectively, based on the analysis results that have been carried out; the results of the hypothesis testing are presented in the table below.

Table 3 F Test

Variable	F count	F table	Sig F
Education levelFston (X1)			0,000
Gender (X2)	5,052	2,040	0,000
Age (X3)			0,000

Source: (Primary Data Processed, 2025)

The results of the F test showed that the calculated F value (5.052) is greater than the table F value (2.947) with a significance value (0.000), which means that collectively the independent variables of education level (X1), gender (X2), and age (X3) have a significant effect on labor productivity (Y) at the Tofu Factory Kres in Junrejo, Batu City, thus H4 is accepted, meaning that education level, gender, and age can enhance labor productivity.

Determination Coefficient Test (R²)

The determination coefficient (R²) essentially measures how much influence the model has in explaining the variation of the dependent variable. The results of the determination coefficient test (R²) are presented in the following table:

Table 5. Results of the Determination Coefficient Test (R²)

Model	R Square
1	0,629

Source: (Primary Data Processed, 2025)

The analysis results showed an r square value of 0.629, which means that education level, gender, and age contribute to the labor productivity in Pak Matali Weaving SMEs, Junrejo District, Batu City by 62.9%, while the remaining 0.371 or 37.1% is influenced by other unstudied variables such as leadership style and training.

DISCUSSION

The Influence of Education Level on Labor Productivity

The analysis presented proves that the level of education has a significant effect on labor productivity at the Pak Matali Woven Bag SMEs in Junrejo District, Batu City, which means that a higher education level can enhance labor productivity. The level of education refers to structured and tiered formal education stages, ranging from kindergarten to higher education.

The educational level of employees at the Pak Matali Weaving Bag SME in Junrejo District, Batu City is predominantly high school, which means they already know how to work well. The results of this study are consistent with the research by Febianti et al. (2023), which proves that a higher educational level can increase employee productivity. A higher education level facilitates an individual's ability to absorb information and implement it in their daily behaviors and lifestyle, especially concerning work.

The study found that the educational level has a dominant influence on employee productivity at the Pak Matali Weaving Bag SME in Junrejo District, Batu City, meaning that higher education supports the increase in labor productivity. Research by Noruddin et al. (2021) proves that educational level affects labor productivity, meaning that as a person's education level rises, their knowledge increases to support their capabilities.

The Effect of Gender on Labor Productivity

The analysis presented has proven that gender has a significant impact on labor productivity at the Pak Matali Woven Bag SMEs, Junrejo District, Batu City. This means that the role of gender can enhance labor productivity. The gender that influences labor productivity is that of employees who are predominantly male, where the production of woven bags is mainly carried out by men because it requires strong physical labor in the production activities.

The gender of employees at Pak Matali Weaving SME in Junrejo, Batu City appears to be predominantly male. The results of this study support the research conducted by Febianti et al. (2023) which proves that gender has a significant influence on employee productivity. Gender can indicate an individual's productivity level. Universally, the productivity level of males is higher than that of females. This may be influenced by factors that women possess, such as physical strength being less, and a tendency to work based on feelings or biological factors.

The research by Putri (2016) proves that gender plays a role in increasing labor productivity, meaning that gender can contribute significantly to enhancing labor productivity. Males are more productive in jobs related to heavy production work. Males are more likely to prefer jobs that involve inanimate objects, while females are more inclined to prefer jobs that involve people. Gender refers to physical differences, while sex is more related to characteristics, roles, and functions. According to Fadhillah (2019), gender plays an important role in enhancing labor productivity.

The Influence of Age on Labor Productivity

The analysis presented proves that age has a significant impact on labor productivity at Pak Matali Woven Bag SMEs, Junrejo District, Batu City. This means that age can enhance labor productivity. The age that influences labor productivity indicates that as a person gets older, their work experience also increases, thus supporting the improvement of labor productivity.

The age of employees at Pak Matali Woven Bag SMEs in Junrejo, Batu City is predominantly between 40-49 years, indicating they have experience in their work. This finding supports the research conducted by Noruddin et al. (2021), which explains that age has a positive effect on labor productivity. Age is closely related to human life development; as one grows older, they become more mature in thinking and working. Age determines one's ability to work; younger individuals have less work experience, whereas those in their productive years possess good experience and knowledge in their work.

Research by Febianti et al. (2023) proves that age has a significant impact on employee work productivity. The theory states that adult age affects the increase in employee work productivity. Age in theory states that adulthood influences the increase in employee work productivity. The productive age is the age group where an individual is physically and mentally capable of working and producing goods or services. Generally, the productive age is counted from 20 to 50 years old.

The Influence of Education Level, Gender, and Age on Labor Productivity

The research findings indicate that simultaneously, education level, gender, and age contribute to labor productivity in the Pak Matali Weaving Bag SMEs, Junrejo District, Batu City by 62.9%. This means that a high level of education, gender, and age play important roles in enhancing labor productivity. The productivity of the workforce at the woven bag small and medium enterprise (UKM) Pak Matali in Junrejo, Batu City shows that employees have the ability to perform their jobs well, can achieve the determined targets, possess high work enthusiasm to improve business progress, are enthusiastic about work, can work according to their superiors' instructions, maintain good work quality by never making mistakes, and are quick to complete tasks.

The results of this study support the research conducted by Ukkas (2017), which explains that education level, gender, and age have a positive and significant effect on labor productivity. Workforce productivity means that employees can complete their work on time, never make mistakes, and can meet work targets. Workforce productivity is the attitude and behavior of workers in completing tasks according to the standards set by the company. Indicators of labor productivity include ability, improvement of achieved results, work spirit, self-development, quality, and efficiency.

CONCLUSION

Based on the explanation presented, it can be concluded that:

- 1) The level of education significantly affects labor productivity in the Matali Woven Bag SMEs in Junrejo District, Batu City. This means that a higher level of

education can enhance labor productivity. A higher level of education will facilitate an individual in absorbing information and implementing it in their work.

- 2) Gender has a significant impact on labor productivity in the Pak Matali Woven Bag SMEs, Junrejo District, Batu City. This means that the role of gender can enhance labor productivity. Male gender is more productive when working in production with heavy labor.
- 3) Age has a significant impact on labor productivity in the Pak Matali Woven Bag SMEs, Junrejo District, Batu City. This indicates that age can enhance labor productivity. Age that influences labor productivity means that as a person gets older, their work experience also increases, thus supporting the increase in labor productivity.
- 4) The research results indicate that simultaneously, education level, gender, and age have a contributing influence on labor productivity in the UKM Tas Anyaman Pak Matali, Junrejo District, Batu City, meaning that a higher education level, gender, and age play important roles in enhancing labor productivity.

SUGGESTIONS

The suggestions in this research are as follows.

1. For SMEs
 - a. SMEs need to pay attention to employees' skills in their work, as well as ensure that employees work in their fields.
 - b. Actions to support the increase in work productivity include employing employees with at least a high school education so that they can more easily receive work information.
 - c. An action taken by the SMEs at Pak Matali Weaving is to employ male employees because the work requires physical effort.
 - d. The action taken by the SMEs is to employ employees who are of productive age between 20 and 50 years.
2. Subsequent researchers to know other factors that influence labor productivity such as leadership styles and training.

REFERENCES

Authored Book

- Amirullah, Imam. (2019). *Pengantar Bisnis*, Edisi Pertama. Yogyakarta: Graha Ilmu
- Notoatmodjo, S. (2019). *Pendidikan dan Perilaku Kesehatan*. Jakarta: Rineka Cipta
- Papalia, D. E., dkk., (2021). *Perkembangan Manusia*. Jakarta: Salemba Humanika.
- Supriyanto. (2019). *Dasar-Dasar Pembelajaran Perusahaan*. Yogyakarta: BPFE.

Dissertation From a Database

- Fadhilah, D. N. (2019). *Pengaruh Tingkat Pendidikan, Upah, Dan Jenis Kelamin Terhadap Produktivitas Kerja Karyawan Pada Bank Pembiayaan Rakyat Syariah (Bprs) Bangun Drajat Warga Yogyakarta* (Doctoral dissertation, UIN Sunan Kalijaga Yogyakarta).

Journal Articles

- Febianti, A., Shulthoni, M., Masrur, M., & Safi'i, M. A. (2023). Pengaruh Tingkat Pendidikan, Umur, Jenis Kelamin, Dan Pengalaman Kerja Terhadap Produktivitas Kerja di Indonesia. *Sahmiyya: Jurnal Ekonomi dan Bisnis*, 198-204.
- Hartoko, Y. (2019). Pengaruh Pendidikan, Pelatihan, Jenis Kelamin, Umur, Status Perkawinan, dan Daerah Tempat Tinggal Terhadap Lama Mencari Kerja Tenaga Kerja Terdidik di Indonesia. *Jurnal Pendidikan dan Ekonomi*, 8(3), 201-207.

- Noruddin, N., Wahono, B., & Athia, I. (2021). Pengaruh Tingkat Pendidikan Dan Usia Karyawan Terhadap Produktivitas Kerja (Studi Kasus Perkebunan Semangka dan Melon Karang Barat Banyusokah Ketapang Sampang). *E-JRM: Elektronik Jurnal Riset Manajemen*, 10(04).
- Putri, H. R. (2016). Pengaruh pendidikan, pengalaman kerja, dan jenis kelamin terhadap produktivitas kerja karyawan bagian produksi CV. Karunia Abadi Wonosobo. *Jurnal Pendidikan dan Ekonomi*, 5(4), 292-300.
- Swarsih, C., Junaidi, J., & Rosmeli, R. (2020). Pengaruh umur, pendidikan, upah, keterampilan, dan jenis kelamin terhadap lama mencari kerja bagi pekerja terdidik di Kota Jambi. *E-Jurnal Ekonomi Sumberdaya Dan Lingkungan*, 9(1), 1–12. <https://doi.org/10.22437/jels.v9i1.11944>
- Ukkas, I. (2017). Faktor-Faktor Yang Mempengaruhi Produktivitas Tenaga Kerja Industri Kecilkota Palopo. *Journal of Islamic Education Management*, 2(2).