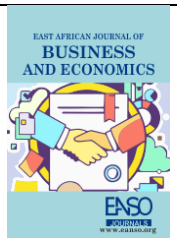
Article DOI: https://doi.org/10.37284/eajbe.6.2.1576



East African Journal of Business and Economics
eajbe.eanso.org
Volume 6, Issue 2, 2023
Print ISSN: 2707-4250 | Online ISSN: 2707-4269
Title DOI: https://doi.org/10.37284/2707-4269

EANSO
EAST AFRICAN NATURE & SCIENCE ORGANIZATION

Original Article

Influence of Entrepreneurship Practices on Agribusiness Transformation in Tanzania: A Vertical Integration Role on Grains

Peter Mkufya[1], Prof. Deus Ngaruko, PhD[2] & Dr. Timothy Lyanga, PhD[2]*

[1] Must Lead Group; P. O. Box 25247 Dar es Salaam, Tanzania.
[2] The Open University of Tanzania, P. O. Box 23409 Dar es Salaam.
* Correspondence Email: saraeliakim84@gmail.com

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

Date Published: *16 November 2023*

Keywords: *Entrepreneurship Practices, Vertical Integration, Agribusiness and Agribusiness Transformation*

ABSTRACT

The study examined the influence of entrepreneurship practices on agribusiness transformation among agribusiness owners in the Mbeya region. Specifically, it examined the effect of agricultural production technologies on postharvest storage and assessed the effect of marketing practices and agro-processing practices on agribusiness transformation. It explored the effect of vertical function on agribusiness transformation on grains. A cross-sectional study design consisting of both qualitative and quantitative data was applied. A sample of 254 agribusiness owners involved in grain production was purposively selected. The study used interviews and structured questionnaires to collect primary data. The reliability and validity test generated an estimated Cronbach's Alpha value of 0.889, which indicates good internal consistency. Multiple Ordinal Logistic Regression was used to determine the influence of entrepreneurship practices on agribusiness transformation. The finding shows that there is insignificant influence ($p > 0.05$) of agricultural production technology practices on agribusiness transformation, whereas postharvest storage, marketing and agro-processing practices indicate significant influence on agribusiness transformation ($P<0.05$). However, the moderation role of vertical function reveals significant negative prediction (-1.193) on agribusiness transformation. Correlation analysis reveals a significant positive, strong correlation between marketing practices and total agribusiness transformation. Government and key actors in the agribusiness value chain are advised to formulate and implement appropriate policies, programs, and strategies to enhance appropriate entrepreneurship practices necessary for agribusiness transformation.

APA CITATION

Mkufya, P., Ngaruko, D. & Lyanga, T. (2023). Influence of Entrepreneurship Practices on Agribusiness Transformation in Tanzania: A Vertical Integration Role on Grains. *East African Journal of Business and Economics*, *6*(2), 103-124. https://doi.org/10.37284/eajbe.6.2.1576

CHICAGO CITATION

Mkufya, Peter, Deus Ngaruko and Timothy Lyanga. 2023. "Influence of Entrepreneurship Practices on Agribusiness Transformation in Tanzania: A Vertical Integration Role on Grains". *East African Journal of Business and Economics* 6 (2), 103-124. https://doi.org/10.37284/eajbe.6.2.1576.

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

HARVARD CITATION

Mkufya, P., Ngaruko, D. & Lyanga, T. (2023) "Influence of Entrepreneurship Practices on Agribusiness Transformation in Tanzania: A Vertical Integration Role on Grains", *East African Journal of Business and Economics*, 6(2), pp. 103-124. doi: 10.37284/eajbe.6.2.1576.

IEEE CITATION

P., Mkufya, D., Ngaruko & T., Lyanga "Influence of Entrepreneurship Practices on Agribusiness Transformation in Tanzania: A Vertical Integration Role on Grains", *EAJBE*, vol. 6, no. 2, pp. 103-124, Nov. 2023.

MLA CITATION

Mkufya, Peter, Deus Ngaruko & Timothy Lyanga. "Influence of Entrepreneurship Practices on Agribusiness Transformation in Tanzania: A Vertical Integration Role on Grains". *East African Journal of Business and Economics*, Vol. 6, no. 2, Nov. 2023, pp. 103-124, doi:10.37284/eajbe.6.2.1576.

INTRODUCTION

The transformation process in agriculture has been observed, theorised about and known since the eighteenth century (Timmer, 1988). However, the concept of agricultural growth embedded in agribusiness transformation is a recent phenomenon (Vermeulen *et al.*, 2018). In order to safeguard the economic gain and turn smallholder farms into profitable rural businesses that generate surpluses and feed the global population, which is expected to grow to about 8.5 billion by 2030 (UNCTAD, 2018; AGRA, 2017), studying agribusiness transformation is of paramount importance. Different paradigms regarding agribusiness transformation emerged (AGRA, 2018; Vermeulen *et al.*, 2018; Bachmann *et al.*, 2017; WB, 2016). Some of the paradigms linked agribusiness transformation with the introduction of new varieties, widespread application of agricultural technologies, market demand, and governance in terms of policy implementation, for instance, adoption of fruit trees in Morocco, widespread promotion of large-scale irrigated monoculture in Ethiopia and vineyard in United Kingdom (Vermeulen *et al.*, 2018).

African countries, including Tanzania, have had their agribusiness sub-sector confronted by poor agricultural production technology and low or no access to mechanisation; most technologies in agriculture are still primitive and require backbreaking manual work (ACET, 2017). Consequently, the sector, characterised by low product quality standards, failed to take advantage of the long growing seasons as only about 5.4% of agriculture is irrigated, low productivity for both land and labour, which limits product access to local as well as international markets (ACET, 2017; GoT, 2012). Due to poor access to agricultural markets, rural farmers have long depended on subsistence farming, and other participants (traders, consumers, intermediaries) are benefiting more.

Agricultural markets are highly vulnerable to domestic and global food prices. As such, on the domestic side, staple food price inflation is lower in countries with greater local production and among products with lower consumption shares (Okou *et al.*, 2022). Likewise, the market channels of crops, for instance, grains, have many intermediary buyers and processors between producers and consumers (USDA, 2018). In order to pave the way for the participation of cooperatives and private traders in the marketing aspects of all agricultural crops in a competitive marketing environment for all actors (producers, traders, processors and exporters) at all levels, the Tanzanian government, among other restructurings, embarked on several decontrol of marketing systems such as decontrol of non-traditional export crops in 1986, food crops in 1989 and traditional export crops in 1993/94 marketing season (URT, 2008). Furthermore, it enacted the Tanzania Agricultural Marketing Policy (AMP), implemented the Agricultural Sector Development Programme phase two (ASDP II), formulated the Agricultural Sector Development Strategy (ASDS-II), and infrastructure improvement (REPOA, 2013; URT, 2013).

Moreover, postharvest losses of agricultural produce in Tanzania remain significantly high. Poor postharvest storage practices and unreliable weather conditions contribute to the rapid deterioration of harvested crops (Suleiman, 2017).

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

As a result, maintaining staple food crops throughout the year and managing cash flow becomes a stern predicament that faces smallholder farmers (Channa*et al.,* 2022). Global initiatives such as the 2009 Comprehensive Framework for Action, Global Agricultural and Food Security Programme, and the Committee on World Food Security (CFS), together with Africa Union's Comprehensive Africa Agricultural Development Program (CAADP) and the 2014 Africa Union Summit in Malabo, collectively among other parameters, address management and mitigation of postharvest losses in various level to curb food shortage, alleviate poverty and improve nutrition (URT, 2019). Up to 47 per cent of USD 940 billion is needed to eradicate hunger in Sub-Saharan Africa in 2050, mainly to support the postharvest sector (FAO & World Bank, 2010). Until the 1970s, Tanzania had no policy on storage for agricultural products. However, following the appearance of the Large Grain Borer (LGB) in the 1980s, resulting in high postharvest losses of cereals, which endangered food security in the country, the government began to support farmers to reduce postharvest losses (REPOA, 2013). The country also enacted the National Postharvest Management Strategy (NPHMS) 2019-2029 with ambitions to facilitate and build the capacity of postharvest actors in order to reduce losses and increase farmers' income as well as food and nutrition values (URT, 2019). Nevertheless, there is still a knowledge gap in postharvest loss management; thus, the stakeholders' knowledge involved in the country is not good enough to prevent losses (Kereth *et al.*, 2013).

Similarly, agro-processing facilities in most parts of the country remain underdeveloped. Financial constraints, bureaucracy, technological difficulties, raw materials quality and quantity are associated with impediments to agro-processing advancement (Nkwabi *et al.,* 2019). Other predicaments in the line include poor storage facilities, unreliable sources of supply, experience, processing skills and energy costs (Jahari *et al.,* 2017; Isinika & Kipene, 2016). Given that there is so much potential in the Tanzanian agribusiness subsector (AGRA, 2021) and in order to safeguard the economic gain and turn smallholder farms into profitable rural businesses that generate surpluses and feed the global population, which is expected to grow to about 8.5 billion by 2030 (UNCTAD, 2018; AGRA, 2017). It is evident that the knowledge of entrepreneurship practices and their influence on agribusiness transformation is a well-timed requirement. This study was conducted to investigate the influence of entrepreneurship practices on agribusiness transformation in Tanzania, specifically delving into agricultural production technology, postharvest storage, marketing, and agro-processing practices.

Hypotheses

General null hypotheses: The influence of entrepreneurship practices on agribusiness transformation in Tanzania is insignificant.

Specific null hypotheses

H_o: There is an insignificant influence of agricultural production technology practices on agribusiness transformation

H_o: The effect of postharvest storage practices on agribusiness transformation in insignificant

H_o: The marketing practices have an insignificant influence on agribusiness transformation

H_o: There is no significant effect of agro-processing practices on agribusiness transformation

LITERATURE REVIEW

Various scholars analysed empirically agricultural production technologies, postharvest storage, marketing, and agro-processing practices (Ameh *et al.,* 2017; Naminse & Zhuang, 2018; Ansah *et al.,* 2018; Mignouna *et al.,* 2017). It is evident that farming technologies in Africa, i.e., cultivation tools such as tractors and power tillers or animal draught, are still primitive and require backbreaking manual work (ACET, 2017). Similarly, The Tanzania national agricultural policy and the government programs recognise storage, market, mechanisation, transportation,

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

and agro-processing facilities as important infrastructure for agribusiness transformation, though largely underdeveloped (URT, 2013). On the other hand, Wang and Huang (2018) affirmed that application of technology investment can promote agricultural economic growth, thus agribusiness transformation. Based on Structure Conduct Performance theory, agribusiness transformation emanates from total structural conduct and performance shift from traditional subsistence agricultural production to modernised commercial agricultural production with sustainable increased efficiency, innovation, diversification, and value-addition (WB, 2016). Entrepreneurship practices in agribusiness are central to agricultural and agro-related production across agro-industries and agro-enterprises (Naminse& Zhuang, 2018). There is little future for farmers unless they become more entrepreneurial in the way they run their farms (Kahan, 2013).

Past studies on postharvest storage practices indicate that farmers lost an average of 9.6% of stored yam in 2 months, while traders lost 3.3% of yam stored in a month (Kumar & Kalita, 2017; Ansah *et al.*,2018). Although postharvest storage practices enhanced the welfare outcomes for traders in Ghana, there was no statistically significant effect detected for farmers (Ansah *et al.*,2018). Nevertheless, there has been mixed opinion with regard to the profitability of postharvest storage facilities (Abass *et al.*, 2019). Until the 1970s, Tanzania had no policy on storage for agricultural products; however, following the appearance of the Large Grain Borer (LGB) in the 1980s, resulting in high postharvest losses of cereals, which endangered food security in the country, the government began to support farmers to reduce postharvest losses (REPOA, 2013).

Furthermore, several studies indicate a positive and significant effect of marketing practices in agribusiness; for example, Mignouna *et al.* (2017) categorically found that the yield of yam (productivity) is positively and significantly related to the probability of participating in marketing activities (marketing practices). The higher the yam yields, the greater the tendency for the farmers to sell yam. However, the latter found the price of yam to be negative, albeit insignificant, associated with the decision to sell. Additionally, a study by Okou *et al.* (2022) revealed the net import dependence, consumption share of staples, global food prices, and real effective exchange rates as key factors that govern changes in local staple food prices, hence market dynamics. Similarly, adverse shocks such as natural disasters and wars bring 1.8 and 4 per cent staple food price surges, respectively. Likewise, the study by Omayio *et al.* (2020) affirms market access to be significantly different ($p \leq 0.05$) between two geographical locations. Linking the structure, conduct and performance theory, Gichangi (2010) found that not much sweet potato sales promotion was carried out apart from some sorting and grading. These findings suggest that the formation of the sweet potato price mainly depended on the spontaneous regulation of the sweet potato market; the setting of price among the actors mainly relied on free bargaining price. Kizito (2011) emphasised the importance and use of improved agricultural market information in developing economies.

Similarly, agro-processing practices influence the price of farm commodities due to value addition. Omayio*et al.* (2020) found that most of the respondents (60%) did not know of any processed guava products irrespective of their levels of education and gender ($p > .05$). Despite the high production of guavas in the country, processing remains extremely low (3.1%) due to limited knowledge (74.8%) and lack of appropriate equipment (65.9%) leading to the fruit's economic under exploitation (Omayio *et al.*, 2020). Similarly, a study by Asom and Ijirshar (2016) revealed agricultural value added had a positive but insignificant influence on the growth of the Nigerian economy in both the short and long run. Relatedly, a study by WB (2016) reveals that most agribusiness products are raw commodities, typically sold at prices lower than those of leading competitors due to a lack of value addition (processing).

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

MATERIALS AND METHODS

Sampling Procedure and Study Area

The study adopted a cross-sectional research design, whereas purposive sampling was employed to choose active grains agribusiness owners from the two districts, two wards and villages, whereby a total of 700 sample frame was established from both districts of Mbozi and Mbeya urban. The vertical and horizontal integration model indicators were used to form two groups of vertical integrated against non-vertical integrated agribusiness owners. The study respondents were drawn from each group using the probability method of simple random sampling to minimise researcher bias and enhance reliability. The sample size was estimated using Yamane's (1967) sampling method (Adam, 2021), illustrated below.

$$\boldsymbol{nY = N/(1 + Ne^2)} \quad (1)$$

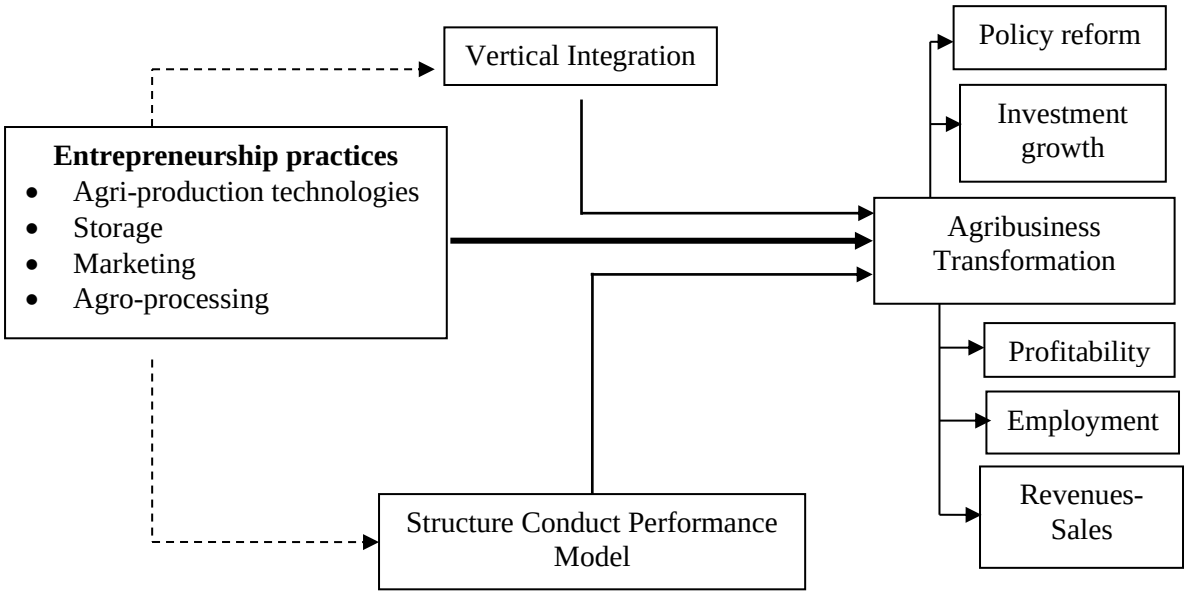
Where: *N* = known population and e = error level or % per cent confidence interval or alpha level. For a 0.95 confidence interval, e = 0.05.

Thus, a total of 254 sample size was randomly selected to obtain the primary data used to assess the influence of entrepreneurship practices on agribusiness transformation in Tanzania.

Variables Measurement

Agribusiness transformation variables were measured using a five-point Likert scale (1-5) as a proxy to describe the opinion of agribusiness owners against specific construction of agribusiness transformation. The vertical integration model was used to govern the moderation effect of the study. The study improvises on vertical integration and Structure Conduct Performance Model to measure the influence of entrepreneurship practices on agribusiness transformation, as illustrated in *Figure 1*.

Figure 1: The Model framework for the influence of entrepreneurship practices on agribusiness transformation.



The levels of measurement of explanatory variables were identified to be nominal, ordinal and interval. Each of the variables (Profit, Sales, Capital, and Employment) assigned several constructions ranging from 5 to 7, making up a total of 23 indicators, i.e., 7 for profit, 5 for Sales, 6 for Capital and 5 for Employment as detailed in *Table 1*, these were later used to calculate total agribusiness transformation scores. Furthermore, the latter is used in the multiple ordinal regression model as the dependent variable.

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

Table 1: Measurement of agribusiness transformation

Agribusiness Transformation	# of indicators	Scores (Min & Max)	Mean Interpretation
Profit Generation	7 items	7 - 35	If M = 7- 17 Poor 18-27 Moderate 28-35 Excellent
Sales Status	5 items	5 – 25	If M = 5-12 Poor 13-20 Moderate 21-25 Excellent
Capital Investment	6 items	6 – 36	If M = 6 – 16 Poor 17-27 Moderate 28-36 Excellent
Employees Number	5 items	5 - 25	If M = 5-12 Poor 13-20 Moderate 21-25 Excellent
Total AT	23	23 - 121	If M=23-40 Poor; If M=41-80 Moderate; If M=81-121 Excellent

Source: Research Data, 2023

Conversely, independent variables comprised agricultural production technology, postharvest storage, marketing and agro-processing practices measured in the similar (1-5) Likert point scale. The farm size, age and education level of the respondents are included in the model. The complete list of individual variables and measurements is summarised in *Table 2*

.

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

Table 2: Independent Variables Measurement

	Description	Measurement
i. Agricultural Production Technology Practices (APT)	Tractors (TRAC), Power Tillers (PTIL), Animal plough (ANPLO), Hand hoe (HHOE)	Equipment used to simplify farming activities measured by the Likert scale
ii. Postharvest Storage Practices (STORP)	Local Storage (STORLO) Improved Storage (STORIMP) Others (STOROTH)	Keeping grain using local methods, Likert scaled Keeping grains using modern methods, Likert scaled Alternative methods of keeping grains, Likert scaled
iii. Marketing Practices (MAKP)	Promotion (PROM) Branding and Packaging (BRAPA) Grading and Pricing (GRAPRI)	Advertising products to enhance sales, Likert Scaled Products labelling and formal wrapping, Likert scaled Setting categories and selling values per unit based on quality and quantity, Likert scaled
iv. Agro Processing Practices (APRP)	Primary processing (PRIMP) Simple machines (SIMACH) Advanced machines (ADMACH)	Grain processing using human power, Likert scaled Value addition using traditional/simple machine, Likert scaled Value addition using modern machines, Likert scaled
v. Moderation	Vertical Integration (VI) Horizontal function (HF)	Upstream and downstream performance of the firm, Likert scaled Same value chain performance and growth
vi. Demographic	Area planted Education level Age	Land cultivated for grain, continuous (in Ha's) Highest level of formal education attained, categorical variable. Number of years of respondents, Continuous (in years)

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

Econometric Equation

Linking the variables tabulated above and adopting the empiricism paradigm, the following regression equation model was applied to estimate the influence of entrepreneurship practices on agribusiness transformation among grains agribusiness owners in Tanzania.

$$ATi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \ldots\ldots\ldots\ldots + \beta n X n + \varepsilon i \quad (2)$$

Whereby: ATi = Agribusiness Transformation, β_0= Intercept, which represents AT when all independent variables are zero; β_1 to βn = estimated coefficients (to be generated); X_1 to X_5 = Independent or predictor variables, representing the change in the AT for a one-unit change in the relevant predictor variable while holding the other variables constant; εi = Random error term,

The specific independent variables were incorporated in equation one above to generate a regression equation two as follows:

$$AT = \beta 0 + \beta 1 APT + \beta 2 STORP + \beta 3 MAKP + \beta 4 APRP + \beta 5 VF + \beta 6\, HF + \varepsilon i \quad (3)$$

Since each concept in equation two consists of several dimensions, as indicated in *Table 2*, equation two was transformed into complete econometric equation three as below;

$$TAT = \beta_0 + \beta_1 TRAC + \beta_2 PTIL + \beta_3 ANPLO + \beta_4\, HHOE + \beta_5 STORLO + \beta_6 STORIMP + \beta_7 TOROTH + \beta_8 PROM + \beta_9 BRAPA + \beta_{10} GRAPRI + \beta_{11} PRIM + \beta_{12} SIMACH + \beta_{13} ADMACH + \beta_{14} VF + \beta_{15} HF + \varepsilon i \quad (4)$$

Whereby: TAT = Total Agribusiness Transformations; TRAC = Tractors, PTIL = Power Tillers, ANPLO= Animal Plough, HHOE = Hand Hoe, STORLO = Local Storage, STORIM*P* = Improved Storage, STOROTH = Other storages practices, PROM = Promotion, BRAPA = Branding and Packaging, GRAPRI = Grading and Pricing, PRIM = Primary processing, SIMACH = Simple machines, ADMACH = Advanced machines, VF = Vertical Function, HF = Horizontal function and εi = Random error term.

Data Analysis

The data from questionnaires were cleaned and coded using Excel and SPSS IBM Statistics Version 26, respectively. Descriptive analysis for both independent and dependent variables was carried out using the occurrence measure of per centage. Data were recoded into different variables to generate categorical variables which relate to the data processing matrix developed to assess the effect of entrepreneurship practices on agribusiness transformation, i.e., poor, moderate, or excellent. Correlation analysis was carried out to ascertain the moderation effect of vertical and horizontal functions and specific entrepreneurship practices on agribusiness transformation. Moreover, econometric analysis was undertaken using multiple ordinal regression analysis after the normality test affirmed the use of a non-parametric test to rule on the study hypothesis. The data tests carried out and passed appropriately include validity and reliability, normality tests, as well as heteroscedasticity, homoscedasticity, and multicollinearity.

Validity and Reliability Tests

The reliability of data is the degree to which the research method produces stable and consistent results. Thus, a specific measure is considered to be reliable if its application on the same object of measurement a number of times produces stable and consistent results (Heo *et al.*, 2015; Kothari, 2009). In order to ensure the reliability of research results, respondents were interviewed at their convenience and in the appropriate environment; in so doing, participant bias and errors were avoided. It was also considered by the researcher and enumerators that a reasonable number of questionnaires were filled per day to avoid researcher errors, which might have resulted from the researcher and enumerators interviewing so many respondents a day. The use of statistical tools played a key role in ensuring researcher bias was avoided.

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

Schunn *et al.* (2016) precisely state validity as a mechanism that ensures the process implemented to collect data has collected the intended data successfully. The three types of validity determinants were named as construct, internal and external validity. The use of an inductive research approach, the causal effect relationship between the dependent variable (agribusiness transformation) and independent variables (entrepreneurship practices), and the adoption of a proper method for selecting a representative sample of the population were the mechanisms applied to ensure research results are valid. The three types of validity determinants were named as construct, internal and external validity. With the use of an inductive research approach, a causal effect relationship existed between the dependent variable (agribusiness transformation) and independent variables (entrepreneurship practices), and the adoption of a proper method for selecting a representative sample of the population were the mechanisms applied to ensure research results are valid. The study carried out several tests such as Normality (*Table 3*), Homoscedasticity (*Table 4*), Multicollinearity (*Table 5*) and Cronbach Alpha (*Table 6*) to ensure the collected data were reliable and valid, hence the research results. Ghasemi and Zahedias (2012) affirm that statistical errors are common in scientific literature, and about 50% of the published articles have at least one error. Thus, statistical tests are meant to minimise errors and thus improve the reliability and validity of the research results.

The normality test result depicts a Shapiro-Wilk statistically significant p-value (p = 0.000) across the variables, i.e. APT, STORP, MAKP, APRP, VF and HF (*Table 3*). The result suggests that the sample data set originates from a population which is not normally distributed.

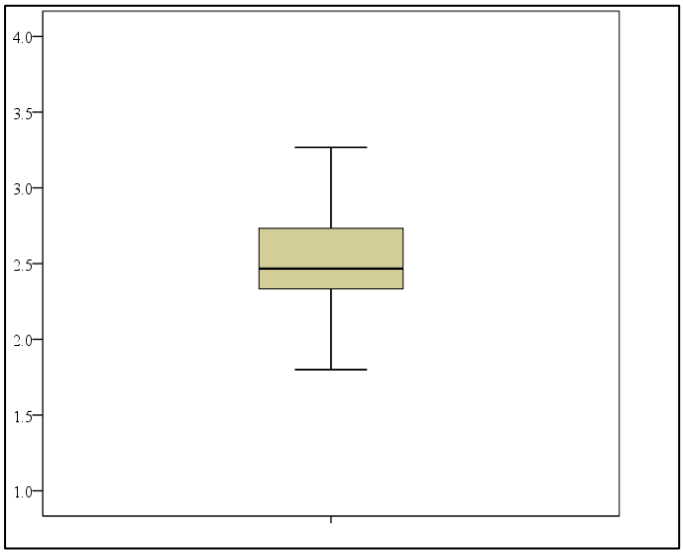
Moreover, the box plots generate symmetric with no outliers in the box plot across all independent variables, as shown in *Figure 2*.

Table 3: Test for Normality

Variables	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
APT	0.236	254	0	0.926	254	0
STORP	0.13	254	0	0.96	254	0
MAKP	0.28	254	0	0.835	254	0
APRP	0.28	254	0	0.835	254	0
VF	0.224	254	0	0.822	254	0
HF	0.232	254	0	0.876	254	0

Source: Field data 2022

Figure 2: Non-symmetric box plot



Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

It was from these findings that the ordinal logistic regression model as a non-parametric test was applied to analyse the impact of entrepreneurship practices on agribusiness transformation.

On homoscedasticity and heteroscedasticity, the results generate statistically significant p-value ($p< 0.000$) and $F = 25.209$, which implies that the variance of dependent and independent variables is constant, hence the homoscedasticity of the data (*Table 4*).

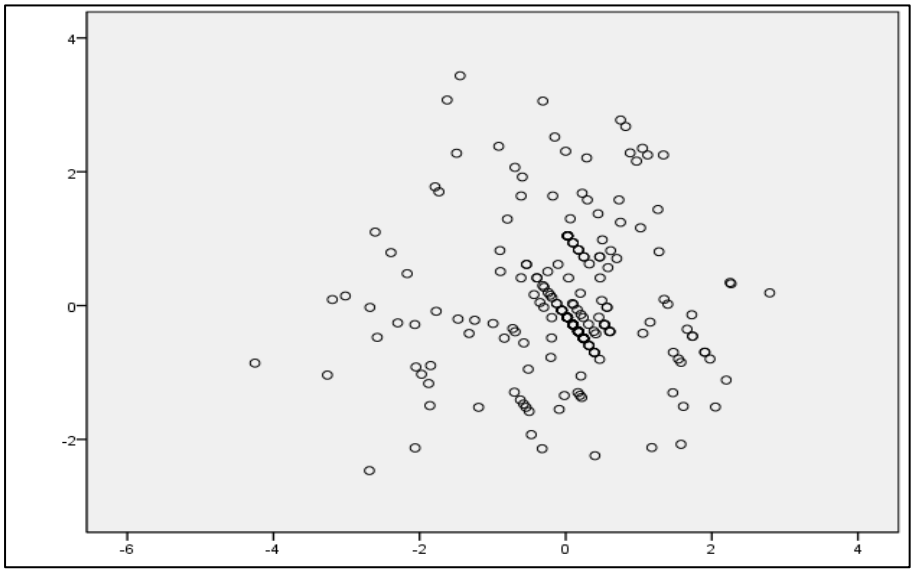
In addition, the scatter plot depicts a non-systematic pattern, such that error terms are evenly distributed, meaning that the variance of Y and X is constant, which indicates homoscedasticity. These observations, therefore, confirm that the data set is free from heteroscedasticity characteristics (*Figure 3*).

Table 4: Table: Analysis of Variance (*n* = 254)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.677	5	.935	25.209	.000[b]
Residual	9.203	248	.037		
Total	13.881	253			

Source: Field data 2022

Figure 3: The Scatter Plot



Multicollinearity was tested in a preliminary analysis to find whether there exists any potential interference among variables in the model. The result generates an Analysis of Variance with statistically significant p-value and F=24.85, whereas Variance Inflation Factor (VIF) values range from 1.3 to 4.594, which affirms weak multicollinearity effect among independent variables (*Table 5*).

Table 5: Multicollinearity Analysis (*n* = 254)

Variables	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
APT	0.011	0.042	0.015	0.25	0.802	0.745	1.342
STORP	0.216	0.052	0.29	4.18	0	0.526	1.902
MAKP	0.263	0.067	0.422	3.921	0	0.218	4.594
APRP	0.013	0.034	0.033	0.392	0.695	0.349	2.864
VF	-0.097	0.038	-0.251	-2.587	0.01	0.269	3.722
HF	0.071	0.045	0.147	1.571	0.117	0.289	3.461

Source: Field data 2022

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

The possibility of multicollinearity is not statistically observed due to the standard error coefficients appearing small (t-value) as they fall above the critical level of 1.96.

On the other hand, the result of the reliability test generates an estimated Cronbach's Alpha value of 0.88, which indicates a good internal consistency (*Table 6*).

Table 6: Reliability Statistics (*n* = 254)

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
0.889	0.899	106

Source: Field data 2022

Taber (2018) states that the generated Cronbach's Alpha value of 0.889 indicates good internal consistency. Therefore, the 106 items in the agribusiness transformation questionnaire have passed the reliability test.

Table 7: Cronbach's Alpha threshold guide

Cronbach's Alpha	Internal Consistency
0.90 and above	Excellent
0.80 - 0.89	Good
0.70 - 0.79	Acceptable
0.60 - 0.69	Questionable
0.50 - 0.59	Poor
Below 0.50	Unacceptable

Source: Improvised from Taber (2018)

Ethical Considerations

An introductory letter was sought from the Open University of Tanzania, Research and Publication Unit, prior to actual fieldwork. Consent from participants was sought before being invited to participate freely and at the time of their convenience. Local Government regulations were adhered to, which included self-introduction to district and ward offices before embarking on data collection. Furthermore, the researcher ensured that the data collected was kept secure and used only for the intended purpose.

RESULTS AND DISCUSSION

Descriptive Results

Demographic Characteristics OF Respondents

The study considered the demographic characteristics which had a relatively close significant association with entrepreneurship practices and their impact on agribusiness transformation.

Area Under Grain Cultivation

The results indicate that the majority of interviewed respondents (62.2%) cultivate between 0.8 and 1.6 hectares of grains per season, whereas 24.4% of respondents cultivate below 0.8 hectares. Moreover, it was revealed that out of the total respondents, 13.4% cultivate above 1.6 hectares, as indicated in *Table 8*. These findings present multiple implications as to the type and effect of entrepreneurship practices adopted by individual respondents and their subsequent impact on agribusiness transformation. According to WB (2018), the majority of agribusiness firms in Tanzania remain small, operate informally and face high farm inputs costs, low productivity and value-addition as a result of low marginal returns.

Table 8: Distribution of cultivated area per respondent (n =254)

Planted (Ha)	Respondents	Per cent of response
Below 0.8	62	24.4
0.8 – 1.6	158	62.2
Above 1.6	34	13.4
Total	254	100

Source: Field data 2022

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

Type of Major Grains Produced

The results indicate that the majority of respondents grow maize (72%), followed by paddy (12.2%) and other types of grains (15.8%), i.e., coffee, wheat, millet, sorghum, and common beans. The findings that the majority of respondents produce maize more than other grains are associated with the fact that maize is a staple food crop for most of the southern highland origins, and it is also a source of income among agribusiness owners. Relating to the area under cultivation discussed in *Table 7*, it is obvious that most maize producers are small-scale agribusinesses owning between 0.8 hectares and 1.6 hectares, followed by other grain producers. A study by WB (2018) indicates that most agribusiness firms in Tanzania remain small, operate informally, and face high farm inputs costs, low productivity, and value-addition as a result of low marginal returns.

Assessing the type of major grains produced, three main categories of response emerged, as indicated in *Table 9*. The first category indicates the majority who grow maize (72%), followed by paddy (12.2%) and those who grow other types of grains such as coffee, wheat, millet, sorghum and common beans (15.8%).

Table 9: Major kind of grains cultivated (n =254)

Grain	Respondents	Per cent of response
Maize	183	72
Paddy	31	12.2
Others (coffee, wheat, millet, sorghum, common beans)	40	15.8
Total	**254**	**100**

Source: Field data 2022

Likert responses and Qualitative data

Agricultural Production Technology Practices

It was revealed that the majority (78.7%) of respondents use hand hoes for agricultural production, while few propositions (14.6%) use other forms of agricultural production technologies, and 6.7% of respondents were undecided. As opposed to hand hoes application, the results indicate that a small proportion of respondents (13.8%) use tractors for agricultural production, while the majority (76.4%) lack tractors, and 9.8% were undecided. The results indicate that there is low utilisation of power tillers for agricultural production, as 11.4% of respondents stated to use power tillers for agricultural production as compared to 72% who did not use power tillers for agricultural production, and 16.6% were undecided (*Table 10*). The results indicate that 57.1% of respondents use animal ploughs, whereas 20.1% do not use animal ploughs, and 22.8% are undecided. This means that the application of animal power for agricultural production appears to be the second dominant hand hoe. Guthiga *et al*. (2007) affirm that draft animal power is viewed as an appropriate and affordable technology for small-scale growers in developing countries who cannot afford expensive fuel-powered mechanisation.

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

Table 10: Summarised Likert scale response on Agricultural Production Technology practices (*n* = 254)

Statements	Not at all true	Completely true	Undecided	Total
Tractors are used more often than others	76.4	13.8	9.8	100
Hand hoe used more often than others	14.6	78.7	6.7	100
Possess own tractor (s)	94.5	2.4	3.1	100
Production implements are hired from non-farmers	67.3	22	10.7	100
Use power tillers more often	72	11.4	16.6	100
Animal ploughs are used more often	20.1	57.1	22.8	100
Both animal plough and power tillers were used	83.5	14.6	1.9	100
Use Combine Harvesters to harvest	88.6	8.7	2.7	100
Depend on human labour for agricultural production	7.1	90.9	2	100
Family labour is used more often in agricultural production	34.6	61.4	4	100
Few used hand hoes for agricultural production	86.2	13	0.8	100

Source: Field data 2022

On the postharvest storage practices, it was found that the majority (63.8%) of respondents do not own local storage facilities, whereas a few (23%) of respondents stated to own local storage facilities, and 13% were undecided. The results further indicate that the majority (63.8%) of respondents do not own local storage facilities, implying that the majority of agribusiness owners do not sell grain off-season when prices are high to optimise profits, implying that the majority of respondents deviate from entrepreneurial core values. Supporting this, GEM (2022) affirms that the fundamental attribute and core function of an entrepreneur is a desire to generate profit.

In spite of respondents' awareness of the contribution of storage practices on the profitability of the grain business, it was revealed that the majority of respondents (66.9%) sell grains without keeping them in store, as summarised by the Likert scale summary in *Table 11*.

Table 11: Summarised Likert scale responses on Postharvest storage practices (*n* = 254)

Statements	Agree	Disagree	Undecided	Total
Storage facilities located near the farm yard	15.4	68.9	15.7	100
Owns private local storage facility	21.2	69.7	9.1	100
Use a modern storage facility	21.3	69.6	9.1	100
Utilised communal owned crop storage facility	23.2	63.8	13	100
Storage is affordable and efficient	36.6	56.7	6.7	100
Access ample storage capacity across the season	73.6	17.7	8.7	100
Constructed own storage facility	29.5	65.4	5.1	100
Grains pay well after storage	85.4	2.4	12.2	100
Sell without keeping crops in store	25.6	66.9	7.5	100
Use a common warehouse to store crops	7.1	84.6	8.3	100
Significant profit is made if storage is practised	70.9	20.8	8.3	100
Government officials support storage facilities	48.4	47.6	4	100
Stakeholders insist on the application of storage	29.5	68.5	2	100
Storage facility located very far	15.4	79.1	5.5	100
Store crops and sell when the price is high	35	64.2	0.8	100

Source: Field data 2022

Analysis of promotion as part of marketing practices indicates that the majority of respondents (97.2%) never use the radio to advertise farm products. It was found that 90.7 per cent of respondents never use social media to promote agricultural produce, whereas 63.8 per cent of respondents often use mobile phones as a marketing tool to search for customers.

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

Furthermore, the results indicate that traders are the main grains market outlet (61.8%) rather than the village market (25.6%), as detailed in *Table 12.*

Table 12: Summarised Likert scale responses on Marketing Practices (*n* = 254)

Marketing practices	Never	Often	Sometimes	Total
Use radio to advertise my farm products (pro)	97.2	2.4	0.4	100
Customers normally come to buy themselves (gp)	28	68.9	3.1	100
Practices contract farming (bp)	95.3	4.3	0.4	100
Use social media to promote (pro)	90.9	8.3	0.8	100
Mobile phones used in the search for customers (pro)	63.8	35.8	0.4	100
Friends and relatives help to look for customers (pro)	35	61.5	3.5	100
Social gatherings used to advertise grains (pro)	69.3	8.7	22	100
Grains are taken to the marketplace for selling (pro)	61.4	25.6	13	100
Packaging and labelling practised (bp)	96.9	3.1	0	100
Grains sold through village market than to traders (pro)	61.8	25.6	12.6	100
Grains need to be transported to market for selling (pro)	18.9	23.6	57.5	100
More producers than buyers (gp)	7.5	69.7	22.8	100
My business name appears on the product package (bp)	96.9	2.7	0.4	100
Customers buy my crop due to lower price (gp)	21.7	57.9	20.4	100
Pack my product well before selling (bp)	72.8	24.4	2.8	100
Have business logo (bp)	97.6	2.4	0	100
Registered with business name (bp)	98.8	1.2	0	100
Participate effectively in exhibitions like Nane Nane (pro)	95.2	2.4	2.4	100
Promotion increases sales (pro)	72.8	15.4	11.8	100
Approach the market differently every season (bp)	68.9	19.3	11.8	100
Listen to media when you have time (pro)	52.4	22.4	25.2	100

Source: Field data 2022

The results indicate that 33.5 per cent of respondents outsource agro-processing services, whereas 94.9 per cent of respondents indicate that agro-processing machines are expensive, implying there is dominance of horizontal function among respondents. While most of the respondents (61.8%) practice primary processing before selling grains, the majority (92.9%) sell grains without simple processing practices (*Table 13*). It can be construed that primary processing mainly aids in the transportation of grains from the farm rather than a value-addition practice.

Table 13: Summarised Likert scale responses on Agro-processing practices (*n* = 254)

Agro-processing practices	Agree	Disagree	Undecided	Total
Grains processed before selling	4.3	92.9	2.8	100
Grains sold at farm gate price	17.3	61.8	20.9	100
Know nothing about agro-processing	11.8	69.7	18.5	100
Agro-processing adds more profit	45.7	43.7	10.6	100
Agro-processing machines are expensive	94.9	2	3.1	100
Agro-processing leads to higher taxes than selling unprocessed grains	82.7	10.6	6.7	100
Source out agro-processing services	33.5	46.1	20.4	100
Advanced agro-processing machines available	21.1	68.1	10.8	100
Simple agro-processing machines used	85.4	7.1	7.5	100
Training and seminars organised on agro-processing	25.6	63.4	11	100
Stopped agro-processing due to running costs	16.1	80.3	3.6	100
I know where to procure agro-processing machine	20.9	65	14.1	100

Source: Field data 2022

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

Effect of Agricultural Production Technology, Storage, Marketing and Agro-processing Practices on Agribusiness Transformation

Agricultural Production Technology

The results reveal that the effect of agricultural production technology practices on agribusiness transformation is moderate (80.7%) as compared to moderate (18.5%) and excellent (0.8%). It construed that the effect of agricultural production technology practices in the study area is moderate to poor. This is in line with ACET (2017), which states that the farming technologies in Africa are still primitive and require backbreaking manual work.

Post Harvest Storage Practices

The results indicate that the effect of postharvest storage practices on agribusiness transformation is moderate (67.3%), whereas 32.3% and 0.4% indicate the effect is poor and excellent, respectively. These findings match Kumar and Kalita (2017) who did a study on Reducing Postharvest Losses during the Storage of Grain Crops to Strengthen Food Security in Developing Countries and found that as much as 50%–60% of cereal grains can be lost during the storage stage due only to the lack of technical efficiency along storage practices. Similarly, Tefera (2012) found that one of the key constraints to improving food and nutritional security in Africa is the poor postharvest management practices that lead to between 14% and 36 loss of maize grains.

Marketing Practices

The results show that the effect of marketing practices on agribusiness transformation is poor (81.9%), while 17.7% and 0.4% indicate the effect is moderate and excellent, respectively. Therefore, it can be deduced that amid the excellent effect of price and grading as components of marketing, the overall marketing practices as a core function of entrepreneurship practices demonstrate a poor effect on agribusiness transformation in the study area. Gichangi (2010) assessed the Structure, Conduct and Performance of the sweet potato marketing system in Kenya and found that not much sweet potato sales promotion was carried out apart from some sorting and grading.

Agro Processing Practices

The results indicate that the effect of agro-processing practices on agribusiness transformation is 52.8 per cent moderate, 46.9 per cent poor and 0.3 per cent excellent. It can be deduced that the effect of agro-processing practices on agribusiness transformation is poor, transmitting to moderate. This means that there is a growing initiative to improve the utilisation of agro-processing practices. Mmbengwa *et al.* (2018) conducted a relatively similar study and found that market access linkages could significantly improve agro-processing participation among smallholder agro-enterprises. URT (2013) underpin storage, market, mechanisation, transportation, and agro-processing facilities as important infrastructure for agribusiness transformation, though largely underdeveloped.

Correlation Analysis

The correlation analysis reveals that there is a significant positive weak correlation between APT and AT (r = 0.274, n = 254, p = 0.000), VF and AT (r = 0.186, r = 254, p = 0.003), respectively. However, the correlation between STORP and AT (r = 0.417, n = 254, p = 0.000), APRP and AT (r = 0.335, n = 254, p = .000), and HF and AT (r = 0.451, n = 254, p = 0.000) indicate a significant positive, strong correlation with AT respectively. MAKP indicates a significant positive, strong correlation with AT (r = 0.526, n = 254, p = .000), as detailed in *Table 14*. These results suggest that STORP, MAKP and APRP are good predictors of AT. However, the moderation effect of VF generates a weak positive significant correlation between vertical function and agribusiness transformation (r = 0.186, r = 254, p = 0.003). On the contrary, the correlation between horizontal function and agribusiness transformation indicates a strong positive significant correlation (r = 0.451, n = 254, p = 0.000), as detailed in *Table 14*. These results

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

suggest that despite the good prediction of STORP, MAKP and APRP on agribusiness transformation, the transformation process is more conspicuous along the horizontal function than the vertical function.

Table 14: Correlation Analysis between entrepreneurship practices and agribusiness transformation (n = 254)

		APT	STORP	MAKP	APRP	VF	HF	AT
APT	Correlation Coefficient	1	.294**	.276**	.281**	.296**	.327**	.274**
	Sig. (2-tailed)		0	0	0	0	0	0
	N	254	254	254	254	254	254	254
STORP	Correlation Coefficient	.294**	1	.516**	.426**	.539**	.491**	.417**
	Sig. (2-tailed)	0		0	0	0	0	0
	N	254	254	254	254	254	254	254
MAKP	Correlation Coefficient	.276**	.516**	1	.534**	.509**	.608**	.526**
	Sig. (2-tailed)	0	0		0	0	0	0
	N	254	254	254	254	254	254	254
APRP	Correlation Coefficient	.281**	.426**	.534**	1	.791**	0.077	.335**
	Sig. (2-tailed)	0	0	0		0	0.222	0
	N	254	254	254	254	254	254	254
VF	Correlation Coefficient	.296**	.539**	.509**	.791**	1	.182**	.186**
	Sig. (2-tailed)	0	0	0	0		0.004	0.003
	N	254	254	254	254	254	254	254
HF	Correlation Coefficient	.327**	.491**	.608**	.077**	.182**	1	.451**
	Sig. (2-tailed)	0	0	0	0.222	0.004		0
	N	254	254	254	254	254	254	254
AT	Correlation Coefficient	.274**	.417**	.526**	.335**	.186**	.451**	1
	Sig. (2-tailed)	0	0	0	0	0.003	0	
	N	254	254	254	254	254	254	254

***. Correlation is significant at the 0.01 level (2-tailed).*

Source: Field data 2022

Estimation of Influence of Entrepreneurship Practices on Agribusiness Transformation

The multiple ordinal regression generates the model fitting information with a statistically significant p-value (p<0.000), which indicates the regression model is appropriate for the data set. The multiple ordinal regression output is detailed in *Table 15*.

Table 15: Multiple ordinal regression results (N = 254)

Variables	Standardised Coefficients		Standardised Coefficients	Sig.	95% Confidence Interval	
	B	Std. Error	Beta		Lower	Upper
APT	0.126	0.387	0.106	0.745	-0.632	0.884
STORP	1.686	0.48	12.322	0	0.745	2.627
MAKP	2.418	0.63	14.719	0	1.183	3.654
APRP	0.803	0.321	6.256	0.012	0.174	1.432
VF	-1.193	0.352	11.478	0.001	-1.884	-0.503
HF	1.107	0.421	6.912	0.009	0.282	1.933

Source: Field data 2022

The results indicate that there is a statistically significant influence of entrepreneurship practices on agribusiness transformation; thus, the general null hypothesis is rejected. Nevertheless, the moderation effect of vertical function (VF) indicates that a one per cent increment in vertical function influences the likelihood of the decrease agribusiness transformation by 1.19 per cent in spite of the Wald test for VF, indicating statistically significant at 0.05 of significance

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

level ($p < 0.001$). Similarly, the results indicate that a one per cent increment in APT, STORP, MAKP and APRP influences the probability of increasing agribusiness transformation (AT) as per the corresponding percentages in *Table 15*. Except for the APT, the Wald test for STORP, MAKP, and APRP are statistically significant at 0.05 significance level ($p < 0.00$), ($p < 0.00$) and ($p < 0.012$), respectively. This confirms the rejection of the null hypothesis for STORP, MAKP and APRP, whereas it confirms the null hypothesis for APT ($p > 0.745$). It can be deduced that except for APT, entrepreneurship practices (STORP, MAKP and APRP) have a statistically significant influence on agribusiness transformation.

A detailed investigation of agricultural production technology practice indicates that a one per cent increment in APT influences the probability of increasing AT by 0.13 per cent. The Wald test for APT is statistically insignificant at a 0.05 significance level ($p > 0.745$), implying no statistically significant influence of agricultural production technology practices on agribusiness transformation. These results are comparable to Ameh *et al.* (2017) findings that agricultural production technologies (machines), agricultural credit and gross domestic product were found not to be statistically significant among smallholder farmers in Nigeria.

Analysing postharvest storage practices, the results indicate that a one per cent increment in postharvest storage practices (STORP) influences the likelihood of the probability increase AT by 1.69 per cent, implying that as the scores of STORP increase, there is a predicted increase in agribusiness transformation. The Wald test for STORP is statistically significant at a 0.05 significance level ($p < 0.000$), implying that STORP is a good predictor of AT. These findings match Kumar and Kalita (2017) that as much as 50% – 60% of cereal grains can be lost during the storage stage due to the lack of technical efficiency in storage practices.

Conversely, the results on marketing practices reveal that a one per cent increment in marketing practices (MAKP) influences the likelihood of the increase in agribusiness transformation (AT) by 2.42 per cent. These results suggest that as the scores of MAKP increase, there is a predicted increase in agribusiness transformation. It can be deduced that MAKP is a good predictor of AT. Likewise, the Wald test for MARK is statistically significant at a 0.05 significance level ($p < 0.000$). It can be deduced that marketing practices demonstrate a statistically significant influence on agribusiness transformation.

Moreover, it was found that a one per cent increment in agro-processing practices (APRP) influences the likelihood of the increase in agribusiness transformation (AT) by 0.80 per cent, implying that as the scores of APRP increase, there is a predicted increase in agribusiness transformation. As expected, the Wald test for APRP is statistically significant at a 0.05 significance level ($p < 0.012$), confirming the statistically significant influence of agro-processing practices on agribusiness transformation.

Analysis of the moderation effect of vertical and horizontal function indicates that a one per cent increment in vertical function influences the likelihood of the decrease agribusiness transformation (AT) by 1.19 per cent, whereas the Wald test for VF is statistically significant at 0.05 of significance level ($p < 0.001$), implying that there is statistically significant influence between vertical and horizontal function as determinants of agribusiness transformation. Controversy, it was found that a one per cent increment in horizontal function influenced the likelihood of the increase agribusiness transformation (AT) by 1.11 per cent, whereby the Wald test for HF is statistically significant at 0.05 of significance level ($p < 0.009$), implying that there is a statistically significant difference between horizontal function and vertical function as determinants of agribusiness transformation.

Total Agribusiness Transformation

The complete ordinal regression results for total agribusiness transformation are summarised in

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

Table 16. While the results indicate that a one per cent increment in TRAC influences the likelihood of the probability of increasing TAT by 0.71 per cent, a similar increment in HHOE results in a probability of decreasing TAT by 0.10 per cent. The Wald test for HHOE and TRAC were not statistically significant at 0.05 significance level ($p > 0.894$) and ($p>0.457$), respectively. The results suggest that HHOE is not a good predictor of agribusiness transformation, although TRAC is statistically not significant yet a good predictor of agribusiness transformation. Similar findings were observed for PTIL and ANPLO, as detailed in *Table 16*. Several studies affirm that farming technologies and mechanisation in Africa are still primitive and largely underdeveloped (URT, 2013; ACET, 2017; Wang & Huang (2018). Although a one per cent increment in PTIL and ANPLO influence the likelihood of the increase TAT by 1.22 and 0.68 per cent respectively, there is no statistically significant effect of Power Tiller (PTIL) and Animal Plough (ANPLO) on total agribusiness transformation as detailed in *Table 16*.

Despite a one per cent increment in STORLO, STORIMP and STOROTH influence the likelihood of the increase in TAT by 3.54 per cent, 0.29 per cent, and 0.01 per cent, respectively. The Wald test indicates there is no statistically significant influence of the latter on TAT, as illustrated in *Table 16*. These findings are similar to Kumar and Kalita (2017) who did a study on Reducing Postharvest Losses during Storage of Grain Crops to Strengthen Food Security in Developing Countries and found that as much as 50% – 60% of cereal grains can be lost during the storage stage due to the lack of technical efficiency along storage practices. Similarly, Tefera (2012) found that one of Africa's key constraints to improving food and nutritional security is the poor postharvest management practices that lead to between 14% and 36 losses of maize grains. On the other hand, examining the effect of postharvest management practices on the welfare of yam farmers and traders, Ansah *et al.*(2018) concur that farmers lose an average of 9.6% of stored yam in a 2-month period, while traders lose 3.3% of yam stored in a month.

The results indicate that a one per cent increment in PROM, BRAPA and GRAPRI influences the likelihood of the increase in TAT by 2.14 per cent, 1.10 per cent, and 2.72 per cent, respectively, implying that PROM, BRAPA and GRAPRI are good predictors of TAT. Nevertheless, the Wald test indicates that there is no statistically significant influence among the marketing variables. It can be deduced that PROM and GRAPRI carry a higher probability of increasing TAT than BRAPA. The study by Gichangi (2010) affirms that not much sweet potato sales promotion was carried out apart from some sorting and grading in Kenya, such that the formation of the sweet potato price mainly depended on the spontaneous regulation of the sweet potato market the setting of price among the actors mainly relied on free bargaining price.

Furthermore, the study found that while a one per cent increment in PRIMP and SIMACH influences the probability of increasing TAT by 3.10 and 0.10 per cent, respectively, a one per cent increment in ADMACH influences the likelihood of the probability of decreasing TAT by 1.63 per cent. The results suggest that PRIMP and SIMACH are good predictors of TAT, while ADMACH is neither a good predictor for TAT nor statistically significant ($p > 0.411$), as illustrated in *Table 16*. Relatedly, Omayio *etal*. (2020) indicate that despite the high production of guavas in Kitui and Taita Taveta counties in Kenya, processing remains extremely low (3.1%) due to limited knowledge (74.8%) and lack of appropriate equipment (65.9%) leading to the fruit's economic under exploitation. Likewise, WB (2016) affirms that in Vietnam, most agribusiness products are raw commodities, typically sold at prices lower than those of leading competitors due to value addition (processing).

Delving into the moderation effect of VF and HF on TAT, the results indicate that a one per cent increment in VF influences the likelihood of a decrease in TAT by 0.19 per cent. On the contrary, a one per cent increment in HF influences the

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

likelihood of the increase in TAT by 4.22 per cent, though the latter had no statistically significant influence on TAT. It can be construed that the influence of entrepreneurship practices on agribusiness transformation decreases with an increase in the moderation effect of vertical function and surges with an increment in horizontal function (HF).

Table 16: Total agribusiness transformation ordinal regression results (N = 254)

Variables	Standardised Coefficients		Standardised Coefficients Beta	Sig.	95% Confidence Interval	
	B	Std. Error			Lower	Upper
TRAC	0.714	0.96	0.554	0.457	-1.167	2.596
PTIL	1.227	1.951	0.396	0.529	-2.596	5.05
ANPLO	0.682	1.189	0.329	0.566	-1.649	3.013
HHOE	-0.098	0.732	0.018	0.894	-1.533	1.337
STORLO	3.549	4.291	0.684	0.408	-4.862	11.96
STORIMP	0.298	0.562	0.282	0.596	-0.803	1.4
STOROTH	0.011	0.253	0.002	0.966	-0.485	0.506
PROM	2.137	2.754	0.602	0.438	-3.261	7.535
BRAPA	1.106	2.21	0.25	0.617	-3.226	5.438
GRAPRI	2.722	3.279	0.689	0.406	-3.704	9.149
PRIMP	3.108	3.784	0.675	0.411	-4.308	10.524
SIMACH	0.1	0.559	0.032	0.859	-0.996	1.195
ADMACH	-1.633	2.172	0.565	0.452	-5.891	2.624
VF	-0.195	1.613	0.015	0.904	-3.357	2.966
HF	4.218	5.209	0.656	0.418	-5.99	14.427
FARMSIZE	-0.017	0.426	0.002	0.968	-0.853	0.819

Source: Field Data 2023

CONCLUSION AND RECOMMENDATIONS

The study reveals that although the influence of entrepreneurship practices on agribusiness transformation is statistically significant at 0.05 of significance level ($p < 0.001$), the moderation effect of vertical function (VF) indicates that a one per cent increment in vertical function influences the likelihood of the probability to decrease agribusiness transformation by 1.19 per cent. The results indicate that a one per cent increment in STORP, MAKP and APRP influences the likelihood of the increase in agribusiness transformation (AT) by 1.69 per cent, 2.42 per cent, and 0.80 per cent, respectively, whereby a one per cent increment in APT influence likelihood of the probability to decrease AT by 0.13 per cent. It can be deduced that except for APT, entrepreneurship practices (STORP, MAKP and APRP) have a statistically significant influence on agribusiness transformation. It can be construed that the influence of entrepreneurship practices on agribusiness transformation decreases with an increase in the moderation effect of VF and, consequently, surges with an increment in HF. Future research can be centred on exploring entrepreneurship effectively, innovation, and interventions that encourage horizontal infrastructure development and management, as well as marketing and postharvest storage practices. The key actors in the agribusiness value chain, including the Tanzania Ministry of Agriculture, advised restructuring policies along with reinforcement of incentives to enhance postharvest storage, marketing, and agro-processing practices for significant agribusiness transformation.

ACKNOWLEDGEMENTS

We would like to thank the Executive Directors' offices in Mbozi and Mbeya urban districts for permission to carry out this research in their districts. Sincere gratitude is also extended to everyone whose assistance made this research study a success.

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

REFERENCES

Abass, B. A., Kotu, H. B., Hoeschle, Z. I., Bekunda, M., and Mwambo, H., (2019). Exploring the profitability of improved storage technologies and their potential impacts on food security and income of smallholder farm households in Tanzania. Journal of Stored Products Research. Volume 82, June 2019, Pages 98-109.

ACET, (2017) Africa Transformation Report; *Agriculture Powering Africa's Economic Transformation.* African Centre for Economic Transformation. Accra, Ghana. [http://acetforafrica.org/acet/wp-content/uploads/publications/2017/10/ATR17-full-report.pdf] site visited on 2nd September, 2019.

Adam, A. M. (2021). A Study on Sample Size Determination in Survey Research. *New Ideas Concerning Science and Technology Vol. 4*, 125–134. [https://doi.org/10.9734/bpi/nicst/v4/2125E] site visited on 18th March, 2023.

AGRA. (2017). Africa Agriculture Status Report: The Business of Smallholder Agriculture in Sub-Saharan Africa (Issue 5). Nairobi, Kenya: Alliance for a Green Revolution in Africa (AGRA). Issue No. 5

AGRA. (2018). Africa Agriculture Status Report: Catalysing Government Capacity to Drive Agricultural Transformation (Issue 6). Nairobi, Kenya: Alliance for a Green Revolution in Africa (AGRA)

AGRA. (2021). How Integration Enhances the Competitiveness of Agribusinesses and Smallholder Farming Systems - the Tanzania Case Study. Dar es Salaam, Tanzania: Alliance for a Green Revolution in Africa (AGRA). ISBN: 978-0-9980765-5-3

Ameh, O. E., Sunday. O. A., Baajon, M. A., and Chukwuemeka. N. J. (2017). An Empirical Analysis of the Effect of Agricultural Input on Agricultural Productivity in Nigeria. International Journal of Agricultural Science and Food Technology. Nigeria [https://www.peertechzpublications.com/articles/IJASFT-3-126.pdf] site visited 3rd November 2022

Ansah, I., Ehwi, J., and D, S. (2018). Effect of postharvest management practices on the welfare of farmers and traders in Tamale Metropolis and Zabzugu Districts, Ghana. Cogent Food & Agriculture. 4. 10.1080/23311932.2018.1475916

Asom, S. T. & Ijirshar, V. U. (2016). Impact of Agriculture Value Added on the Growth of Nigerian Economy. Nigerian Journal of Management Sciences: A Multi-disciplinary Edition. 5(1): 238-245. Benue State University, Makurdi-Nigeria.

Bachmann, Y., Idohou, R., Sinsin, B., Elie A., P., and Lykke, A. M (2017). Mapping changes in land use/land cover and prediction of future extension of *bowé* in Benin, West Africa. Volume 69, December 2017, Pages 85-92 [https://doi.org/10.1016/j.landusepol.2017.09.015] site visited on May 13, 2022

Channa, H., Gilbert, J.R., Feleke, S., Abdoulaye, T., (2022); Overcoming smallholder farmers' postharvest constraints through harvest loans and storage technology: Insights from a randomised controlled trial in Tanzania, Journal of Development Economics, Volume 157,2022,102851, ISSN 0304-3878 [https://doi.org/10.1016/j.jdeveco.2022.102851] site visited on March 15 2023.

FAO & World Bank (2010): FAO/World Bank Workshop on Reducing Postharvest Losses in Grain Supply Chains in Africa; Lessons Learned and Practical Guidelines. Rome, Italy.

GEM (2022). Global Entrepreneurship Monitor 2021/2022 Global Report. Opportunities Amid Disruption. Babson College [https://gemconsortium.org/file/open?fileId=50900] site visited June 10, 2022.

Gichangi, A. (2010). Analysis of Structure, conduct and performance of sweet potato

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

marketing: the case of Nairobi and Kisumu, Kenya.

GoT, (2012). National Sample Census of Agriculture 2007/2008: Crop Sector – National Report. Tanzania.

Guthiga, P., Karugia, J., and Nyikal, R. (2007). Does use of draft animal power increase economic efficiency of smallholder farms in Kenya? Renewable Agriculture and Food Systems. 22. 290 - 296. 10.1017/S174217050700186X. [https://www.jstor.org/stable/44490536] site visited on 8th June, 2022.

Isinika, A. & Kipene, V. (2016). Growth of Agro-processing Firms and Labour Productivity in Tanzania: Opportunities and Limiting Factors. In: REPOA's 21st Annual Research Workshop. Dar es Salaam, 1-35.

Jahari, C., Kilama, B., Dube, S. & Paremoer, T. (2017). Regional industrialisation and the development of agro-processing value chains in Tanzania and South Africa: Oilseeds-to-edible oils. In: ACER III Conference.

Kahan, D., (2013) Entrepreneurship in farming. FAO. Rome [http://www.fao.org/uploads/media/5-EntrepreneurshipInternLores.pdf] site visited on October 31 2019.

Kereth, G., K., Lyimo, M., Mbwana, H., Mongi, R., Ruhembe, C., (2013). Assessment of postharvest handling practices: knowledge and losses of fruits in Bagamoyo district of Tanzania. J.Food Qual. Manag.. 11. 8-15. [file:///C:/Users/USER/Downloads/Postharvest.pdf] site visited on 15th March 2023.

Kizito, M. A., (2011). The structure, conduct, and performance of Agricultural Marketing Information Systems in Sub-Saharan Africa. A dissertation submitted to Michigan State University in partial fulfilment of the requirements for the Degree of Doctor of Philosophy.

Kumar, D., and Kalita, P., (2017). Reducing Postharvest Losses during Storage of Grain Crops to Strengthen Food Security in Developing Countries. *Foods* 6, no. 1: 8. [https://doi.org/10.3390/foods6010008] site visited on June 13 2022.

Mignouna D. B., Abdoulaye T., Akinola A. A., Alene A., Oparinde A., Manyong V.M., Maroya N., Asiedu R. (2017). A Two-stage Empirical Analysis of Market Participation in Yam-growing Areas of West Africa, p. 262-274 [http://www.tropicultura.org/text/v35n4/262.pdf] site visited September 25 2021

Naminse, E. J. and Zhuang, J (2018). Does farmer entrepreneurship alleviate rural poverty in China? Evidence from Guangxi Province [https://doi.org/10.1371/journal.pone.0194912] site visited October 31 2019.

Nkwabi, M. J., Mboya, B. L., Nkwabi, M. J., Nkwabi, M. J., (2019). A review of the challenges affecting the agro-processing sector in Tanzania, Asian Journal of Sustainable Business Research, 1 (2): 68-77

Okou, C., Spray, J., and Unsal, D. F. 2022. Staple Food Prices in Sub-Saharan Africa: An Empirical Assessment, IMF Working Papers, WP/22/135.

Omayio, G., George, A.,Michael,O.,Gachuiri, C., Mwang'ombe, A. (2020). Trends and Constraints in Guava (Psidium Guajava L.) Production, Utilisation, Processing and Preservation in Kenya. International Journal of Fruit Science. 20. 1-12. 10.1080/15538362.2020.1791304.

REPOA (2013), Tanzania Markets Pan: Postharvest Losses in Tanzania; Challenges and Options for Mitigation. Policy Brief, No 3 –ENG/2013 [http://www.repoa.or.tz/images/uploads/Post-harvest_losses_in_Tanzania_TM_PAN_-_English_3.pdf] site visited September 3 2019.

Suleiman, R., (2017). Journal of Stored Products and Postharvest Research Understanding postharvest practices, knowledge, and actual

Article DOI: https://doi.org/10.37284/eajbe.6.2.1576

mycotoxin levels in maize in three agro-ecological zones in Tanzania. Journal of Stored Products and Postharvest Research. 8. 73-84. 10.5897/JSPPR2017.0243.

Taber, K. S. (2018). Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. Res. Sci. Educ, 48,. 1273-1296.[https://doi.or/10.1007/s11165-016-9602-2] site visited on 18th March, 2023

Tefera, T. (2012). Postharvest losses in Africa maize in the face of increasing food shortage. Food Sec.4, 267 – 277 (2012). [https://doi.org/10.1007/s12571-012-0182-3] site visited on 13th June 2022

Timmer, C. P. (1988). "The agricultural transformation," in *Handbook of Development Economics*, Vol. 1, eds H. Chenery and T. N. Srinivasan (Amsterdam: North Holland Publishers).

UNCTAD (2018). Migration for Structural Transformation. Economic Development in Africa Report 2018. United Nations Conference on Trade and Development [https://unctad.org/en/PublicationChapters/edar2018_ch4_en.pdf] site visited September 11 2019]

URT (2019). National Postharvest Management Strategy 2019 -2029. Ministry of Agriculture, Dodoma, Tanzania[https://www.kilimo.go.tz/uploads/dasip/ENGLISH_STRATEGY] site visited on March 3 2023.

URT, (2008). Agricultural Marketing Policy. Ministry of Industry, Trade and Marketing [https://www.mit.go.tz/uploads/documents/sw/1455888762-Agricultural-Marketing-Policy.pdf] site visited on March 17 2023

URT, (2013) National Agriculture Policy Draft November 2013: Ministry of Agriculture Food Security and Cooperative. Dar es Salaam. [http://www.tzdpg.or.tz/fileadmin/documents/dpg_internal/dpg_working_groups_clusters/cluster_1/agriculture/2._Ag_policies_and_strategies/National_ag_policies/1._2013_NATIONAL_AGRICULTURAL_POLICY_-_FINALFebruari_2013.pdf] site visited on 4th September 2019.

USDA, (2018). Grain and Feed Annual: 2018 Tanzania Corn, Wheat and Rice Report. Washington, DC.

Vermeulen, S.J., Dinesh D., Howden S.M., Cramer, L and Thornton, P.K., (2018). Transformation in Practice: A Review of Empirical Cases of Transformational Adaptation in Agriculture Under Climate Change. *Front. Sustain. Food Syst*. 2:65. doi: 10.3389/fsufs.2018.00065 [https://www.frontiersin.org/articles/10.3389/fsufs.2018.00065/full#B45] siste visited on 12th November 2019]

Wang, T., & Huang, L., (2018). An Empirical Study on the Relationship between Agricultural Science and Technology Input and Agricultural Economic Growth Based on E-Commerce Model. Sustainability. 10. 4465. 10.3390/su10124465. Watch?v=A6g8NG3K_vo&t=3316s]site visited on 22nd March, 2022

WB, (2016). Transforming Vietnamese Agriculture: Gaining More from Less. Vietnam Development Report. Washington, D.C. World Bank.

WB, (2018). Country partnership framework for Tanzania [http://documents.worldbank.org/curated/en/669801521338458808/pdf/Tanzania-CPF-FY18-22-SECPO-February-14-02212018.pdf] site visited on March 5 2020.

Yamane, Taro (1967) Statistics an Introductory Analysis. 2nd Edition, New York, Harper and Row

[https://www.scirp.org/(S(351jmbntvnsjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=1699497] site visited on 13th November, 2020

