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The Influence of Access to Capital, Transaction Efficiency, Partnerships, and Limited Market Access on Farmers' Dependency on Middlemen in Rice Farming

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A B S T R A C T
This study examines determinants of rice farmers' dependence on middlemen in Sukorejo Village, Kebonsari District, Madiun Regency, East Java. Using an explanatory quantitative survey, primary data were collected from 90 rice farmers through a Likert scale questionnaire. The dependent variable was farmers' dependence on middlemen, while the independent variables were access to capital, transaction efficiency, partnership, and limited market access. Data were analyzed using validity and reliability tests, classical assumption tests, and multiple linear regression. The findings show that all four variables positively and significantly affect dependence, with transaction efficiency as the strongest predictor. The results imply that reducing dependence requires alternative financing, collective marketing, and accessible market information.

INTRODUCTION

Rice farming is a strategic component of rural development in Indonesia because it supports food availability, household income, and the continuity of agricultural livelihoods. In rice-producing villages, production decisions are inseparable from marketing decisions. Farmers require production inputs before planting, liquidity during cultivation, and reliable market channels after harvest. When these conditions are not fully provided by formal institutions or competitive markets, informal actors may become central to both financing and marketing. In many rural rice economies, middlemen are not only buyers of paddy but also providers of farm-gate collection, rapid payment, informal credit, and market access.

This study focuses on Sukorejo Village, Kebonsari District, Madiun Regency, East Java. The village was selected because paddy farming remains an important livelihood activity and farmer-level marketing is still strongly connected to local middlemen. This setting offers a relevant case for explaining why farmers continue to rely on middlemen even though alternative market channels may potentially provide better prices. The issue is not simply whether middlemen are present, but why their role becomes difficult for farmers to replace.

Dependence on middlemen is a complex phenomenon. It cannot be reduced to farmers lack of knowledge or to a simple preference for traditional markets. For many smallholders, selling to middlemen is a rational response to limited working capital, transaction uncertainty, transport constraints, incomplete price information, weak bargaining position, and long-standing personal relationships. Middlemen absorb the harvest quickly, reduce search and transport costs, and sometimes provide cash or production loans before planting. However, the same arrangement may limit farmers' freedom to choose buyers, compare market prices, and negotiate independently at harvest time.

Previous studies have examined farmer middleman relations through market efficiency, transaction costs, patron client relationships, value chain finance, and market participation. Agustina, Sidhi, Artini, and Lisanty (2024) found that rice farmers' dependence on middlemen is related to capital loans, transaction convenience, and limited alternative marketing networks. Winanti, Mutiara, and Febrianti (2024) emphasized that farmer-middleman relationships are socially embedded through trust and repeated transactions. International evidence also shows that limited market access may prevent rice farmers from participating in direct marketing channels (Donkor, Garnevska, Siddique, & Donkor, 2021). These studies suggest that farmer dependence emerges from the interaction of economic, social, and structural factors.

The contribution of this article lies in integrating four determinants in one quantitative model access to capital, transaction efficiency, partnership, and limited market access. Rather than describing the existence of middlemen as a single channel marketing phenomenon, this study operationalizes dependence as a measurable construct and tests the relative effect of each determinant. The local focus on Sukorejo Village is also important because market dependence is context-specific. Farmers decisions are shaped by local buyers, transport

conditions, social norms, and financing options. Accordingly, this study aims to analyze the influence of access to capital, transaction efficiency, partnership, and limited market access on rice farmers dependence on middlemen in Sukorejo Village, Kebonsari District, Madiun Regency.

THEORETICAL REVIEW

Farmer Dependence on Middlemen

Dependence on middlemen refers to the extent to which rice farmers repeatedly sell their harvest to middlemen and perceive difficulty in switching to other buyers. It is reflected in repeated sales to the same buyer, limited ability to access alternative channels, willingness to sell even when prices are not optimal, and the subjective perception that marketing cannot be carried out easily without middlemen. Dependence therefore includes behavioral and perceptual dimensions.

From a rural marketing perspective, middlemen perform functions such as assembling harvests from smallholders, transporting paddy, bearing some marketing risks, providing market information, and connecting rural producers with downstream actors such as rice mills, wholesalers, and retailers. When these functions are not provided by farmer institutions or formal buyers, middlemen become a default channel. The dependence problem arises when useful services are coupled with reduced bargaining power for farmers.

Access to Capital and Dependence

Capital is essential for rice production because farmers must finance land preparation, seeds, fertilizers, pesticides, labor, irrigation-related activities, harvesting, and post-harvest handling before income is received. In smallholder contexts, formal credit is often constrained by collateral requirements, administrative procedures, risk assessment, and the seasonal nature of agricultural income. When formal financing is difficult to obtain, farmers often rely on informal financing from actors embedded in the marketing chain (Villalba, Venus, & Sauer, 2023). Middleman-provided capital may solve short-term liquidity constraints, but it can create an implicit obligation to sell harvested paddy to the capital provider.

H1: Access to capital has a positive and significant effect on rice farmers' dependence on middlemen.

Transaction Efficiency and Dependence

Transaction efficiency refers to the perceived ease, speed, and practicality of selling paddy through middlemen. Farmers may prefer a channel not only because of price, but because it saves time, reduces transport costs, simplifies negotiation, and provides quick cash. Farm gate purchasing is attractive when farmers have limited vehicles, labor, storage capacity, or access to real-time price information. Transaction cost reasoning explains that economic actors tend to choose arrangements that minimize search, negotiation, monitoring, and enforcement costs (Williamson, 1985).

H2: Transaction efficiency has a positive and significant effect on rice farmers' dependence on middlemen.

Partnership and Dependence

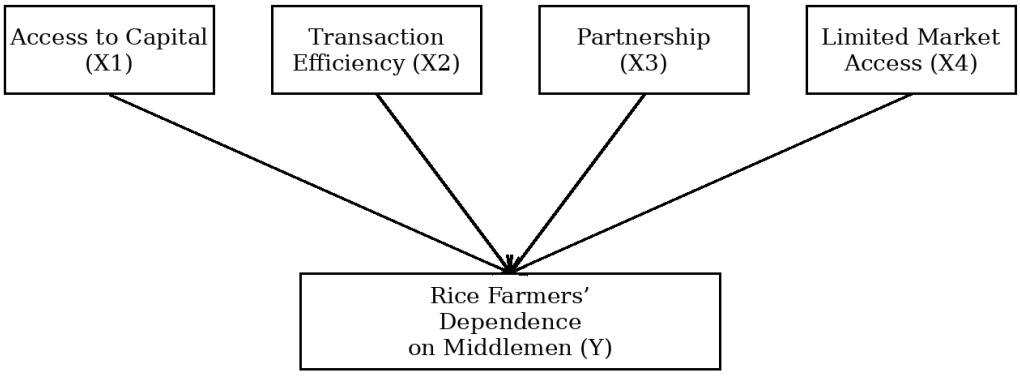
Partnership in this study denotes a socially embedded relationship between farmers and middlemen. It includes trust, interpersonal closeness, longterm cooperation, assistance during difficult periods, and reluctance to switch buyers because of social norms. Social capital theory explains that trust, obligations, and repeated interactions may facilitate economic exchange (Coleman, 1988). In the rice marketing context, this can reduce transaction uncertainty but may also create loyalty that restricts farmers willingness to explore other buyers.

H3: Partnership has a positive and significant effect on rice farmers' dependence on middlemen.

Limited Market Access and Dependence

Limited market access refers to barriers faced by farmers in reaching buyers other than middlemen. These barriers include inadequate price information, lack of buyer networks, distance to alternative markets, transport costs, and limited bargaining power. Farmers with weak market access tend to depend on the nearest and most certain buyer. Ma, Rahut, Sonobe, and Gong (2024) emphasize that linking farmers to markets requires overcoming informational, infrastructural, and institutional constraints.

H4: Limited market access has a positive and significant effect on rice farmers' dependence on middlemen.



Source: Developed by the authors based on the research model.

Figure 1. Conceptual Framework

METHODOLOGY

This study used a quantitative explanatory survey design. The explanatory approach was appropriate because the study tested the effect of several independent variables on one dependent variable. The research was conducted in Sukorejo Village, Kebonsari District, Madiun Regency, East Java. The population consisted of rice farmers in Sukorejo Village. Based on the study data, the estimated population was 674 farmers. The sample size was determined using the Slovin formula with a 10% margin of error, resulting in 87.08

respondents it was rounded and increased to 90 respondents to strengthen the analysis and anticipate incomplete responses.

Primary data were collected using a structured questionnaire. The instrument consisted of 25 Likert scale statements measured from 1 (strongly disagree) to 5 (strongly agree). The dependent variable was farmers' dependence on middlemen (Y), measured using five indicators. The independent variables were access to capital (X1), transaction efficiency (X2), partnership (X3), and limited market access (X4), each measured using five indicators. The score for each construct was obtained by summing item scores, so each variable ranged from 5 to 25.

Data were processed using IBM SPSS. The analysis included validity testing using item total correlation, reliability testing using Cronbach's alpha, descriptive statistics, normality testing using Kolmogorov-Smirnov, multicollinearity testing using Tolerance and Variance Inflation Factor, heteroscedasticity testing using the Glejser approach, and multiple linear regression. The empirical model was formulated as follows:

$$Y = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots (1)$$

In Equation (1), Y represents farmers' dependence on middlemen, X1 represents access to capital, X2 represents transaction efficiency, X3 represents partnership, X4 represents limited market access, α is the constant, β1 to β4 are regression coefficients, and ε is the error term. Hypotheses were evaluated at the 5% significance level.

Table 1. Operationalization of Research Variables

Variable	Code	Operational Definition	Main Indicators	Items
Farmers' dependence on middlemen	Y	Attachment in marketing decisions, reflected in repeated sales to middlemen and difficulty switching buyers.	Repeated sales, switching difficulty, buyer preference, price tolerance, perceived dependence.	Y1-Y5
Access to capital	X1	Perceived limitation of internal capital and reliance on capital assistance related to middlemen.	Capital adequacy, need for advances, formal credit barriers, usefulness of middleman capital.	X1.1-X1.5
Transaction efficiency	X2	Perceived ease, speed, and practicality of selling paddy through middlemen.	Process simplicity, farm-gate collection, low additional cost, transaction speed, time saving.	X2.1-X2.5
Partnership	X3	Closeness, trust, and social attachment between farmers and middlemen.	Relationship quality, trust, assistance, long-term relation, reluctance to switch.	X3.1-X3.5
Limited market access	X4	Barriers faced by farmers in	Price information, alternative market	X4.1-X4.5

		accessing alternative buyers and price information.	access, buyer networks, additional cost, market limitation.	

RESULTS

Descriptive Statistics

The descriptive results show that farmers dependence on middlemen was relatively high compared with the explanatory variables. The mean score for dependence was 17.8889 with a standard deviation of 2.39120. The four independent variables had mean scores ranging from 16.5222 to 16.8667. This indicates that respondents generally perceived moderate-to-high levels of capital constraints, transaction efficiency, partnership, and limited market access.

Table 2. Descriptive Statistics of Research Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Access to capital	90	5.00	25.00	16.5889	4.29239
Transaction efficiency	90	5.00	25.00	16.8667	4.41703
Partnership	90	7.00	25.00	16.7333	4.27115
Limited market access	90	8.00	25.00	16.5222	3.63883
Farmers' dependence	90	15.00	20.00	17.8889	2.39120

Validity and Reliability Tests

The validity test indicates that all questionnaire items had correlation coefficients above the r-table value of 0.207. The lowest item correlation was 0.831 and the highest was 0.987. This confirms that all indicators were valid for measuring their respective constructs. Reliability was also satisfactory because all Cronbach's alpha values exceeded 0.900, which indicates very strong internal consistency.

Table 3. Validity and Reliability Summary

Construct	Item Correlation Range	r-table	Validity Decision	Cronbach's Alpha	Reliability Decision
Access to capital	0.855-0.911	0.207	Valid	0.928	Reliable
Transaction efficiency	0.864-0.910	0.207	Valid	0.929	Reliable
Partnership	0.851-0.903	0.207	Valid	0.921	Reliable
Limited market access	0.831-0.874	0.207	Valid	0.900	Reliable
Farmers' dependence	0.934-0.987	0.207	Valid	0.981	Reliable

Classical Assumption Tests

The Kolmogorov-Smirnov normality test produced an Asymp. Sig. value of 0.099, indicating normally distributed residuals. The multicollinearity test showed Tolerance values between 0.933 and 0.995 and VIF values between 1.005 and 1.071, indicating that the independent variables were not highly correlated. The Glejser heteroscedasticity test produced significance values greater than 0.05 for all predictors, indicating homoscedastic residuals.

Table 4. Summary of Classical Assumption Tests

Test	Indicator	Result	Decision
Normality	Kolmogorov-Smirnov Asymp. Sig.	0.099	Residuals are normally distributed
Multicollinearity	Tolerance	0.933-0.995	No multicollinearity
Multicollinearity	VIF	1.005-1.071	No multicollinearity
Heteroscedasticity	Sig. values	0.108-0.956	No heteroscedasticity

Multiple Linear Regression

The multiple linear regression results show that all independent variables had positive coefficients and statistically significant effects on farmers' dependence on middlemen. The estimated regression equation is presented as follows:

$$Y = 2.601 + 0.229X1 + 0.292X2 + 0.233X3 + 0.162X4 \quad \ldots\ldots\ldots\ldots\ldots (2)$$

Table 5. Multiple Linear Regression Results

Predictor	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
Constant	2.601	0.988	-	2.633	0.010	-	-
Access to capital	0.229	0.031	0.411	7.485	0.000	0.933	1.071
Transaction efficiency	0.292	0.029	0.539	10.143	0.000	0.995	1.005
Partnership	0.233	0.031	0.416	7.623	0.000	0.944	1.060
Limited market access	0.162	0.035	0.246	4.619	0.000	0.990	1.011

The coefficient of determination shows that R Square was 0.761 and Adjusted R Square was 0.750. Thus, 76.1% of the variation in farmers dependence on middlemen was explained by access to capital, transaction efficiency, partnership, and limited market access, while the remaining 23.9% was explained by factors outside the model. The F-test result confirms that the regression model was statistically significant.

Table 6. Model Summary and ANOVA

Model Indicator	Value
R	0.872
R Square	0.761
Adjusted R Square	0.750
Std. Error of the Estimate	1.19591
F-statistic	67.704
Sig. F	0.000

DISCUSSION

The Effect of Access to Capital on Dependence

The first finding shows that access to capital has a positive and significant effect on rice farmers' dependence on middlemen. This means that the more farmers perceive financing from middlemen as important for the continuity of rice farming, the more likely they are to remain attached to middlemen as their main marketing channel. In the study area, capital is not only a production input issue it becomes a marketing attachment because financing and selling are connected in the same informal relationship.

This result is theoretically consistent with rural credit market problems. Smallholders often face difficulties in obtaining formal credit because of collateral limitations, administrative requirements, uncertain income cycles, and production risk. When formal financing is difficult, informal financing from trading partners becomes attractive because it is faster and more flexible. However, this flexibility may be exchanged for marketing loyalty. Farmers who receive financial help may feel economically or morally expected to sell their harvest to the same party. This confirms the argument that value-chain finance can help solve liquidity constraints while simultaneously creating dependency risks (Villalba et al., 2023).

Transaction efficiency is the strongest determinant in this study. This finding is important because it challenges the assumption that farmers depend on middlemen only because of debt or lack of market knowledge. Farmers may continue selling to middlemen because the channel works efficiently for their immediate needs. Middlemen commonly come to the farm, reduce transport burdens, simplify negotiation, and provide quick payment. These services are valuable when farmers face limited time, limited labor, and urgent liquidity needs after harvest.

The implication is that any alternative marketing channel must compete not only on price but also on service quality. A cooperative or rice mill that offers a slightly higher price may still be less attractive if farmers must bear transport costs, wait longer for payment, or face complex procedures. Therefore, the dependence problem cannot be solved merely by telling farmers to seek better prices. Alternative institutions must match or exceed the transaction convenience currently provided by middlemen. This interpretation aligns with transaction cost economics, which emphasizes that actors choose arrangements that reduce practical costs and uncertainty (Williamson, 1985).

The Effect of Partnership on Dependence

Partnership also has a positive and significant effect on dependence. This confirms that farmer-middleman relations are socially embedded. Trust, repeated transactions, assistance during difficulties, and longterm relationships create a sense of security for farmers. In a rural setting, such relationships are often stronger than formal contracts because they are supported by reputation and social proximity. Farmers may prefer dealing with known buyers because the risk of conflict, delayed payment, or rejection is perceived to be lower.

However, social embeddedness can create a trade off. On one side, it reduces uncertainty and supports continuity of exchange. On the other side, it may reduce farmers' willingness to compare alternative buyers, especially when farmers feel reluctant to disappoint a middleman who has helped them. This finding supports social capital theory, which recognizes trust and reciprocity as resources that facilitate cooperation (Putnam, 1993). In this case, the same social capital that supports marketing stability may also preserve dependency.

The Effect of Limited Market Access on Dependence

Limited market access has a positive and significant effect on dependence. Farmers who lack price information, buyer networks, transport options, or direct

links to rice mills have fewer realistic alternatives. In such conditions, the middleman becomes the most accessible market institution. The issue is not merely the physical existence of alternative buyers, but whether those buyers are reachable, trusted, timely, and affordable for farmers.

This result supports the market access literature, which argues that smallholders need information, infrastructure, institutions, and bargaining networks to participate effectively in markets (Ma et al., 2024). If farmers cannot compare prices or negotiate with several buyers, their bargaining position remains weak. Therefore, improving market access should include price transparency, collective selling arrangements, linkages with rice mills, and better rural logistics.

Integrated Interpretation

Taken together, the results show that dependence on middlemen is multidimensional. Capital constraints, efficient transactions, social partnership, and limited market access reinforce one another. A farmer who lacks capital may accept support from a middleman; the same middleman offers easy transactions repeated exchanges build trust; and the absence of alternative markets prevents switching. This pattern explains why dependence can persist even when farmers understand that prices from middlemen may not always be the highest.

The most feasible development strategy is to replicate the useful functions of middlemen through farmer oriented institutions while reducing the risks of dependency. Farmer groups, cooperatives, village owned enterprises, and extension agencies can collaborate to provide seasonal financing, collective harvest aggregation, transparent weighing, price information, and buyer contracts with rice mills. The objective should not be to demonize middlemen, but to create a fairer marketing environment in which farmers have real choices and stronger bargaining power.

CONCLUSIONS AND RECOMMENDATIONS

This study concludes that access to capital, transaction efficiency, partnership, and limited market access positively and significantly influence rice farmers dependence on middlemen in Sukorejo Village, Kebonsari District, Madiun Regency. The regression model explains 76.1% of the variation in farmers dependence. Transaction efficiency is the strongest determinant, followed by partnership, access to capital, and limited market access based on standardized effects.

The findings demonstrate that dependence on middlemen is not merely a price-related problem. Farmers continue to rely on middlemen because middlemen provide services that are not fully supplied by formal institutions or alternative markets. They offer quick transactions, direct harvest collection, informal financing, and socially trusted relationships. However, this arrangement may limit farmers' bargaining position and reduce their freedom to choose the most beneficial buyer.

The study recommends strengthening farmer institutions, improving access to flexible seasonal credit, expanding market information systems, and developing collective marketing channels that can match the transaction

efficiency of middlemen. Village owned enterprises, cooperatives, and farmer groups can play a central role by aggregating paddy, linking farmers to rice mills, improving price transparency, and facilitating fair financing schemes.

FURTHER STUDY

This study is limited to one village and uses cross sectional survey data, so the findings should be interpreted within the local context of Sukorejo Village. Future research should include additional variables such as paddy price, farm size, household liquidity pressure, storage capacity, farmer group participation, financial literacy, and digital market information access. Comparative studies across villages or districts would also help explain whether the same determinants operate similarly in different rice marketing systems.

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