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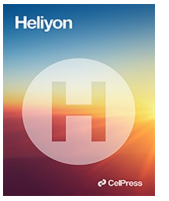

Candidate at Haramaya University and Oromia Agricultural Research Institute, Ethiopia
Professor of Agricultural Economics and CEO of Ethiopian Economics Association, Ethiopia
Senior Researcher at Ethiopian Economics Association, Ethiopia
Senior Researcher at International Livestock Research Institute (ILRI), Ethiopia

Keywords:

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1. Introduction

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2. Methodology of the study

2.1. Description of the study area

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2.2. Sampling design and sample size determination

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kebeles

kebeles

$$N = \frac{Z^2 pq}{e^2} = \frac{(1.96)^2(0.5)(0.5)}{(0.05)^2} = 385$$

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2.3. Data sources, types and methods of data collection

$$Y_i^* = \beta' X_{jk} + u_i$$

$$Y_i = \left\{ \begin{array}{c} Y_i^* = L \ \ if Y_i^* \le L \\ Y_i^* = L \ \ if \quad L < Y^* < U \\ Y_i^* = U \ \ if Y^* \ge U \end{array} \right\}$$

Y_i

X_{jk} = u_i

δ

$$L(\beta, \delta \,/\, y_j X_j L_{1j} L_{2j}) = \Pi_{yj-L1j} \varphi\left(\frac{L_{1j} - \beta^* X_j}{\delta}\right) \Pi_{yj} = y_j^* . \varphi\left(\frac{y_i - \beta^* X_j}{\delta}\right) \Pi_{yj-L_{2j}} \varphi\left(\frac{L_{2j} - \beta^* X_j}{\delta}\right)$$

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3. Results and discussion

3.1. Descriptive analysis of variables in tobit model for farm mechanization level

3.2. Asset ownership by sex of household head in the study area

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3.3. Types and level of farm mechanization technologies

Table 1

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Table 2

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3.4. Major constraints in mechanized agriculture in the study area

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Table 3

Table 4

Table 5

“ ” “ ” “ ”

3.5. Determinants of farm mechanization level: tobit model output

Table 6

	$\frac{\partial E(y*\|x)}{\partial x}=\beta$	>	$\frac{\partial E(y\|x)}{\partial x}=\beta\Phi\left(\frac{x\beta}{\sigma}\right)$	$\frac{\partial \Pr(y> \|x)}{\partial x}=\varphi\left(\frac{x\beta}{\sigma}\right)\frac{\beta}{\sigma}$
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4. Conclusion and recommendation

4.1. Conclusion

4.2. Recommendations

Land clustering, introduction of land augmenting mechanization technologies and consolidation:

Credit Facilitation for custom service providers:

Establishing nearby custom service centers ,

Education and training of farmers

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Author contribution statement

Data availability statement

Declaration of competing interest

Appendix A. Supplementary data

ANNEXESAnnex. Farm machinery data on national and study area zones

References

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second ed.

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