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Tobacco Farm Workers' Incomes: Analyzing the Influence of Diverse Socio-Economic Factors

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Abstract

Understanding the socio-economic factors influencing tobacco farm laborers' income is essential for improving their financial stability and productivity. Many farm workers face economic uncertainty due to low education levels, limited experience, and fluctuating wages. Existing studies often overlook the combined impact of these factors, creating a research gap in labor income dynamics. This study aims to analyze how education, experience, age, and family size affect farm laborers' earnings. A quantitative descriptive method was employed, using surveys, interviews, and multiple linear regression analysis on respondents from Kagokan and Klaseman villages, Gatak District. The findings reveal that education and experience positively impact income, while age negatively influences earnings due to declining physical ability. Family size shows no significant effect. These results highlight the need for policy interventions such as vocational training, wage restructuring, and education access for farm laborers. Policymakers should implement sustainable programs to bridge economic disparities and enhance workforce efficiency. Future research should explore the role of agricultural technology adoption and gender-based income disparities, offering deeper insights into labor market dynamics.

Keywords: *Change Strategy, Education, Human Resources Investment, Productivity, Skills, Tobacco Farm Workers*

Introduction

Socio-economic conditions refer to an individual's situation or position within the social structure of a community, which is socially regulated and determines specific rights and obligations. This position carries a set of responsibilities that must be fulfilled by the status holder. Socio-economic aspects relate to the circumstances in which a person lives, including material development opportunities and unavoidable limitations. Factors such as population size and density, food consumption and production, housing, clothing, health, diseases, resource power, and other fundamental elements fluctuate unpredictably and can significantly influence an individual's survival conditions (Sari & Remiasa, 2019).

Socio-economic factors significantly impact tobacco farm laborers. Labor is one of the key elements in the success of tobacco plantations, as raw material processing

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relies heavily on manual labor. Additionally, the social background of workers in the tobacco industry can affect their working conditions and earnings. Female laborers, in particular, contribute to household economies, especially when their husbands also work. Therefore, socio-economic factors and wage systems must be considered to improve the income of tobacco farm laborers (Efendi & Sulistyaningsih, 2019).

Education level is a crucial socio-economic factor affecting farm laborers. Agricultural workers tend to have lower educational attainment than those in other employment sectors. Some farm laborers may only have primary education or even less. Factors influencing their education levels include access to educational facilities, family economic conditions, and the priority between working in agriculture and pursuing further education. (Sari & Remiasa, 2019).

The higher the level of education in society, the greater the social status and life expectations they aspire to achieve. Farmers generally have an average level of education that does not reach secondary school, with most only graduating from elementary school. Agricultural outreach and training programs are unevenly distributed and conducted at uncertain intervals, causing farmers to rely primarily on personal experience and knowledge passed down from their parents (Gusti et al., 2022).

Method

This study employs a quantitative and descriptive approach. The quantitative approach enables researchers to measure and statistically analyze the relationships between the studied variables. Meanwhile, the descriptive approach provides a clearer picture of the socio-economic conditions of tobacco farm laborers in Gatak District and their income levels. A purposive sampling method was used to determine the research location, focusing on Klaseman and Kagokan Villages in Gatak District, Sukoharjo Regency. These villages were selected based on their significant tobacco farming activities.

Conducting research in these locations is advantageous because Klaseman and Kagokan are well-known tobacco-producing areas, ensuring that the findings accurately represent the conditions of tobacco farm laborers. These villages also have a large number of farm laborers, facilitating data collection. Additionally, this study allows researchers to directly observe the socio-economic factors affecting farm laborers' incomes, leading to a more in-depth and contextual analysis.

The research was conducted from July to August 2025. The data collection method involved studying the population related to the research focus, including individuals, objects, events, and institutions. The sample consisted of 30% of respondents, with 15 respondents from Kagokan Village and 15 from Klaseman Village. The data analysis method used in this study was quantitative analysis with a multiple linear regression approach. This method helps determine the strength of relationships between variables and predict the dependent variable based on independent variables. The relationship between these variables is expressed in the following equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Tabel 1. Data Analysis Methods

Variable	Coefficient (β)	Description	P Value
Y	-	Experience	-
X_1	β_1	Education	p_1
X_2	β_2	Experience	p_2
X_3	β_3	Age	p_3
X_4	β_4	Family	p_4

E	E	Error	-

Result And Discussion

1. Respondent Characteristics

The characteristics of respondents in this study provide an overview of the conditions and traits of tobacco farmers managing agricultural activities in Kagokan and Klaseman villages, Gatak, Sukoharjo, Central Java. These characteristics include key aspects such as age, education level, farming experience, and household size. Each of these factors plays a crucial role in shaping farmers' decision-making processes, adaptability to new agricultural technologies, and overall productivity. Age distribution reflects workforce dynamics, while education influences knowledge adoption and efficiency in farming practices. Farming experience determines skill levels and resilience in handling agricultural challenges, whereas household size affects labor availability and economic stability. Understanding these characteristics helps policymakers and stakeholders develop targeted strategies to improve farmers' welfare and agricultural sustainability in the region.

1. Age

Productive age refers to the age group generally recognized as having optimal physical, mental, and social capacity to contribute to economic, social, and developmental activities. The International Labour Organization (ILO) and Indonesia's Central Bureau of Statistics (BPS) define the productive age range as 15–64 years. Individuals within this range are expected to be actively engaged in the workforce, driving economic growth and societal progress. A higher proportion of individuals in this category often indicates a strong labor supply, while an aging workforce may pose challenges for sustainability. Understanding the distribution of productive-age individuals within a population helps policymakers and businesses develop strategies to enhance workforce participation and productivity. The following table illustrates the respondent distribution based on productive and non-productive age groups, providing insights into labor dynamics.Tabel 2. Characteristics of Respondents Based on Age

No.	Age Group	Frequency	Presentase
1.	<40	2	6.67%
2.	41-50	3	10.00%
3.	51-60	4	13.33%
4.	61-64	5	16.67%
5.	>64	16	53,33%
	Σ	30	100%

Data Source: Primary Data Analysis 2023

The majority of respondents fall into the age group of over 64 years, totaling 16 individuals or 53.33% of the sample. This dominant segment highlights a higher proportion of non-productive age participants in the study. The prevalence of older respondents suggests a potential aging workforce in the sector, which may impact productivity and labor sustainability. Meanwhile, the remaining age groups—under 40,

41–50, 51–60, and 61–64 years—collectively account for 14 individuals or 46.67% of total respondents. These younger age categories represent a smaller proportion compared to the over-64 group, indicating a possible generational gap in workforce distribution. The following table provides a detailed breakdown of respondents' age groups, offering insights into demographic trends and their implications for labor availability.

1. Education

Education plays a crucial role in shaping farmers' ability to adopt new technologies, alongside their skills and competencies. Higher education levels enhance cognitive abilities, enabling better decision-making and innovative problem-solving in agricultural practices. Knowledge gained through formal education influences farming strategies, improving efficiency and productivity. Educated farmers tend to embrace modern techniques, utilizing data-driven approaches to optimize crop yields and resource management. Exposure to scientific advancements fosters adaptability, allowing laborers to integrate sustainable methods into daily operations. Strong educational backgrounds empower individuals to navigate market trends, access financial resources, and implement risk management strategies effectively. As education levels rise, labor performance improves, creating a positive impact on overall agricultural output. The following table illustrates respondents' educational levels, highlighting their correlation with work efficiency and technological adoption.

Tabel 3. Characteristics of Respondents Based on Education Level

No	Education	Frequency	Presentase
1.	No School	2	6.67%
2	SD	12	40.00%
3	SMP	6	20.00%
4	SMA	10	33.33%
	Σ	30	100%

Data Source: Primary Data Analysis 2023

The data reveals that a significant portion of respondents holds an elementary school education, comprising 40% of the total. Following this, 33.33% of respondents have completed high school, while 20% possess a junior high school education. The smallest group consists of individuals with no formal education, accounting for 6.67%. The total number of respondents in this survey is 30. The educational background of these agricultural laborers is expected to provide them with essential skills for managing rice farming operations, including the ability to calculate costs, revenues, profits, and losses associated with their activities. This foundational knowledge can play a crucial role in enhancing their agricultural practices and overall economic stability.

2. Experience

Farm laborers' experience shapes their income through various interconnected factors. Job type determines task complexity and wage potential across different agricultural roles. Wage patterns fluctuate based on contractual agreements, productivity, and regional standards. Seasonal changes influence work availability, directly affecting earning stability. Skill levels impact efficiency, leading to higher demand and better compensation for experienced workers. Socioeconomic conditions, including land ownership, access to resources, and labor market dynamics, create disparities in income opportunities. Workers with extensive experience often secure better-paying jobs and negotiate favorable terms. Understanding these elements provides insight into the financial well-being of farm laborers. The following table

presents the number and percentage of respondents categorized by farming experience, offering a clearer perspective on how labor tenure correlates with earnings.

Tabel 4. Characteristics of Respondents Based on Experience

No.	Experience	Frequency	Presentase
1.	5-20	9	30.00%
2.	21-40	14	46.67%
3.	41-60	5	16.67%
4.	61-80	2	6.67%
	Σ	30	100%

Data Source: Primary Data Analysis 2023

Data indicates that a significant majority of respondents have work experience ranging from 21 to 40 years, accounting for 46.67% of the total. The second largest group consists of individuals with 5 to 20 years of experience, representing 30% of respondents. Those with 41 to 60 years of experience make up 16.67%, while the smallest group, with 61 to 80 years of experience, comprises only 6.67%. The total number of respondents in this survey is 30 individuals. This distribution of work experience highlights the depth of knowledge and skills present among agricultural laborers, which can significantly influence their productivity and income potential in the sector.Jumlah Anggota Keluarga

Family size can significantly influence the conditions faced by agricultural laborers. As the number of family members increases, financial needs also rise, prompting laborers to work harder to meet these demands. This situation often leads to greater participation in the workforce, as the growing number of dependents encourages laborers to seek additional income sources. The pressure to provide for a larger family can drive agricultural workers to take on more hours or seek supplementary employment, ultimately impacting their overall productivity and economic stability. This dynamic illustrates the critical relationship between family size and the work engagement of agricultural laborers, highlighting the challenges they face in balancing family responsibilities with income generation.

Tabel 5. Characteristics of Respondents Based on Family Members

No.	Family	Frequency	Presentase
1.	1	2	6.67%
2.	2	6	20.00%
3.	3	9	30.00%
4.	4	9	30.00%
5.	5	2	6.67%
6.	6	1	3.33%
7.	8	1	3.33%
	Σ	30	100%

Data Source: Primary Data Analysis 2023

The data reveals that a significant majority of agricultural laborers, specifically 30% of respondents, have 3 to 4 family members. This statistic indicates that many laborers in the region bear considerable family responsibilities, motivating them to work harder to meet their household needs. Larger family sizes often correlate with increased economic demands, which subsequently influences the laborers' participation in the workforce. Additionally, 20% of respondents report having 2 family members, while 6.67% have 5 family members, showcasing a variation in family obligations. This

diversity in family size remains within a range that impacts their productivity and work patterns, highlighting the essential connection between family dynamics and economic participation among agricultural workers.

Respondent's Income

Respondents' income was classified into two, namely the income of farm workers and non-farm workers.

1. Agricultural Income

In this study, agricultural income refers to the earnings that respondents receive from the agricultural sector, measured in rupiah. The income of agricultural laborers is significantly influenced by various factors, including the type of crops managed, harvest seasons, land area, and prevailing wage rates in the region. Additionally, external factors such as weather conditions and market demand can also impact the amount of income received by agricultural workers. As a result, the income of agricultural laborers often fluctuates and is not fixed, depending on economic situations and the agricultural yields achieved. This variability underscores the need for strategies to stabilize income and enhance the financial security of those working in the agricultural sector.

Tabel 6. Characteristics of Respondents Based on Income

No.	Income	Frequency	Presentase
1.	≤1.000.000	5	16.67%
2.	>1.000.000 -<2.000.000	22	73.33%
3.	≥2.000.000	3	10.00%
	Σ	30	100%

Data Source: Primary Data Analysis 2023

According to the data, a significant majority of respondents earn between 1,000,000 and 2,000,000 rupiah per month, accounting for 73.33% of the sample. Meanwhile, 16.67% of respondents report earning ≤ 1,000,000 rupiah, while 10% have an income of ≥ 2,000,000 rupiah. This distribution indicates that most agricultural laborers in this sample fall within a middle-income range. The concentration of earnings in this bracket suggests a level of financial stability for many, although it also highlights the challenges faced by those at the lower end of the income spectrum. Understanding this income distribution is essential for addressing the economic needs and improving the livelihoods of agricultural workers.

2. Non-farm worker income

Income derived from sources outside of agricultural employment encompasses earnings from various types of jobs or ventures. This income can originate from sectors such as industry, services, and trade, providing individuals with additional financial support. Furthermore, it may include revenue generated from self-owned businesses, such as small enterprises or trade activities. Such supplementary income plays a crucial role in enhancing the overall financial stability of individuals, allowing them to diversify their earnings and reduce reliance on a single source. By tapping into these alternative income streams, individuals can better navigate economic fluctuations and improve their quality of life.

Tabel 7. Characteristics of Respondents Based on Non-Farm Labor Income

No.	Income	Frequency	Presentase
1.	Have no Job	21	70%
2.	≤50.000	3	10%
3.	>50.000 -	6	20%

<100.000		
Jumlah	Σ	100%

Data Source: Primary Data Analysis 2023

Data on non-agricultural income reveals that a significant majority of respondents, specifically 70%, do not have any additional income outside their work as agricultural laborers. This finding indicates that most agricultural workers rely entirely on the income generated from the agricultural sector. Meanwhile, 10% of respondents report having a small supplementary income of ≤ 50,000, while 20% earn additional income ranging from 50,000 to less than 100,000. The lack of alternative income sources for the majority of agricultural laborers may stem from limited access to opportunities for supplementary employment outside the agricultural sector. This situation highlights a high dependency on agricultural income, which can fluctuate based on seasonal changes, harvest yields, and prevailing economic conditions.

Multiple Linear Regression Coefficient Test

Variable	β	T	p-value	Sig.
(Constant)	13.800	35.577	.000	***
Education (X1)	.126	2.319	.029	*
Experience (X2)	.345	2.338	.028	*
Age (X3)	-.248	-2.140	.042	*
Family (X4)	-.053	-.509	.615	Ns

Notes: F-Sat = 10.523 (p-value = 0.000 and sig.***); R^2 = 0.628 and $R^{2\ adj}$ = 0.568; *** dan * = significant 99,9% and 95% ; ns = not significant.

1. Simultaneous Influence (F Test)

   The results presented in the table indicate that the F-test yielded an F-value of 10.523 with a significance level of 0.000. Given a significance level of 95% ($p < 0.05$), this comparison leads to the rejection of the null hypothesis (H0). This outcome suggests that at least one or more independent variables significantly contribute to the dependent variable, which in this case is income. Among the independent variables—X1 (Education), X2 (Experience), X3 (Age), and X4 (Family)—there is a strong collective influence on income. This finding underscores the importance of these factors in understanding the dynamics of agricultural laborers' earnings, highlighting that they work together to shape the financial outcomes for these workers.

2. Partial Influence (T Test)

   a. Education (X1)

      The analysis reveals that education has a highly positive and significant impact on the income of agricultural laborers, with a p-value of 0.029. This result is statistically significant at a 95% confidence level, indicating that the relationship between education and income is not due to random chance. Education plays a crucial role in enhancing the productivity and income of agricultural laborers. Higher levels of education equip laborers with better skills and knowledge, enabling them to adopt modern agricultural practices and technologies. This, in turn, can lead to increased efficiency in farming operations, improved crop yields, and ultimately higher income levels. Moreover, educated agricultural laborers are more likely to access information about market trends, agricultural innovations, and best practices, which can

further enhance their productivity. They may also have better negotiation skills when dealing with employers or buyers, allowing them to secure better wages and prices for their produce. In summary, the findings underscore the importance of education as a key factor in improving the economic well-being of agricultural laborers. Investing in education and training programs for these workers could lead to significant improvements in their productivity and income, contributing to their overall quality of life.

b. Experience (X2)

Experience significantly influences the income of agricultural laborers, as indicated by a t-test result showing a significance level of 0.028, which is below the threshold of 0.050. This strong correlation suggests that for every additional year of experience, laborers enhance their skills and efficiency, leading to increased productivity. Experienced agricultural workers often possess a deeper understanding of farming techniques and market dynamics, allowing them to make informed decisions that boost their output. As a result, these laborers command higher wages and are more sought after in the labor market. Their ability to adapt to challenges and implement best practices further solidifies their value, making experience a critical factor in determining income levels in the agricultural sector.

c. Age (X3)

Age significantly influences the income of agricultural laborers, as indicated by a t-test result showing a significance level of 0.042, which is below the 0.050 threshold. The negative regression coefficient of -0.248 suggests that older laborers tend to earn less as they age. Productivity often declines with age, leading to reduced output and lower earnings. Additionally, older workers may struggle to adapt to new agricultural technologies and practices, which can further hinder their efficiency. Many older laborers might opt for lighter tasks that offer lower wages due to decreased health and stamina. This trend illustrates the complex relationship between age and income, highlighting age as a critical factor affecting the earnings of agricultural workers.

d. Family (X4)

Family size does not significantly impact the income of agricultural laborers, as evidenced by a t-test result showing a significance level of 0.615, which exceeds the 0.050 threshold. The regression coefficient of -0.509 indicates that the number of family members has no meaningful effect on laborers' earnings. In the agricultural sector, income structures often rely more on prevailing systems and job opportunities rather than personal factors like family size. This finding highlights the importance of implementing fair wage policies and economic empowerment programs to enhance the welfare of agricultural workers. By focusing on systemic improvements, stakeholders can create a more equitable environment that supports the financial stability of laborers..

2. Coefficient of Determination

The coefficient of determination (R Square) indicates the extent to which the variation in the dependent variable (Income) can be explained by the independent variables in the regression analysis, namely Education (X1), Experience (X2), Age (X3), and Family (X4). In this regression result, the R Square value of 0.628 reveals that 62.8% of the variation in income can be explained by the independent variables in the model. Meanwhile, the remaining

37.2% is attributed to other variables outside the model or factors not examined in this study. The Adjusted R Square (R^2 adj) value of 0.568, or 56.8%, provides a more accurate assessment of model fit as it accounts for the number of independent variables included. Adjusted R^2 is preferred because adding variables can artificially inflate R^2, even if those variables are not relevant. Thus, after adjustment, 56.8% of the variation in agricultural laborers' income is explained by the variables X1, X2, X3, and X4, while 43.2% is influenced by other factors. This indicates that the model is reasonably good but does not fully capture the complexities affecting agricultural laborers' income, as numerous external factors also play a significant role

Conclusion

The study confirms that socio-economic factors, including education, experience, and age, significantly influence the income of tobacco farm laborers. Findings show that higher education and more work experience positively impact earnings, while age has a negative correlation due to reduced physical ability. Field observations support these results, revealing that younger, educated workers adapt better to modern agricultural techniques, leading to increased productivity and income. To address income disparities, policymakers should promote vocational training, improve access to education, and implement fair wage policies. Future research should explore the impact of technology adoption on laborer productivity and analyze the gender-based income gap in the agricultural sector, providing deeper insights into workforce dynamics and economic sustainability.

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