

**IMPACT OF ENTREPRENEURSHIP PRACTICES ON AGRIBUSINESS  
TRANSFORMATION IN TANZANIA: A VERTICAL INTERGRATION  
ROLE ON GRAINS**

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**2023**

**CERTIFICATION**

The undersigned certifies that they have read and hereby recommends for examination by the Open University of Tanzania a thesis entitled; **“Impact of entrepreneurship practices on agribusiness transformation in Tanzania: A vertical integration role on grains”** in fulfilment of the requirements for the degree of Ph.D. of the Open University of Tanzania.

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## **DEDICATION**

I dedicate this work to my lovely wife Rebecca for providing moral, material and spiritual support. She has been centre for my inspiration, motivation and encouragement which fuelled my energy to overcome obstacles on the way by going extra mile. Since research journey needed a great deal of time for privacy and sometime working away from home, she played a key role in managing complex family roles in my absence which enabled me to pursue ambition.

I also dedicate this work to my sons Stewart, Godfrey, Erick, Emmanuel and my daughter Grace whose prayers and understanding assisted me abundantly. I also dedicate this work to my parents who laid foundation of my academic career in many ways. Lastly but not least, I dedicate this work to all agribusiness value chain actors whose work is vital in sustaining livelihood of mankind. I am indeed blessed to have networked with all of the above good people.

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## ABSTRACT

The study examines impact of entrepreneurship practices on agribusiness transformation among agribusiness owners in Mbeya region. Specifically, it examined effect of agricultural production technologies, assessed effect of post-harvest storage, assessed effect of marketing practices, and examined influence of agro-processing practices in agribusiness transformation. It explored effect of vertical function on agribusiness transformation on grains. A cross sectional study design consisting of both qualitative and quantitative data was applied. The sample of 254 randomly selected agribusiness owners involved in grains production in the study area. The study used interview and structured questionnaires for primary data. Ordinal Logistic Regression was used to determine the impact of entrepreneurship practices on agribusiness transformation. The finding shows that there is insignificant effect ( $P>0.05$ ) of agricultural production technology practices on agribusiness transformation whereas post-harvest storage, marketing and agro-processing practices indicate significant effect 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 significant positive strong correlation between marketing practices and total agribusiness transformation. Government and key actors in agribusiness value chain are advised to formulate and implement appropriate policy, programs and strategies to enhance the impact of entrepreneurship practices on agribusiness transformation.

**Keywords:** *Entrepreneurship Practices, Agribusiness and Agribusiness Transformation.*

## TABLE OF CONTENTS

<b>CERTIFICATION .....</b>	<b>ii</b>
<b>COPYRIGHT .....</b>	<b>iii</b>
<b>DECLARATION.....</b>	<b>iv</b>
<b>DEDICATION.....</b>	<b>v</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>vi</b>
<b>ABSTRACT .....</b>	<b>vii</b>
<b>LIST OF FIGURES .....</b>	<b>xv</b>
<b>ABBREVIATIONS AND ACRONYMS.....</b>	<b>xvi</b>
<b>CHAPTER ONE .....</b>	<b>1</b>
<b>INTRODUCTION.....</b>	<b>1</b>
1.1 Background Information .....	1
1.2 Research Problem Statement.....	2
1.3 Overall Objective .....	4
1.3.1 Specific Objectives.....	4
1.4 General hypothesis .....	5
1.5 Specific Research Hypothesis .....	5
1.6 Significance and Justification of the Study .....	5
1.7 Study Scope .....	6
<b>CHAPTER TWO .....</b>	<b>8</b>
<b>LITERATURE REVIEW.....</b>	<b>8</b>
2.1 Chapter Overview.....	8
2.2 Definition of the Key Concepts.....	8
2.2.1 Entrepreneurship Practices .....	8



2.2.2	Agribusiness and Agribusiness Transformation.....	9
2.2.3	Measuring Agribusiness Transformation .....	9
2.2.4	Vertical Integration.....	10
2.2.5	Horizontal Integration .....	10
2.3	Theoretical Model .....	10
2.3.1	Vertical and Horizontal Integration Model .....	11
2.3.2	Structure Conduct Performance Model.....	12
2.4	Empirical Literature Review .....	13
2.4.1	Agricultural Production Technologies .....	13
2.3.2	Post-Harvest Storage Practices.....	14
2.3.3	Marketing Practices .....	15
2.4.4	Agro Processing Practices .....	16
2.4.5	Vertical and horizontal Functions as Determinants of Agribusiness Transformation .....	18
2.5	Agribusiness transformation.....	18
2.6	Policy Review .....	20
2.7	Research Gap.....	21
2.8	Conceptual framework .....	22
<b>CHAPTER THREE .....</b>		<b>23</b>
<b>RESEARCH METHODOLOGY .....</b>		<b>24</b>
3.1	Chapter Overview.....	24
3.2	Description of the Study Area .....	24
3.3	Philosophy and Assumptions of the Study .....	25
3.4	Research type and design .....	26

3.5	Sampling Design and Procedure .....	26
3.6	Data Collection Methods and Instruments .....	28
3.7	Measurement of Variables.....	29
3.8	Data Processing and Analysis Methods .....	31
3.9.	Data Analysis and Presentation .....	36
3.10	Reliability and Validity of Data .....	37
3.10.1	Statistical Tests.....	38
3.10.2	Ethical Issues .....	44
<b>CHAPTER FOUR.....</b>		<b>46</b>
<b>FINDINGS ON ENTREPRENEURSHIP PRACTICES IN GRIBUSINESS</b>		
<b>TRANSFORMATION.....</b>		<b>46</b>
4.1	Chapter Overview.....	46
4.2	Descriptive Statistics Analysis .....	46
4.2.1	Background Information of Respondents.....	46
4.2.1.1	Area Under Grain Cultivation .....	46
4.2.1.2	Type of Major Grains Produced .....	47
4.2.2	Agricultural Production Technology Practices .....	48
4.2.3	Post-Harvest Storage Practices.....	51
4.2.3.1	Local Storage Practices .....	51
4.2.3.2	Modern Storage Practices.....	53
4.2.3.3	Other Storage Practices .....	54
4.2.4	Marketing Practices .....	58
4.2.4	Promotional Practices.....	58
4.2.5	Agro Processing Practices .....	66

4.2.5.1	Primary Agro-Processing Practices .....	66
4.2.5.2	Simple Agro-Processing Practices .....	67
4.2.5.3	Advanced Agro-Processing Practices.....	69
<b>CHAPTER FIVE .....</b>		<b>72</b>
<b>VERTICAL AND HORIZONTAL DETERMINANTS OF</b>		
<b>AGRIBUSINESS TRANSFORMATION .....</b>		<b>72</b>
5.1	Chapter Overview .....	72
5.2	Vertical Integration Model .....	72
5.3	Agribusiness Transformation as Determined by Vertical and Horizontal Functions .....	75
5.4	Agribusiness Transformation .....	77
5.4.1	Profit Generation .....	77
5.4.2	Sales Status.....	78
5.4.3	Capital investment.....	79
5.4.4	Employment .....	81
<b>CHAPTER SIX .....</b>		<b>82</b>
<b>INFLUENCE OF ENTREPRENEURSHIP PRACTICES ON</b>		
<b>AGRIBUSINESS TRANSFORMATION .....</b>		<b>83</b>
6.1	Chapter Overview.....	83
6.2	Correlation Analysis .....	83
6.2.1	Correlation analysis on Vertical and Horizontal function.....	85
6.3	Ordinal Logistic Regression Analysis Findings .....	85
6.3.1	Testing of hypothesis.....	86
6.3.1.1	General Hypothesis .....	87

6.3.1.2 Specific Research Hypothesis.....	88
6.3.4 Total Agribusiness Transformation .....	91
6.3.5 Discussion of Findings.....	95
6.3.5.1 Agricultural Production Technology Practices .....	95
6.3.5.2 Post-harvest Storage Practices .....	97
6.3.5.3 Marketing Practices.....	100
6.3.5.4 Agro Processing Practices.....	104
6.3.5.5 Vertical and Horizontal Function.....	106
<b>CHAPTER SEVEN.....</b>	<b>109</b>
<b>CONCLUSION AND RECOMMENDATIONS.....</b>	<b>109</b>
7.1 Chapter Overview.....	109
7.2 Summary of the Findings .....	109
7.2.1 Agricultural Production Technologies .....	109
7.2.2 Postharvest Storage Practices .....	110
7.2.3 Marketing Practices .....	112
7.2.4 Agro Processing Practice.....	113
7.2.5 Entrepreneurship Tendency.....	115
7.2.6 Vertical and Horizontal Function As Moderation Variables.....	115
7.2.7 Agribusiness Transformation .....	116
7.3 Recommendations .....	118
7.4 Areas for Future Studies.....	120
<b>REFERENCES.....</b>	<b>123</b>
<b>APPENDICES .....</b>	<b>134</b>

## LIST OF TABLES

Table 3.1: Variable Definition and Measurement (n=254).....	30
Table 3.2: Sample Frame and Sample Size Estimation .....	27
Table 3.3: Data Processing Matrix for Agribusiness Transformation (n = 254) .....	34
Table 4.1: Distribution of cultivated Area per Respondent (n =254) .....	47
Table 4.2: Major kind of Grain Cultivated (n =254) .....	48
Table 4.3: Effect of Agricultural Production Technologies in Percentage (n = 254).....	50
Table 4.4: Effect of Post-Harvest Storage Practices in Percentage (n = 254) .....	56
Table 4.5: Effect of Marketing Practices in Percentage (n =254).....	65
Table 4.6: Effect of Agro-processing Practices in Percentage (n = 254).....	70
Table 5.1: Effect of Vertical Function on Horizontal Function in Percentage (n =254).....	75
Table 5.2: Effect of Vertical and Horizontal Function on Agribusiness Transformation (n =254) .....	77
Table 5.3: Profit as a Measure of Agribusiness Transformation in Percentage.....	78
Table 5.4: Sales Status as a Measure of Agribusiness Transformation in Percentage (n = 254).....	79
Table 5.5: Capital as a Measure of Agribusiness Transformation in Percentage.....	81
Table 5.6: Employees as a Measure for Agribusiness Transformation in Percentage (n = 254).....	81
Table 6.1: Correlation Analysis between Entrepreneurship Practices and Moderation effect of Vertical Function (n = 254) .....	84

Table 6.2: Correlation Analysis Vertical and Horizontal Functions (n =254).....	85
Table 6.3: Model Fitting Information (n = 254) .....	86
Table 6.4: Coefficient of estimates (n =254) .....	87
Table 6.5: Coefficient of Estimates for the Total Agribusiness Transformation .....	95

## LIST OF FIGURES

Figure 2.1: Theoretical Framework of the Impact of Entrepreneurship practices on Agribusiness Transformation. ....	12
Figure 2.2: Conceptual Framework for Impact of Entrepreneurship Practices for Agribusiness Transformation.....	23
Figure 3.1: Non Symmetric Box Plot .....	40
Figure 3.2: The Scatter Plot .....	42
Figure 4.1: Effect of Agricultural Production Technologies on Agribusiness Transformation.....	51
Figure 4.2: Effect of Local Storage Practices .....	52
Figure 4.3: Effect of Modern Storage Practices.....	53
Figure 4.4: Effect of other Storage Practices .....	55
Figure 4.5: Effect of Storage Practices on Agribusiness Transformation .....	57
Figure 4.6: Effect of Promotion .....	59
Figure 4.7: Effect of Branding and Packaging.....	61
Figure 4.8: Effect of Grading and Pricing.....	63
Figure 4.9: Effect of Marketing Practices on Agribusiness Transformation .....	66
Figure 4.10: Effect of Primary Processing.....	67
Figure 4.11: Effect of Simple Agro-processing Practices .....	68
Figure 4.12: Effect of advanced Agro-processing Practices.....	70
Figure 4.13: Effect of Agro-processing practices on Agribusiness Transformation.....	71
Figure 5.1: Effect of Vertical Function on Agribusiness Transformation .....	76
Figure 5.2: Agribusiness Transformation .....	82

### **ABBREVIATIONS AND ACRONYMS**

ACET	African Centre for Economic Transformation
ADMACH	Advanced processing practices
AfDB	African Development Bank
AFI	Agriculture for Impact
AGRA	Alliance for Green Revolution Africa
ANPLO	Animal plough application
APROC	Agro processing practices
APRP	Agro-processing
APT	Agribusiness Production Technology Practices
ASDP II	Agricultural Sector Development Programme phase Two
AT	Agribusiness Transformation
BRAPA	Branding and Packaging
CAADP	Comprehensive African Agriculture Development Programme
DGP	Gross Domestic Product
FAO	Food and Agriculture Organization
FEW	Famine Early Warning Systems Network
GAPRI	Grading and Pricing
GAFSP	Global Agriculture and Food Security Program
GoT	Government of Tanzania
HF	Horizontal function
HHOE	Hand Hoe
MAKP	Marketing practices



PO	Purchasing Order
PRIMP	Primary processing practices,
PROM	Promotion activities,
PTIL	Power Tillers application,
PTIL	Power Tillers
REPOA	Research on Poverty Alleviation
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SCP	Structure Conduct Performance
SDGs	Sustainable Development Goals
SIMACH	Simple Processing practices,
STORIMP	Improved storage practices,
STORLO	Local storage practices,
STOROTH	Other storage practices
STORP	Storage practices,
SUN	Scaling up Nutrition
TADB	Tanzania Agricultural Development Bank
TAT	Total Agribusiness Transformation
TRAC	Tractors application,
UNCTAD	United Nations Conference on Trade and Development
URT	United Republic of Tanzania
USDA	United States Department of Agriculture
VF	Vertical function,
WB	World Bank
WRS	Warehouse Receipt System

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background Information

The transformation process in agriculture has been observed, theorized about and known since 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 global population which is expected to grow to about 8.5 billion by 2030 (UNCTAD, 2018; AGRA, 2017), studying agribusiness transformation becomes of paramount important.

Different paradigms regarding agribusiness transformation emerged (AGRA, 2018; Vermeulen, *et al*, 2018; Bachmann *et al*, 2017; WB, 2016). Some of the paradigm linked agribusiness transformation with introduction on new varieties, widespread application of agricultural technologies, market demand, and governance in term 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 its agribusiness sub sector confronted by inadequate adherence to product quality standards, grades and post-harvest management, failure to take advantage of the long growing season as only about 5.4% of agriculture is irrigated, and low productivity for both land and labour, in which case limit product access to local as well as international markets (ACET,

2017; GoT, 2011). GAFSP (2016) pinpoints constraints within Tanzania agribusiness sector as post-harvest losses (storage practices) and inefficient logistics, lack of skills in operating processing technologies, costly packaging materials (marketing) and alike. Tackling these challenges, Tanzania government implemented policy changes such as 2012 waiver for VAT on irrigation, tractors, farm implements, Agricultural Sector Development Programme phase two (ASDP II), formulated Agricultural Sector Development Strategy (ASDS-II), put in place the 2013 national agricultural policy, and infrastructure improvement (REPOA, 2013; URT, 2013; GAFSP (2016).

On the other hand, most of regions in southern highland of Tanzania like Mbeya and Songwe are privileged with conducive climatic conditions which favour wide range of crops production including grains (USDA, 2018). Mbeya region is one of the main grain baskets, producing up to 60 percent of the total grain in the country (URT, 2011; FEWS, 2018). According to USDA (2018), the market channels of grains have many intermediary buyers and processors between producers and consumers, which strongly indicate dominance of horizontal integration than the vertical function, consequently overall efficiency of agribusiness system is reduced (USDA, 2018). In view of the above, the research study was carried out to assess the impact of entrepreneurship practices on agribusiness transformation among small-scale grain agribusinesses in Tanzania, under the vertical integration function.

## **1.2 Research Problem Statement**

The relevance of entrepreneurship practices to economic development has been highlighted by many researchers (Davidsson, *et al*, 2006; Cooney, 2012). While

entrepreneurship is fundamental to both global and local economic development (Neumann, 2021; Cooney, 2012), little is known about the impact of entrepreneurship practices specifically on agribusiness transformation. According to FAO (2017) agribusiness transformation is gaining traction in Africa, as justified by the rising ratio of agribusiness value added to farm value added. However, majority of agribusiness firms in Tanzania remain small, operate informally and face high farm inputs costs, low productivity and value-addition as result low marginal returns (WB, 2018). The challenges existing in agribusiness sector provide dynamic setting desirably to empirically investigate entrepreneurship practices (Koch *et al*, 2018). Due to this, some efforts have been made to establish empirical evidence on impact of entrepreneurship practices on agribusiness value chain.

Neumann, (2021) assessed the impact of entrepreneurship on economic, social and environmental welfare and found that the entrepreneurship is one cause of macroeconomic development, but that the relationship between entrepreneurship and welfare is very complex, whereas Wasseja, *et al* (2016) analysed commercialization of smallholder farming on household welfare in Kenya, with key focus on market access and internal farming practices. Similarly, using vertical and horizontal integration approach and multinomial logit regression model, Mutura *et al* (2015) assessed determinants of the choice of market channel among smallholder dairy farmers in Kenya.

On the other hand, Vermeulen, *et al.*, (2018) conducted a study on agricultural transformation adaptation in Asia and African countries (China, India, Morocco, Mozambique and Burkina Faso among others) whereby quantitative and time series

data were used. Although the studies linked entrepreneurship practices and agribusiness value chain, empirical evidence on the impact of entrepreneurship practices on agribusiness transformation was inconclusive, and most of studies used quantitative and time series data which relied on farmer's memory (Zungo & Kilima, 2019).

In addition, the vertical integration model (arrangement in which upstream and downstream activities of a firm is owned or controlled by the parent firm) underpinned the research study which was the strongest point of diversion from the previous studies. Previous studies might have overlooked the role of vertical integration on agribusiness transformation hence, the research gap. The proposed study was therefore employed vertical integration model, and scaled variable due to its uniqueness ability to measure respondents' perceptual understanding and satisfaction to assess impact of entrepreneurship practices on agribusiness transformation in Tanzania.

### **1.3 Overall Objective**

The overall objective of this research was to assess the impact entrepreneurship practices on agribusiness transformation in Tanzania under the vertical integration context.

#### **1.3.1 Specific Objectives**

- i. To assess effect of agricultural production technology practices on transforming agribusiness in Tanzania.
- ii. To examine effect of post-harvest storage practices on transformation of

agribusiness.

- iii. To examine influence of agro-processing practices on agribusiness transformation.
- iv. To assess effect of marketing practices on agribusiness transformation.
- v. To examine effect of vertical and horizontal function and its determinants on agribusiness transformation.

#### **1.4 General Hypothesis**

H<sub>0</sub>: There was insignificant effect of entrepreneurship practices on agribusiness transformation in Tanzania.

#### **1.5 Specific Research Hypothesis**

- i. H<sub>0</sub>: Agricultural production technology practices insignificant effect on agribusiness transformation in Tanzania.
- ii. H<sub>0</sub>: Effect of post-harvest storage facilities on enhancing agribusiness transformation is insignificant.
- iii. H<sub>0</sub>: There is no significant effect of marketing practices on agribusiness transformation.
- iv. H<sub>0</sub>: There is no significant effect of agro-processing practices on agribusiness transformation.
- v. H<sub>0</sub>: The effect of vertical function and horizontal function and its determinants on agribusiness transformation is the same.

#### **1.6 Significance and Justification of the Study**

The fact that the 2015 Sustainable Development Goals (SDGs) reflect a higher priority for the fight against hunger and a complex definition of food security (goal

2), conducting research on agribusiness transformation becomes of paramount important (Bachmann, 2017). The important information collected by the study revolved around agricultural production technologies, post-storage practices, marketing (promotion, grading and pricing, branding and packaging), and agro processing practices.

These information meant to address review of agricultural policy and other stakeholders' issues across agribusiness value chain. Linking agribusiness and entrepreneurship practices shed a vital light in accelerating development of national macro economy for instance the current Tanzania industrialization agenda, expediting self-employment through agribusiness and fosters entrepreneurship skills without which entrepreneurial capacitation in agriculture would have been missing. Since agriculture is often seen as outdated, unprofitable and hard work by young people (AFI, 2014), the expected study findings would enable young people, government and development agencies take advantage of sharpening entrepreneurship mind-set and capacity of agribusiness practitioners, policy makers and other value chains as result make agribusiness a lucrative business in Tanzania and beyond.

### **1.7 Study Scope**

The research study limits itself on examining agribusiness transformation in light of entrepreneurial practices in Tanzania, Mbeya region. It carefully and critically assessed effect of technologies used for agricultural production, effect of post-harvest storage practices, effect of agro-processing practices and influence of marketing practices as well as examining vertical integration functions on

agribusiness transformation. The study is grounded on vertical integration and structure conduct performance theory in examining agribusiness transformation. The entrepreneurship practices which were not in line with agricultural production technologies, storage, marketing and agro-processing were beyond the scope of this study.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Chapter Overview**

This chapter presents both the theoretical and empirical literature in global and local context. In the outset, the concept of entrepreneurship practices, agribusiness, and agribusiness transformation were defined. The chapter covered among other things, theoretical and conceptual framework of the study, theoretical and empirical literature review. Theoretical review was grounded on vertical integration as well as structure conduct performance model. Empirical literature review involved collecting various materials from scientific research works so as to enrich the findings of the study. Finally the chapter ends with the articulation of research gap in the literature on agribusiness transformation as impacted by entrepreneurship practices.

#### **2.2 Definition of the Key Concepts**

##### **2.2.1 Entrepreneurship Practices**

Naminse and Zhuang (2018) define entrepreneurship practices under agribusiness context as both farm and non-farm activities undertaken by individuals for profitable gains. Muzari, (2022) relates entrepreneurship practices in agriculture as undertakings leading to profitable marriage of agriculture and entrepreneurship, specifically; they are the practices which turn one's farm into a viable business. This involves application of the principles of entrepreneurship to plan for activities such as agricultural technology acquisition, production operations, harvesting, storage, marketing, agro processing and decision making in agricultural and agro-based

businesses (Muzari, 2022).

On the other hands, agripreneur is an individual employed either on a full time or part-time basis in farming activities or practices, such as soil cultivation, crop growing, and livestock rearing, as the principal source of their income. Likewise, Muzari, (2022) define agricultural entrepreneur as someone who runs his or her agricultural business at own financial risk governed by positive attitude and practice sustainable agriculture. According to Kahan (2013), there is little future for farmers unless they become more entrepreneurial in the way they run their farms. These concepts in the definition have been used in the study to organize appropriate and enriching instruments for data collect with relevant constructs.

### **2.2.2 Agribusiness and Agribusiness Transformation**

Agribusiness is defined as value addition in agricultural products and agro related products performed by agro industries and agro-enterprises (Labaste, 2015), whereas Agribusiness transformation refers to a structural and performance shift from traditional subsistence agricultural production to modernized commercial agricultural production. Agribusiness transformation can be determined by increased efficiency, innovation, diversification, and value-addition (WB, 2016).

### **2.2.3 Measuring Agribusiness Transformation**

Globally, there is no one fit for all measure for agribusiness transformation, different country used different observable trajectories to measure agribusiness transformation. These measures include agribusiness shared of GDP and growth in local and export market (Labaste, 2015). However, there is a need for more robust,

easy to measure, universally applied and well defined agribusiness transformation model (Labaste, 2015; Gandhi, 2014).

#### **2.2.4 Vertical Integration**

Vertical integration approach is defined as extent to which a firm controls the production of its inputs or suppliers and the distribution of its outputs or finished products (Mponyi, 2004; Fernandes & Tang, 2012). Two of the most common methods of vertical integration include backward and forward integration. Backward integration is when a firm expands backward on the production path into manufacturing, while forward integration is when the firm control and manage distribution or supply of their products (Kenton, 2019).

#### **2.2.5 Horizontal Integration**

Horizontal integration is also known as lateral integration, it is referred to as merger of two or more firms, in this case agribusiness firms that occupy similar levels in the production supply chain (Kenton, 2019). The model reduces cost of operations and enhances ability of mergers to strive within business competition.

### **2.3 Theoretical Model**

The study was guided by two main theories namely Vertical and horizontal integration, and Structure Conduct Performance theory. In examining effect of agricultural production technology practices, post-harvest storage, agro-processing practices and determinants of agribusiness transformation, the vertical integration theory was applied whereas, in assessing effect of marketing practices, structure conduct performance theory was used. The overall agribusiness transformation was

made up by the combined function of both theories such that as vertical integration theory described ownership of upstream and downstream operation of the firms, the structure conduct performance theory compliment efficiency, profitability, marketing and overall agribusiness organization structure as detailed in the conceptual framework (Fig. 2.1).

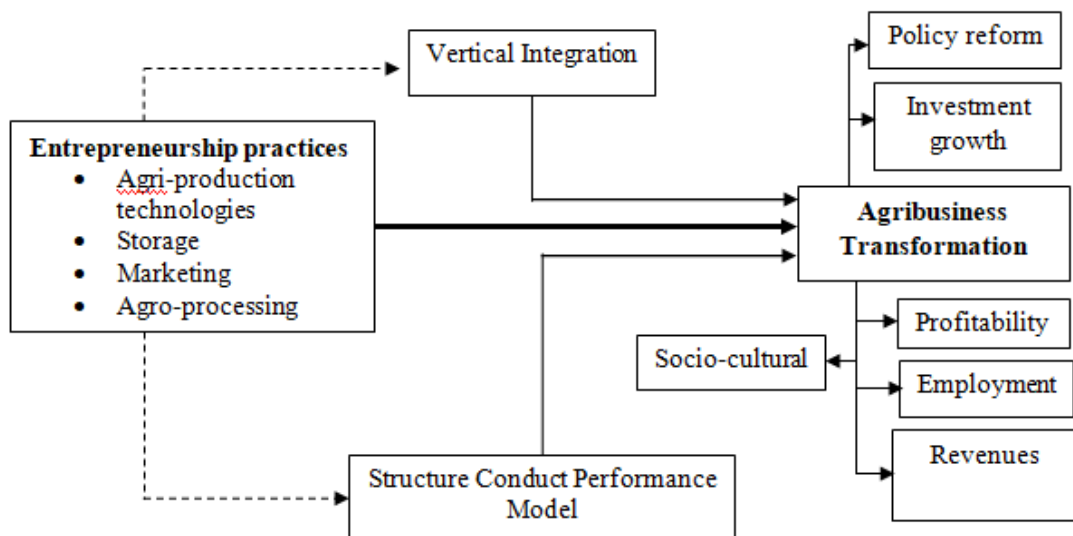
### **2.3.1 Vertical and Horizontal Integration Model**

Vertical integration brings both benefits as well as new challenges (Zhang, 2013). Majority of firms take actions to gain more control over their supply chains than the popular trend of outsourcing, tend to go back to gain a higher level of vertical integration as outsourcing raise some challenges when it comes to management (Zhang, 2013). Supporting this views, Kenton (2019) assert that firms can integrate by purchasing their suppliers, manage own storage and perform marketing activities which allow them to control the process, reduce costs, and improve efficiencies. In addition to these advantages, vertical integration also decrease transportation costs and reduce delivery turnaround times among others.

On the other hand, Horizontal integration as an opposite of vertical integration, it has an immense contribution on increasing the market share and power among the two firms. The firms can merge synergies, product lines, and enter new markets (Kenton, 2019). Mutura, *et al.*, (2015) found that horizontally integrated households in Kenya used cooperative and farmers associations as milk marketing channel. However, Kenton (2019) affirms that horizontal integration reduces the level of competition in the market while boosting the revenue of the participants who otherwise may not have prevailed in a fierce market environment independently.

### 2.3.2 Structure Conduct Performance Theory

Gichangi (2010) defines Structure as the components and characteristics of the various markets and industries in an economy. It involves the different sectors of the economy, basically describes environment in which organization operate within a specific market. Conduct explains all actions and behaviour of the organizations on the decisions being taken and the reasons behind them, for instance the way the price is set by an organization. The organization need to know if the prices are in agreement with other firms in the market. The last component in SCP is performance which measure efficiency, profitability and growth.



**Figure 2. 1: Theoretical Framework of the Impact of Entrepreneurship Practices on Agribusiness Transformation.**

Although SCP model can be adapted to examining behaviour of the firms and industries, the critics state that the model does not give exact relationship between structure, conduct and performance. On the other hand, SCP has been criticised for providing a snapshot of competitive conditions. It does not explain the historical growth of the firm neither explain how the future change will affect organization

structure, behaviour and performance (SM, 2016). In this study, the SCP theory will be used to examine effect of marketing practices on agribusiness transformation. The theoretical framework is presented below (Fig.2.1).

## **2.4 Empirical Literature Review**

### **2.4.1 Agricultural Production Technology Practices**

Ameh, *et al.*, (2017) empirically analysed the effect of Agricultural Input on Agricultural Productivity in Nigeria from 1990 to 2016, using secondary annual time series data, and adopted unit root test by Augmented Dickey-Fuller (ADF) approach; a test for longrun relationship (Johansen cointegration), Granger causality test as methodology, and then the Ordinary Least Squares (OLS) multiple regression method was used whereby revealed that agricultural production technologies (machines), agricultural credit and gross domestic product were found to be statistically insignificant. However, the study focused on three agricultural inputs namely machines, agricultural credit and gross domestic product.

Furthermore, Wang and Huang (2018) conducted an empirical study on the relationship between agricultural science and technology input and agricultural economic growth based on e-commerce model, which revealed that application of agricultural science and technology investment and e-commerce model can promote agricultural economic growth, thus agribusiness transformation. However, their study could not examine agribusiness transformation in light of agricultural production technologies in the context of the vertical integration role.

ACET (2017) affirms that the farming technologies in Africa are still primitive and require backbreaking manual work, highlighting agricultural production technologies

as cultivation tools such as tractor and power tillers or animal draught. Similarly, The Tanzania national agricultural policy and the government programs recognize storage, market, mechanization, transportation, agro-processing facilities as important infrastructure for agribusiness transformation though largely under developed (URT, 2013).

### **2.3.2 Post-Harvest Storage Practices**

Ansah, *et al.*, (2018), examined the effect postharvest management practices on the welfare of yam farmers and traders, using randomly sampled data, analysed the data with beta regression and linear regression models thereby found that that farmers lose an average of 9.6% of stored yam in 2-month period, while traders lose 3.3% of yam stored in a month. The main postharvest storage management practices used by farmers and traders include heat-control measures, sorting-management practices, and cleaning-management practices. Although postharvest storage practices enhanced the welfare outcomes for traders in Ghana, there was no statistically significant effect detected for farmers. However the study did not integrate entrepreneurial attributes and considered traders' welfare as separate from farmers

Likewise, Abass, *et al.*, (2019) assessed the profitability of selected improved grain storage technologies and the potential impact of their adoption on food security and income of smallholder maize producers in Tanzania. Using on-farm experiment data, time series maize price data, and household survey data, results show mixed opinion with regards to the profitability of metallic silos; bigger silos are profitable for farmers who have economies of scale to use them while smaller ones are profitable only within the context of higher grain price and bigger seasonal price gap. Until the

1970's, Tanzania had no policy on storage for agricultural products. However, following the appearance of the Large Grain Borer (LGB) in the 1980's, resulting in high post-harvest losses of cereals, which endangered food security in the country, the government began to support farmers to reduce post-harvest losses (REPOA, 2013).

### **2.3.3 Marketing Practices**

Mignouna, *et al.*, (2017) investigated the underpinning drivers of market participation among small scale farmers in the yam belt of West Africa. Using a multistage random sample of 1,400 households from Ghana and Nigeria found that the yield of yam (productivity) is positively and significantly related to 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 later found that the price of yam was found to be negatively, albeit, insignificant associated with the decision to sell. Despite similarities of the two studies, the effect of entrepreneurship practices among small scale yam farmers as potential agribusiness owners was not analysed.

Using data on domestic market prices of the five most consumed staple foods (maize, rice, sunflower, wheat etc.) from 15 countries, Okou *et al* (2022) analysed the domestic and external drivers of local staple food prices in Sub-Saharan Africa and revealed that the net import dependence, consumption share of staples, global food prices, and real effective exchange rates are key factors that govern changes in local staple food prices. Among these drivers, the consumption share of each staple has the largest price effect. That external factors drive food price inflation, but



domestic factors can mitigate these vulnerabilities. On the external side, it was noted that Sub-Saharan African countries are highly vulnerable to global food prices, with the pass-through from global to local food prices estimated close to unity for highly imported staples. On the domestic side, staple food price inflation is lower in countries with greater local production and among products with lower consumption shares. Additionally, adverse shocks such as natural disasters and wars bring 1.8 and 4 percent staple food price surges respectively beyond generalized price increases. The study however assessed domestic and external macro variables such that the effect of price as determinant of marketing at agro-enterprise level was not analysed.

Similarly, assessing the structure, conduct and performance of sweet potato marketing system in Nairobi and Kisumu, Gichangi (2010) found that not much of sweet potato sales promotion was carried out apart from some sorting and grading. 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. Although sales promotion was analysed Gichangi (2010) the study did not empirically analysed other marketing practices like packaging, branding and pricing. Kizito, (2011) stressed that the importance and use of improved agricultural market information in developing economies increases with the transformation of agriculture from diversified-subsistence to more specialized-commercial production.

#### **2.4.4 Agro Processing Practices**

Processing is one of the key function in agribusiness subsector as it influence price of farm commodity due to value addition. Omayio, *et al.*, (2020) assessed the

production, utilization, preservation and processing of guavas in Kitui and Taita Taveta counties, Kenya. Data collection ( $n = 417$ ) was carried out by using a semi-structured questionnaire administered to guava farmers. It was found that marketability of guavas was significantly different ( $p \leq 0.05$ ) between the two counties with market access being more difficult in Taita Taveta ( $\chi^2 = 105.3$ ,  $p < .001$ ) compared to Kitui. Most (60%) of the respondents 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. However, Omayio, *et al.*, (2020) assessment shade little information about postharvest storage practices. Asom & Ijirshar (2016) empirically examined the impact of agriculture value added (processing) on the growth of the Nigerian economy. The study used Solow-Swan exogenous growth model. The study indicated that agriculture value added had positive but insignificant influence on the growth of the Nigerian economy in both the short and long run.

According to Asom and Ijirshar (2016) measures taken to advance the level of processing industries, innovations in improving existing processes, techniques, procedures, and technology entirely help to foster the level of value added in agricultural sector thereby contributing to the growth of the economy. The study however could not examine agro-processing practices for value addition as a core function for agribusiness transformation. Likewise, WB (2016) affirms that in

Vietnam, most of agribusiness products are in the form of raw commodities, typically sold at prices lower than those of leading competitors due to value addition (processing).

#### **2.4.5 Vertical and Horizontal Functions as Determinants of Agribusiness Transformation**

As defined above, vertical function in this case are efforts bestowed by agribusiness owners to expand and reinvest on upstream and downstream of same business functions, for instance improving infrastructures like transportation logistics, storage facilities, performing simple or advanced processing and conducting sales and marketing of both agricultural raw or processed products to the end consumers. This can further extend to involve farm inputs production and distribution. Contrary, horizontal integration which exist when agribusiness firms join together to deliver products or services to end consumer for instance in agricultural marketing cooperative societies and crop association (Zhang, 2013).

Using multinomial logit regression model Mutura *et al* (2015) vertically and horizontally analysed factors influencing the choice of dairy market outlet by the small holder dairy farmers, and found that vertically integrated households used own outlet as marketing channel while horizontally integrated households used cooperative and farmers associations as milk marketing channel. It worth noting that although the study shade the light on market channel as component of entrepreneurial practices within agribusiness transformation context, the study could not analyse agro processing and storage practices deployed by farmers as it was intended by this research study.

Benmehaia & Brabez, (2017) analysed the determinants of vertical backward integration with a maximum-likelihood logistic regression model. By using a farm-level data, the analysis estimates the effect of main factors on the likelihood of a farmer for the backward input contracting. Results suggest that the important factors affecting significantly the farmer's decision for vertical backward integration are farm size, off-farm activities, and participation in government programs, ownership structure, and geographical location.

The results confirm the effective relationship hypothesized between the likelihood for backward contracting and farm characteristics. However the study narrowed itself on vertical backward integration whereby excluded vertical forward and horizontal integration. In testing actors' perceptions of the three commonly cited forms of accountability identified in the literature i.e. vertical, horizontal, and hybrid, Reddick *et al* (2020) using structural equation model found that there is both vertical and horizontal accountability present in city governments in the United States supporting a hybrid model.

On the other hand, Roy, *et al.*, (2022) analysed the impact of coepetition on the market performance of product innovation. Introduce a key distinction between the two main types of coepetition, i.e., vertical versus horizontal coepetition whereas built a set of four hypotheses and test them on a sample of 763 new products in the video game industry. Although the study shades little insights about marketing elements, it revealed that horizontal coepetition has a greater impact on the market performance of radical innovation while vertical coepetition has no impact on the market performance of innovation.

## **2.5 Agribusiness Transformation**

Using ARDL model in estimating the determinants of agribusiness output in Nigeria, Ene, H., *et al.*, (2022) found that there was long-run relationship between agribusiness output and its observed determinants. The long-run estimates revealed that agribusiness output was majorly determined by temperature level, exchange rate, capital and labour employed. The latter coincide with the current study specified agribusiness transformation variables in the conceptual framework i.e., increase in agricultural sales, number of employees under agribusiness owners, capital investment and profit margins.

Hazell, (2007) found that in an era of globalization, trade liberalization, changing market structures and demand, and ample world food supplies, which literarily translate to agribusiness transformation, developing countries should moderate the importance of food staples and small farms and focus instead on commercial farms, higher-value agriculture, and rural income diversification, without which the country will remain trapped in poverty, hunger, and economic stagnation. Likewise, Dimitri, *et al.*, (2005) assert that the structure of farms, farm households, and the rural communities in which they exist has been transformed noticeably over the last century. The transformation includes productivity growth, the increasing importance of national and global agriculture markets, and the rising influence of consumers on agricultural production.

## **2.6 Policy Review**

Tanzania launched a number of policy initiatives, strategies and plans for development purposes. These policies, plans and strategies included National

Agricultural Policy 2013, Tanzania Development Vision 2025, The Medium Term Development Plans 2011-2016; the National Poverty Eradication Strategy (NPES) (1998); and the Poverty Reduction Strategy (PRSP) of 2000 among others (URT, 2014). According to Divanbeigi and Saliola (2016) Government policies play a key role in shaping the business environment through their impact on costs, risks and barriers to competition for various players in the value chain.

Looking at both the quality and the efficiency of agribusiness regulations, and using new cross-sectional data, investigated the relationship between the heterogeneity in countries' agricultural productivity and differences in how they regulate agricultural markets. The results show that agricultural productivity is on average higher where transaction costs are lower and countries adhere to a higher number of regulatory good practices (Divanbeigi and Saliola, 2016). In order to realize agribusiness transformation, entrepreneurship practices are crucial component in policy analysis. Naminse and Zhuang (2018) suggest that policymakers in China should involve more rural farmers in the targeted poverty alleviation strategies of the government by equipping rural farmers with entrepreneurial skills.

## **2.6 Research Gap**

FAO and AfDB (2019) conducted a study to examine feasibility of establishment of Agricultural Transformation Centres (ATCs) in African context with specific reference to Tanzania, and found that there was strong market potential for Tanzanian crops, including cereals. However, the study utilized time series data and had confined itself on establishment of agricultural transformation centres rather than agribusiness transformation as a whole. URT (2016) denote that Tanzanian

farming is mainly subsistence and dominated by the smallholder farmers. The transition from traditional agriculture to agribusiness production is a central to developmental vision of many countries in Sub Sahara Africa, including Tanzania. As stated, although agribusiness should be at the top of the agenda for economic transformation and development in Africa (WB, 2013), as it offers promising opportunities to accelerate agribusiness development, increase food security, address poverty, youth employment and drive agriculture-led economic growth (Payumo *et al*, 2017), it's transformation has not been empirical documented. In addition, the vertical integration model appeared to be the strongest point of diversion from the previous studies hence the research gap.

## **2.7 Conceptual Framework**

The conceptual framework of this study indicates causal effect relationship between entrepreneurship practices and agribusiness transformation. The selected dimensions of entrepreneurship practices can positively or negatively influence agribusiness transformation. Utilization of agricultural production technologies (the 1<sup>st</sup> specific object), simplify works and increase production hence agribusiness transformation. In addition to agricultural production technologies, Storage practices (the 2<sup>nd</sup> specific objective) were crucial to curb post-harvest loses and enhance pricing of agricultural products hence profitability and capital accumulation necessary for agribusiness transformation. It was from this then, if well managed, storage practices may lead to agribusiness transformation as depicted in the conceptual framework.

The better the marketing practices (the 3<sup>rd</sup> specific objective) the higher the sales volume and thus agribusiness transformation. Despite the fact that agro-processing

(the 4<sup>th</sup> specific objective) adds value of agricultural produce, reduce bulkiness of the consignment and improve product presentation, it also enhance shelve life and make it more convenient during transportation, especially when it comes to international market. Apart from causal effect relationship demonstrated in the conceptual framework, the vertical integration and horizontal function play mediating role on the determinants of agribusiness transformation worth studying i.e. the 5<sup>th</sup> specific objective (Figure 2.2).

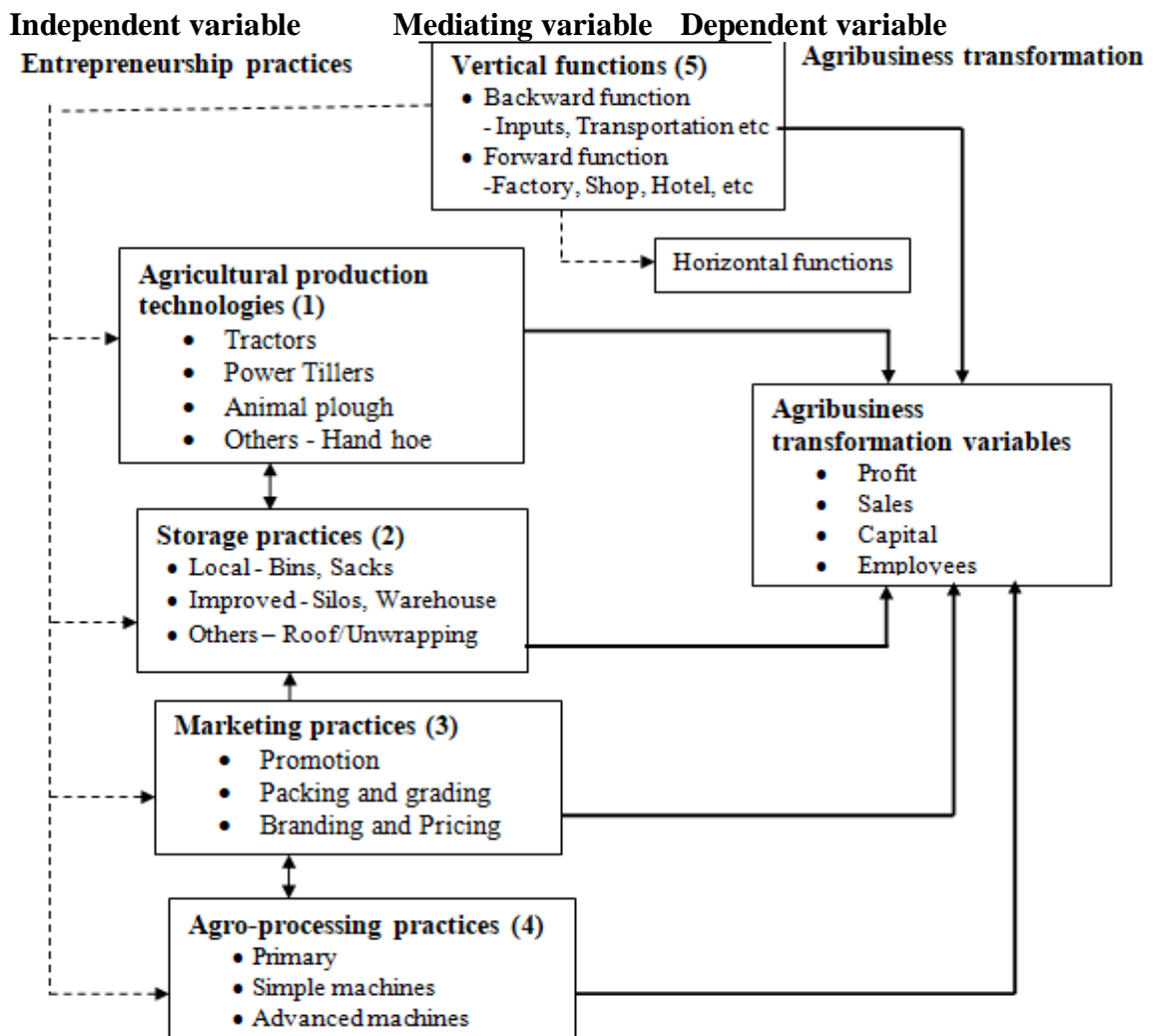


Figure 2.2: Conceptual Framework for Impact of Entrepreneurship Practices for Agribusiness Transformation

**A key**

—————▶ Indicate strong relationship

.....▶ Indicate weak relationship



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Chapter Overview**

This chapter discussed the research methodology with which the study was based. Specifically, the chapter described the study area, research philosophy (research paradigm) and assumptions of the study, research type and design, sampling design and procedures, data collection methods and instruments, data processing and analysis. It presents reliability and validity of the research study, general econometric regression model used to respond on hypothesis of the study and validate agribusiness transformation in Tanzania. Finally the chapter presents statistical test applied to ascertain sample characteristics such as normality test, multicollinearity, homoscedasticity and heteroscedasticity, Cronbach's Alpha reliability test and ethical issues guided the study.

#### **3.2 Description of the Study Area**

The study was conducted in southern highland of Tanzania, Mbeya region. The region is located in south west corner of the southern highlands of Tanzania, lies between Latitude 7° and 9° - 31° South of Equator, and between Longitudes 32° and 35° east of the Greenwich Meridian (URT, 2007). Some of the reasons for selecting Mbeya as a study area were due to the fact that 40% of region's GDP is contributed by agribusiness, 80% of the population residing in Mbeya on average were engaged in agriculture production, and the region has suitable climatic conditions suitable for food crops as well as traditional cash crops production (URT, 2007). As such Mbeya is a renowned agribusiness hub along Southern Agricultural

Growth Corridor of Tanzania (SAGCOT). The region has 8 districts from which two districts of Mbeya urban and Mbozi districts were selected for data collection. Mbeya urban and Mbozi districts have the highest number of crop growing households per square kilometre and the highest percentage of crop growing households in the region respectively (URT, 2007).

### **3.3 Philosophy and Assumptions of the Study**

The philosophy underpinning this study proposal was derived from differentiation of the three major assumptions in business and research management namely ontology, epistemology and axiology. While Ontology refers the nature of reality, in which case shape the way in which study objects interpreted (Saunders, 2009). In agribusiness these objects include agribusiness enterprise, management, individuals' activities and events taking place within the agribusiness enterprise. According to Saunders (2009), epistemology concerns with assumptions about what consist of acceptable, valid and legitimate knowledge, and how knowledge can be communicated to beneficiaries.

The knowledge referred would be ranging from numerical data, textual, visual data, facts to interpretation, narratives etc. On the other hand, axiology was about the role of values and ethics within the research process (Saunders, 2009). Basing on these assumptions the study philosophy was positivism. The positivism justified by the fact that, the research used existing theories, collect and quantified data and testing hypotheses to draw conclusion on agribusiness transformation. Since data collection was used to assess hypothesis in the context of vertical integration, the study then adopted deductive approach. According to Saunders (2009), deductive approach

used to evaluate hypotheses or propositions related to an existing theory.

### **3.4 Research Type and Design**

The study adopted cross sectional research design to respond to overall objective of the proposed research and consequently research hypothesis. Some of the key characteristics of cross-sectional research design are that the research takes place at a single point in time, it does not involve manipulating variables, it allows researchers to look at numerous characteristics at once (age, income, gender, etc.), it is often used to look at the prevailing characteristics in a given population and can provide information about what is happening in a current population. The cross-sectional data gives up to date findings and recommendation which was the core to the research study.

### **3.5 Sampling Design and Procedure**

The sample frame obtained from the Districts Executive Director (DED) office - trade and agriculture departments. Information from DED office further authenticated using Ward Executives office (WEO) residence ledger. The purposive sampling method was employed (researchers employ his or her own expertise to judge about whom to include in the sampling frame) to establish the sample frame. The vertical integration and horizontal integration model indicators was used to form two groups of vertical integrated against none vertical integrated agribusiness owners.

Since a sample is part of sample frame which is studied, sample size was then be drawn from each group by using probability method of simple randomly sampling.

The simple randomly sampling ensured that respondents were selected without biasness and that each member in the sample frame had an equal chance to be selected. The sampling unit of the study was agribusiness owners. In order to have a good representative sample, both vertical and horizontal integrated agribusiness owners were considered. The sample size was estimated by using mathematic sampling method developed by Yamane so as to ensure the findings generalized from the sample are with limits of random error (Adam, 2021). The mathematical formula is illustrated in equation 1.

$$nY = N / (1 + Ne^2) \dots\dots\dots (1)$$

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

**Table 3.1: Sample Frame and Sample Size Estimation**

Districts	Sampling frame (N)	Sample size (nY)
Mbeya Urban	350	$nY = 700 / (1 + 700(0.05^2))$
Mbozi	350	$nY = 700 / 2.75$
<b>Total</b>	<b>700</b>	<b>nY = 254</b>

**Source:** Improvised from Adam, (2021).

According to Kothari (2009), if the population from which the sample is drawn is heterogeneous, a large sample would be required. Mbeya is a dominant agribusiness region with heterogeneous agribusiness practitioners. The sample frame was purposively obtained from district agriculture officer farmers’ ledger, whereby 350

sample frame came from Mbeya urban district and 350 came from Mbozi district, two Wards and two Villages were purposively sampled in which case the total of 700 agribusiness owners were selected as sample frame. Therefore using equation (1) above, the sample size was computed to be 254 respondents. The table (3.1) indicates how the sample size was computed.

### **3.6 Data Collection Methods and Instruments**

Both primary and secondary data were collected. Primary data were collected through structured questionnaires of a 5-point Likert-type, whereby set of statements (Items) were pre developed for respondents to assign the values (1 – 5) depending on personal agreement against statements. For instance, in examining technologies applied for agricultural production (the 1<sup>st</sup> objective), the values ranged from (1) Not at all true, (2) Slightly not true, (3) Undecided, (4) Mostly true, and (5) Completely true. In examining effect of post-harvest storage practices (the 2<sup>nd</sup> objective), a scale of five scores structured in a questionnaire was used. The scale had values implying (1) Completely disagree, (2) Mostly disagree, (3) Neither disagree nor agree, (4) Mostly agree, and (5) Completely agree.

Similarly, on assessing marketing practices (the 3<sup>rd</sup> objective), questionnaires with similar nature as above was administered to respondents with values indicating (1) never, (2) rarely (3) sometimes (4) often, and (5) always. Likewise, in examining influence of agro-processing practices (the 4<sup>rd</sup> objective), respondents were requested to respond to statements by indicating the value which gives the score in the Likert scale. The values also ranged from 1 to 5 implying, (1) Strongly disagree,

(2) Disagree, (3) Neither agree nor Disagree, (4) Agree, and (5) Strongly agree. Lastly in assessing the effect of vertical function as determinant of agribusiness transformation (the 5<sup>th</sup> objective), respondents were asked to give opinion on same scale by indicating their best representative choice by scoring between (1) Not at all, (2) Little, (3) Occasionally, (4) Often all time, and (5) Always.

Secondary data were collected mainly from library resource, online browsing, agricultural development partner's reports and journals. In addition, observation method was applied in which case, the researcher visited farms, home, and business premises of selected respondents to observe and gather evidence-based information on technologies applied, storage practices, agro-processing practices and marketing practices adopted.

### **3.7 Measurement of Variables**

The levels of measurement of explanatory variables were identified to be nominal, ordinal and interval. Thus, the key functional variables of the research study were systematically defined and categorically broken down to match appropriate measurement as illustrated in Table 3.2. Positive and negative signs were expected in among the variables in the regression model.

**Table 3.2: Variable Definition and Measurement (n=254)**

<b>Variable</b>	<b>Measurement</b>	<b>Scale</b>
<b>A. Background variables</b>		
Age	Number of years of respondents	Interval
Gender	State of being female or male	Nominal
Education level	Highest level of formal education attained	Ordinal
Area planted	Area that crops are grown in Ha's	Interval
<b>B. Agricultural production technology practices</b>		
	<b>5- points Likert scale</b>	
Tractors, Power Tillers, Animal plough, Hand hoe	Equipment used to simplify farming activities measured by Likert scale	Ordinal
<b>C. Storage practices</b>		
	<b>5- points Likert scale</b>	
Local Storage	Keeping grain using local methods	Ordinal
Improved Storage	Keeping grains using modern methods	Ordinal
Others	Alternative methods of keeping grains	Ordinal
<b>D. Marketing practices</b>		
	<b>5- points Likert scale</b>	
Promotion	Advertising products so that can sales	Ordinal
Packing and Grading	Activities related to products wrapping and setting categories based on quality and quantity.	Ordinal
Branding and Pricing	Activities related to of products labelling and setting price	Ordinal
<b>E. Agro-processing practices</b>		
	<b>5- points Likert scale</b>	
Primary processing	Processing using human power	Ordinal
Local machines	Value addition using traditional/simple machine	Ordinal
Advanced machines	Value addition using modern machines	Ordinal
<b>F. Vertical function</b>		
	<b>5- points Likert scale</b>	
Backward integration	Activities performed at upstream of the firm	Ordinal
Forward integration	Activities performed at downstream of the firm	Ordinal
<b>G. Horizontal function</b>		
<b>H. Agribusiness transformation</b>		
	<b>5- points Likert scale</b>	
Profitability	Increase in net worth of the agribusiness firm	Interval
Employees	The hired human labour	Ordinal
Investment capital	Financial resources available for business development and growth	Interval
Sales	Process of exchange of goods or services to customer using monetary value	Interval

### 3.8 Data Processing and Analysis Methods

Data from questionnaires were extracted, coded, transformed and the total scores of each variable were computed. Munishi *et al.*, (2017) assessed factors affecting performance of smallholder tea farmers using the multiple regression model, which was found to be a good fit for the data ( $F = 11.777$ ;  $p < 0.0001$ ;  $R^2 = 0.255$ ). In this case, the study improvised on the similar multiple regression models to develop the specified models for individual specific objectives and general objective of the study. Based on adopted empiricism paradigm (positivism), the specified models followed the regression equation model presented in equation 2.

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \dots \dots \dots + \beta_n X_n + \epsilon_i \dots (2)$$

Where:  $Y_i$  = Expected value of dependent variable,  $X_1$  to  $X_2$  = Independent or predictor variables,  $\beta_1$  to  $\beta_n$  = estimated coefficients (to be generated),  $\beta_0$  = Coefficient of regression, when all values of  $X_1$  to  $X_n$  is equal to zero, and  $\epsilon_i$  = Random error term,

(i) Examining effect of agricultural production technology practices

The specified model was given by tractors used for farm preparation, planting, harvesting etc., Power Tiller used for farm production activities and Animal plough used for farm production activities as summarized in equation 3.

$$APT = f(\text{TRAC}, \text{PTIL}, \text{ANPLO}) \dots \dots \dots (3)$$

Equating the equation above to regression model, the specified model was as indicated in equation 3.1.

$$APT = \beta_0 + \beta_1 \text{TRAC} + \beta_2 \text{PTIL} + \beta_3 \text{ANPLO} + \epsilon_i \dots \dots \dots (3.1)$$

Where:  $APT$  = Agribusiness Production Technology Practices,  $\beta_1$  to  $\beta_3$  = are



coefficients estimated, while  $\beta_0$  = Coefficient of regression, TRAC = Tractors application, PTIL =Power Tillers application, ANPLO = Animal plough application and  $\epsilon_i$  = Random error term.

(ii) Examining effect of post-harvest storage practices

The specified model for Post-harvest storage practices was given by local Storage practices, improved storage practices and other practices, of which gave the function presented in equation 4;

$$STORP = f(STORLO, STORIMP, STOROTH) \dots \dots \dots (4)$$

The general specified model for storage practices is presented in equation 4.1.

$$STORP = \beta_0 + \beta_1STORLO + \beta_2STORIMP + \beta_3STOROTH + \epsilon_i \dots \dots \dots (4.1)$$

Where: STORP = Storage practices,  $\beta_1$  to  $\beta_3$  = are coefficients estimated, while  $\beta_0$  = Coefficient of regression, STORLO = Local storage practices, STORIMP = Improved storage practices, STOROTH = Other storage practices, and  $\epsilon_i$  = Random error term

(iii) Assessing the effect of marketing practices

The specified model to assess effect of marketing practices was generated as presented in equation 5.

$$MAKP = f(PROM, BRAPA, GRAPRI) \dots \dots \dots (5)$$

The equation above was transformed into regression equation to give the specified model in equation 5.1.

$$MAKP = \beta_0 + \beta_1PROM + \beta_2GRAPRI + \beta_3BRAPA + \epsilon_i \dots \dots \dots (5.1)$$

Where; MAKP = Marketing practices,  $\beta_1$  to  $\beta_3$  = are coefficients estimated, while  $\beta_0$  =

Coefficient of regression, PROM = Promotion activities, BRAPA = Branding and Packaging, GRAPRI = Grading and Pricing, and  $\epsilon_i$  = Random error term.

(iv) Examining influence of agro-processing practices

As explanatory variable in this regard, agro processing practices was a function of primary processing practices, Simple Machines used for agro-processing and advanced machines as summarized in equation 6;

$$APRP = f(\text{PRIMP}, \text{SIMACH}, \text{ADMACH}) \dots\dots\dots (6)$$

Therefore, the specified model to assess influence of agro-processing was indicated in equation 6.1.

$$APRP = \beta_0 + \beta_1\text{PRIMPs} + \beta_2\text{SIMACHs} + \beta_3\text{ADMACH} + \epsilon_i \dots\dots\dots(6.1)$$

Where: APRP, = Agro processing practices,  $\beta_1$  to  $\beta_3$  = are coefficients estimated, while  $\beta_0$  = Coefficient of regression, PRIMP = Primary processing practices, SIMACH = Simple Processing practices, and  $\epsilon_i$  = Random error term.

(v) Analysing effect of vertical and horizontal functions and its determinants on agribusiness transformation.

The model specification is given by regression model as presented in equation 7.

$$AT = \beta_0 + \beta_1\text{VF} + \beta_2\text{HF} + \epsilon_i \dots\dots\dots (7)$$

Where: AT = Agribusiness transformation,  $\beta_1$  to  $\beta_2$  = are coefficients estimated, while  $\beta_0$  = Coefficient of regression, VF = Vertical function, HF = Horizontal function and  $\epsilon_i$  = Random error term.

In model (2) – (7) above, if p-value was less than 0.05 ( $P < 0.05$ ) then null hypothesis was rejected and alternate hypothesis was accepted. In addition, the total scores of

each statement (items) from Likert scale was summed up to generate its estimated mean score (M) i.e. level of effect. The table below indicates total statements to be used against each variable and computed minimum and maximum scores of each variable. The scores was translated into level of effects by categorizing mean scores into three levels of effects i.e. poor, moderate and excellence for each specific variable. This was used as one of decision guide against actual field scores (Table 3.3).

**Table 3.3: Data Processing Matrix for Agribusiness Transformation (n = 254)**

Variables	Statements	Likert Scale	Level of effect or influence
<b>Agricultural production Technologies</b>	<b>11 items</b>	<b>Scores 11 – 55</b>	<b>If M=11-25 Poor; Moderate 26-40; Excellent 41-55</b>
Utilize Tractors, Power Tillers, Animal draft and or Manpower	11 items	Values 1 – 5	If M=1-2.5 Moderate; 2.6-5 Excellent
<b>Storage practices</b>	<b>15 items</b>	<b>Scores 15 – 75</b>	<b>If M=15-30 Poor; 31-40 Moderate; 41-75 Excellent</b>
Local Storage facilities	7 items	Values 1 – 5	If M=1-2.4 Poor; 2.5-3.7 Moderate; 3.8-5 Excellent
Improved Storage facilities	6 items	Values 1 – 5	If M=1-2.4 Poor; 2.5-3.7 Moderate; 3.8-5 Excellent
Other forms of Storage	2 items	Values 1 – 5	If M=1-2.4 Poor; 2.5-3.7 Moderate; 3.8-5 Excellent
<b>Marketing practices</b>	<b>22 items</b>	<b>Scores 22 – 110</b>	<b>If M=22-52 Poor; 53-83 Moderate; 84-110 Excellent</b>
Promotion, Grading and Pricing, Branding and Packaging	22 items	Values 1 – 5	If M=1-2.4 Poor; 2.5-3.7 Moderate; 3.8-5 Excellent
<b>Agro-processing Practices</b>	<b>12 items</b>	<b>Scores 12 – 60</b>	<b>If M=12-29 Poor; 30-46 Moderate; 47-60 Excellent</b>
Primary, Simple and improved processing practices	12 items	Values 1 – 5	If M=1-2.4 Poor; 2.5-3.7 Moderate; 3.8-5 Excellent
<b>Vertical and Horizontal Functions as Determinants of Agribusiness Transformation</b>			
Backward and Forward Vertical function	11 items	<b>Scores 11 –55</b>	If M=11-26 Poor; 27-42 Moderate; 43-55 Excellent
Horizontal Function	8 items	<b>Scores 8 – 40</b>	If M=8-19 Poor; 20-31 Moderate; 32-40 Excellent
<b>Agribusiness Transformation</b>	<b>23 items</b>		
Profit Generation	7 items	<b>Scores 7-35</b>	If M=7- 17 Poor; 18-27 Moderate; 28-35 Excellent
Sales Status	5 items	<b>Scores 5 – 25</b>	If M=5-12 Poor; 13-20 Moderate; 21-25 Excellent
Capital Investment	6 items	<b>Scores 6 – 36</b>	If M=6 – 16 Poor; 17-27 Moderate; 28-36 Excellent
Employees Number	5 items	<b>Scores 5 - 25</b>	If M=5-12 Poor; 13-20 Moderate; 21-25 Excellent

Finally, the general specified function to assess impact of entrepreneurship practices on agribusiness transformation was the combination of independent variables and vertical functions, as indicated in equation 8.

$$AT = f(IV, VF, HF) \dots\dots\dots (8)$$

Where: AT = Agribusiness Transformation, IV = Independent Variable; and VF = Vertical Function, and HF = Horizontal function.

From the equation (8), Independent variables (IV) was the function of the following;

$$IV = f(APT, STORP, MAKP, APRP) \dots\dots\dots (9)$$

Where: APT = Agricultural Production technologies, STORP = Storage practices, MAKP = Marketing practices, and APRP = Agro-processing practices.

Extending equation (8) to measure Total Agribusiness Transformation (TAT), the following specified model (equation 10) is generated;

$$TAT = f(APT + STORP + MAKP + APRP + VF + HF) \dots\dots\dots (10)$$

Equation (10) above was transformed to regression equation as in equation (10.1);

$$TAT = \beta_0 + \beta_1 APT + \beta_2 STORP + \beta_3 MAKP + \beta_4 APRP + \beta_5 VF + \beta_6 HF + \epsilon_i \dots\dots (10.1).$$

Since each concept in equation (10.1) consists of several dimensions or variables, then the complete econometric equation for analysing agribusiness transformation was as shown in equation (10.2) below;

$$\begin{aligned} TAT = & \beta_0 + \beta_1 TRAC + \beta_2 PTIL + \beta_3 ANPLO + \beta_4 HHOE + \beta_5 STORLO \\ & + \beta_6 STORIMP + \beta_7 TOROTH + \beta_8 PROM + \beta_9 BRAPA + \beta_{10} GRAPRI \\ & + \beta_{11} PRIM + \beta_{12} SIMACH + \beta_{13} ADMACH + \beta_{14} VF + \beta_{15} HF \\ & + \epsilon_i \dots\dots\dots (10.2) \end{aligned}$$

Where: TAT = Total Agribusiness Transformations; TRAC = Tractors, PTIL = Power Tillers, ANPLO= Animal Plough, HHOE = Hand Hoe, STORLO = Local

Storage, STORIMP =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  $\epsilon_i$  = Random error term.

Since during coding of the questionnaires, each variable was measured using a Likert scale with maximum of five points, agribusiness transformation indicators was given by profit status, sales volumes, increase in capital invested and number of employees under agribusiness owners. The Total Agribusiness Transformation was estimated by summing up scores of scaled independent variables to obtain an index number which was further used to make inference on agribusiness transformation. The estimated sum of scores to measure total impact of entrepreneurship practices on agribusiness transformation was grouped as following, sum of scores below 184 means the impact was poor, above 185 and below 290 implies the impact was moderate, and above 291 indicates the impact was excellent, the details of individual independent variables indicated in Table 3.3.

### **3.9 Data Analysis and Presentation**

The data from questionnaires were analysed using Statistical Package for Social Sciences computer program (SPSS) and Microsoft Excel. Descriptive statistics involved computation of percentage, cross tabulation and frequencies which were undertaken to analyse respondent's socio-demographic attributes. Econometric analysis was undertaken using multiple ordinal regression analysis after normality test affirmed that the data were not normally distributed hence none parametric test

was adopted. The reviewed documents were analysed using content analysis. Research findings were discussed, summarized and presented in form of bar charts, pie charts as figures and tables.

### **3.10 Reliability and Validity of Data**

Reliability of data is the degree to which 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 in a number of times produces stable and consistent results (Heo, *et al*, 2015; Kothari, 2009). In order to ensure reliability of research results respondents were interviewed at the time of their convenience and in appropriate environment, in so doing participants 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 be resulted from researcher and enumerators interviewing so many respondents a day. The use of statistical tool played a key role to ensure researcher biasness was avoided.

On the other hand, Validity refers to extent at which an empirical measure adequately reflects the real meaning of the subject under investigation. Validity is a mechanism that ensures that the process implemented to collect data has collected the intended data successfully (Schunn, *et al.*, 2016). The three types of validity determinants were named as construct, internal and external validity. The use of inductive research approach, causal effect relationship existed between dependent variable (agribusiness transformation) and independent variables (entrepreneurship practices) and adoption of proper method for selecting representative sample of the population were the mechanisms applied to ensure research results are valid.

### **3.10.1 Statistical Tests**

In order to establish sample characteristics to deploy the correct statistical tests for the analysis of the impact of entrepreneurship practices on agribusiness transformation, several statistical tests were carried out prior to data analysis. The statistical tests include normality assessment, homoscedasticity and heteroscedasticity test, multicollinearity analysis and Cronbach Alpha a measure of internal consistency. According to Ghasemi and Zahedias (2012) statistical errors are common in scientific literature and about 50% of the published articles have at least one error. Thus, statistical test are meant to minimize errors and thus improve reliability and validity of the research results.

#### **3.10.1.1 Normality Test**

Test for assumption was carried out before regression and correlation analysis to ascertain whether the data set for agribusiness transformation originate from population with normal distribution. Ghasemi and Zahediasl (2012) assert that statistical errors are common in scientific literature and about 50% of the published articles have at least one error. Thus, assumption of normality needs was checked using parametric tests, because their validity depends on it. The normality test result depicts Shapiro-Wilk statistical significant p-value ( $p = 0.000$ ) across the variables i.e. APT, STORP, MAKP, APRP, VF and HF (Table 3.4). The result suggests that the sample data set originate from the population which is not normally distributed.

**Table 3. 4: Test for Normality**

Variables	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
APT	.236	254	.000	.926	254	.000
STORP	.130	254	.000	.960	254	.000
MAKP	.280	254	.000	.835	254	.000
APRP	.280	254	.000	.835	254	.000
VF	.224	254	.000	.822	254	.000
HF	.232	254	.000	.876	254	.000

**Source:** Field Data (2022).

Since normality test using p-value is more powerful test for data normalization as compared to Skewness and Kurtosis (NRI, 2021), the generated values for Skewness and Kurtosis, which is given by the ratio of statistic and standard error, the values are found to be within acceptable range of  $\pm 1.96$  as indicated in Table 3.5.

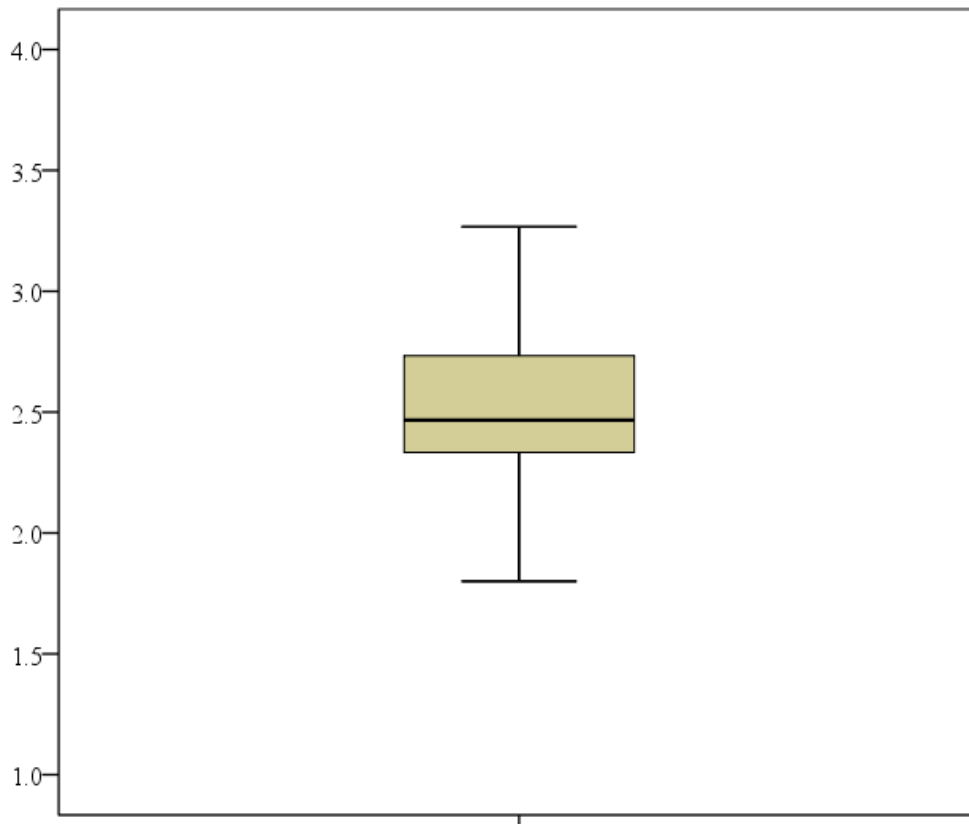
**Table 3.5: Normality Test Output for Skewness and Kurtosis (n=254)**

		Statistic	Std. Error
APT	Skewness	-0.028	0.153
	Kurtosis	1.014	0.304
STORP	Skewness	0.389	0.153
	Kurtosis	1.413	0.304
MAKP	Skewness	0.246	0.153
	Kurtosis	-1.551	0.304
APRPOC	Skewness	0.246	0.153
	Kurtosis	-1.551	0.304
VF	Skewness	1.241	0.153
	Kurtosis	1.181	0.304

**Source:** Field Data (2022).

Similarly, the box plots generate symmetric with no outliers in the box plot across all independent variables as shown in figure 3.1.





**Figure 3.1: Non Symmetric box Plot**

It can be deduced that the data set is not normally distributed which implies that multiple linear regression model as parametric test is unsuitable model for data analysis. It is from these findings ordinal logistic regression model as non-parametric test is applied to analyse the impact of entrepreneurship practices on agribusiness transformation.

### **3.10.1.2 Homoscedasticity and Heteroscedasticity**

Homoscedasticity and heteroscedasticity were conducted to establish variation of the error term or residuals, such that if the variance of the error terms or residuals remains constant with scatter plot depicting an evenly distributed pattern then homoscedasticity existed whereas if the variance of the error term was not constant

and scatter plot portrays systematic pattern, then heteroscedasticity existed. Therefore test for homoscedasticity and heteroscedasticity was carried out whereby dependent variable was regressed against independent variables. According to Zedstatistics (2018), Homoscedasticity is conspicuous when variance of Y (dependent variable) and X (independent variable) is constant while heteroscedasticity occurs when variance of dependent and independent variable is not constant. The difference between homoscedasticity and heteroscedasticity is therefore based on variation of the error term or residuals, such that if the variance of the error terms or residuals remains constant and the generated scatter plot gives an evenly distributed pattern, it is an indication of homoscedasticity.

**Table 3.6: Table: Analysis of Variance (n = 254)**

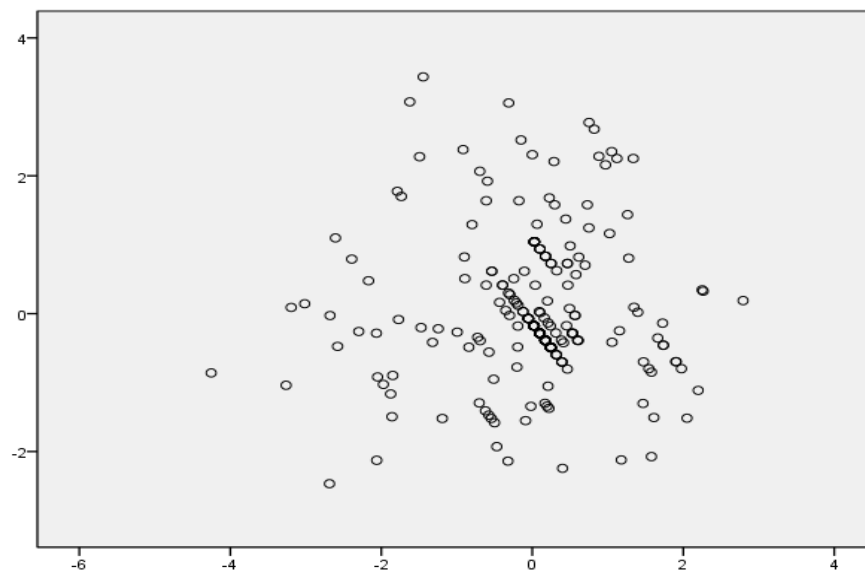
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.677	5	.935	25.209	.000 <sup>b</sup>
Residual	9.203	248	.037		
Total	13.881	253			

**Source:** Field Data (2022).

Contrarily, if the variance of the error term is not constant and scatter plot indicates a systematic pattern, it is an indication of heteroscedasticity. It is worth noting that most of cross sectional studies face the challenge of heteroscedasticity which could result into high variance of coefficients and significant values and hence unrealistic low p-values if precautions are not taken. Therefore, the dependent variable was regressed against independent variables to determine homoscedasticity and heteroscedasticity characteristics of the sample. The results generate statistical significant p-value ( $p < 0.000$ ) and  $F = 25.209$  which implies that the variance of

dependent and independent variables is constant hence homoscedasticity of the data (Table 3.6)

Similarly, the scatter plot depicts none systematic pattern, such that error terms are evenly distributed meaning that the variance of Y and X is constant which indicate homoscedasticity. These observations therefore confirm that the data set is free from heteroscedasticity characteristics (Figure 3.2).



**Figure 3.2: The Scatter Plot**

### **3.10.1.3 Multicollinearity**

Multicollinearity was tested in a preliminary analysis to find whether there exists any potential interference among variables in the model. If the Pair-wise correlation among predictors revealed less than 0.4 correlations then there will be no problem of multicollinearity. According to Gujarati (2004), if pair-wise correlation among predictors in the regression equation is in excess of 0.5 then multicollinearity is a serious problem.

Therefore, the linear regression was used to test for multicollinearity of independent variables whereby the dependent variable was regressed against independent variables to determine multicollinearity characteristics of the sample. The result generate Analysis of Variance (ANOVA) with statistical significant p-value and  $F=24.85$  whereas Variance Inflation Factor (VIF) values ranging from 1.3 to 4.594 which affirm weak multicollinearity effect among independents variables (Table 3.7)

**Table 3.7: Multicollinearity Analysis**

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
APT	.011	.042	.015	.250	.802	.745	1.342
STORP	.216	.052	.290	4.180	.000	.526	1.902
MAKP	.263	.067	.422	3.921	.000	.218	4.594
APRP	.013	.034	.033	.392	.695	.349	2.864
VF	-.097	.038	-.251	-2.587	.010	.269	3.722
HF	.071	.045	.147	1.571	.117	.289	3.461

**Source:** Field Data (2022).

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

#### **3.10.1.4 Cronbach's Alpha**

In order to ensure reliability of the data collection tool, analysis of Cronbach's Alpha as reliability analysis was carried out due to its significance in measuring internal consistency between items in the scale (Taber, 2018). One of the key precautions to be observed when analysing Cronbach's Alpha is that all statements should be in one direction i.e. should not mix negative and positive worded questions (Datatab, 2023).

Thus, Cronbach alpha as convenient test used to estimate the reliability or internal consistency of composite score (Heo *et al*, 2015), was computed to ensure variables in regression model were accurate for agribusiness transformation. The result of reliability test generates estimated Cronbach's Alpha value of 0.88 which indicates a good internal consistency (Table 3.8).

**Table 3.8: Reliability Statistics (n = 254)**

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

**Source:** Field Data (2022).

Taber (2018) pointed out that the generated Cronbach's Alpha value of 0.889 indicates good internal consistency. Therefore, the 106 items in agribusiness transformation questionnaire has passed reliability test (Table 3.9)

**Table 3.9: 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:** Taber (2018) improved.

### 3.10.2 Ethical Issues

During the research, ethical issues were observed throughout the process of data collection and interaction of different key informants. Some precautions were taken such as ensuring permission letter was collected from The Open University of

Tanzania, Research and Publication Unit. Furthermore, researcher was to ensure information collected was kept secured and used only for intended purpose. Participants were invited to participate freely and on the time of their convenient. Local Government regulations were adhered by which included self-introduction in district and ward offices before proceeding for data collection.

**CHAPTER FOUR**  
**FINDINGS ON ENTREPRENEURSHIP PRACTICES IN AGRIBUSINESS**  
**TRANSFORMATION**

**4.1 Chapter Overview**

This chapter presents the research findings using descriptive statistics analysis by starting with analysis of background information of respondents. Specifically, the chapter presents the effect of post-harvest storage practices focusing on local storage practices, improved storage practices and other storage practices, Moreover it presents effect of marketing practices by analysing promotion, branding and packaging, grading and pricing, it presents effect of agro-processing practices such as primary processing practices, simple processing practices and advanced processing practices as well as market Structure Conduct Performance model is categorically analysed.

**4. 2 Descriptive Statistics Analysis**

**4.2. 1. Background Information of Respondents**

This subsection presents relevant core background information variables namely area under grain cultivation and type of major grain produced. The study considered the background information which had close significant association with entrepreneurship practices and their impact on agribusiness transformation.

**4.2.1.1 Area under Grain Cultivation**

The results indicate that 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 4.1. These findings present multiple implications as to the type and effect of entrepreneurship practices adopted by individual respondents, and its subsequently impact on agribusiness transformation. According to WB (2018) majority of agribusiness firms in Tanzania remain small, operate informally and face high farm inputs costs, low productivity and value-addition as result lows marginal returns.

**Table 4.1: Distribution of cultivated Area per Respondent (n =254)**

<b>Planted (Ha)</b>	<b>Respondents</b>	<b>Percent of response</b>
Below 0.8	62	24.4
0.8 – 1.6	158	62.2
Above 1.6	34	13.4
<b>Total</b>	<b>254</b>	<b>100.0</b>

**Source:** Field Data (2022).

#### **4.2.1.2 Type of Major Grains Produced**

Assessing type of major grains produced, three main categories of response emerge as indicated in the Table 4.2 below. The first category who are the majority grow maize (72%), followed by paddy (12.2%) and those who growth other types of grain such as coffee, wheat, millet, sorghum and common beans (15.8%). The findings that majority of respondents produce maize than other grains can be explained by the fact that maize is a staple food crop for most of southern highland origins and is also source of income generation among agribusiness owners. Relating the area under cultivation discussed in section 4.2.1 above, it is obvious that most of maize producers are small-scale agribusiness owning between 0.8 hectares and 1.6 hectares, followed by other grain producers.



**Table 4.2: Major kind of Grain Cultivated (n =254)**

<b>Grain</b>	<b>Respondents</b>	<b>Percent of response</b>
Maize	183	72.0
Paddy	31	12.2
Others (coffee, wheat, millet, sorghum, common beans)	40	15.8
<b>Total</b>	<b>254</b>	<b>100.0</b>

**Source:** Field Data (2022).

## **4.2.2 Agricultural Production Technology Practices**

### **4.2.2.1 Hand Hoe Application**

It was revealed that majority (78.7%) of respondents use hand hoe for agricultural production, while few propositions (14.6%) use other forms of agricultural production technologies, and 6.7% of respondents were undecided. It was found that 90.9% of respondents depend on human labour for agricultural production, whereby 7.1% do not depend on human labour for agribusiness production, and 2% were undecided. Furthermore, in assessing whether few agribusiness owners use hand hoe, 86.2% refuted as compared to 13% who agreed, and 0.8% were undecided (Table 4.3). It can be deduced that reliance on primitive agricultural production technology practices render poor effect on agribusiness transformation.

### **4.2.2.2 Tractor Application**

As opposed to hand hoes application, the results indicate that small proportions of respondents (13.8%) use tractors for agricultural production, while majority (76.4%) lack tractors, and 9.8% were undecided. The results indicate that almost quarter (22%) of the respondents hired production implement from none farmers, though majority (67.3%) of respondents stated that production implement are not hired from none farmers, and 10.7% were undecided. As expected, 94.5% of respondents lack

own tractors as compared to 2.4% who possess own tractors, and 3.1% were undecided as illustrated in table 4.3. This implies that access to tractor for agricultural production is a horizontal based function. It can be deduced that the probability that the effect of agricultural production technology on agribusiness transformation is poor command high possibility.

#### **4.2.2.3 Power Tiller Application**

The results indicate that there is low utilization of power tillers for agricultural production, as 11.4% of respondents stated to use power tiller for agricultural production as compared to 72% who did not use power tiller for agricultural production, and 16.6% were undecided (Table 4.3). It was revealed that the use of power tiller is even lower than the use of tractors (13.8%) as indicated in table 4.3. These findings reinforce the fact that the use of hand hoe for agricultural production was dominant among smallholder agribusiness enterprises which contribute to poor impact on agribusiness growth and transformation. Under this circumstance agricultural production fails to deliver the rate of economic growth currently assumed by many policy initiatives in Africa (Giller *et al.*, 2021).

#### **4.2.2.4 Animal Plough Utilization**

The results indicate that 57.1% of respondents use animal plough whereby 20.1% do not use animal plough, and 22.8% were undecided. This means that application of animal power for agricultural production appears to be the second dominant to hand hoe. Linking between animal plough and power tiller, it was found that majority (83.5%) of respondents refuted that both animal plough and power tillers are used simultaneously, except 14.6% of respondents who indicate that both animal and

power tillers are used, and 1.9% were indifferent (Table 4.3). 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 can not afford expensive fuel powered mechanization.

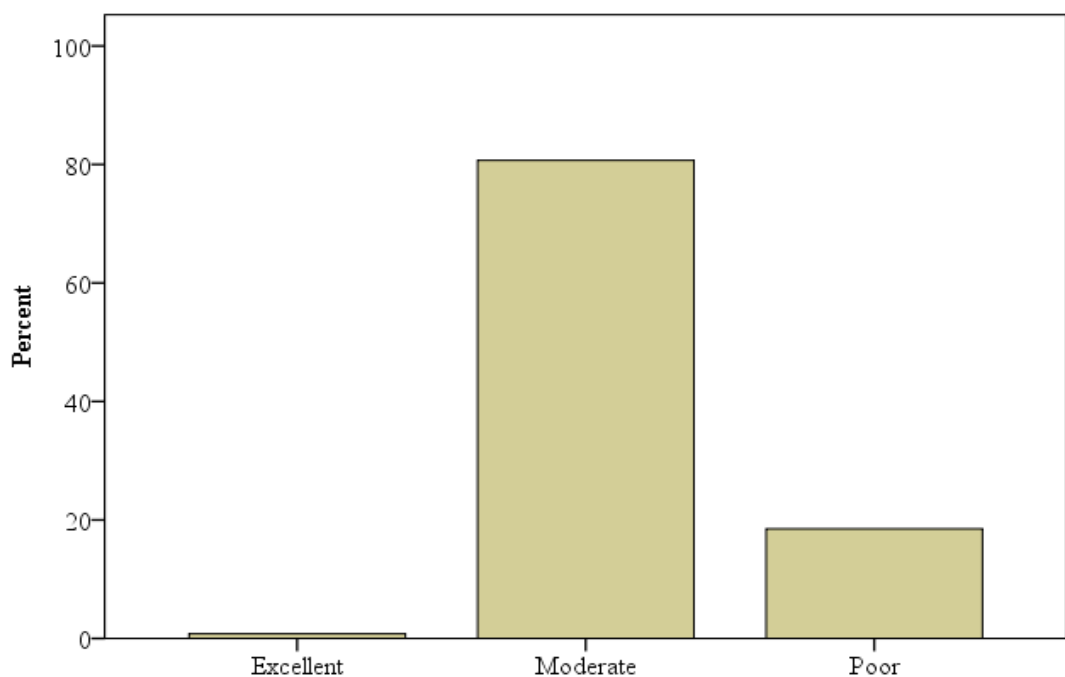
**Table 4.3: Effect of Agricultural Production Technologies in Percentage (n = 254)**

Statements	Not at all true	Completely true	Undecided	Total
Tractors 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 plough used more often	20.1	57.1	22.8	100
Both animal plough and power tillers 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 used more often in agricultural production	34.6	61.4	4	100
Few used hand hoe for agricultural production	86.2	13	0.8	100

**Source:** Field Data (2022).

The overall effect of agricultural production technology practices on agribusiness transformation was analysed using data processing matrix summarized in Table 3.3. The results indicate that majority of respondents (80.7%) assert that there is moderate effect of agricultural production technologies on agribusiness transformation, while 18.5% stated that the effect of agricultural production technologies on agribusiness is poor. It was found that very few respondents (0.8%)

assert that the effect of agricultural production technologies on agribusiness transformation is excellent (Figure 4.1). It can be deduced that the effect of agricultural production technologies on agribusiness transformation in the study area is moderate to poor. The farming technologies in Africa are still primitive and require backbreaking manual work (ACET, 2017).



**Figure 4.1: Effect of Agricultural Production Technology Practices on Agribusiness Transformation**

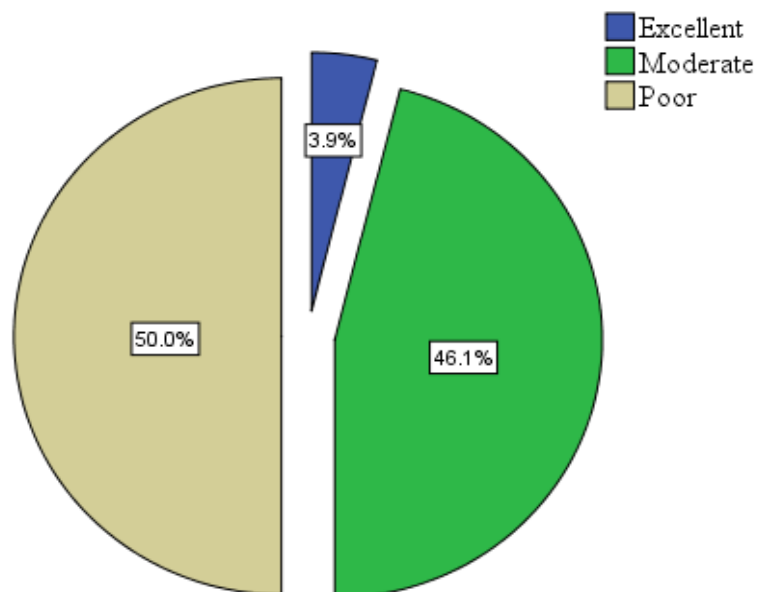
### **4.2.3 Post-Harvest Storage Practices**

#### **4.2.3.1 Local Storage Practices**

Analysing ownership of post-harvest local storage facilities, it was found that majority (63.8%) of respondents do not own local storage facility whereas, few (23%) of respondents stated to own local storage facilities, and 13% were undecided (Table 4.4). It can be deduced that lack of enough local storage facilities explain why

agribusiness owners sell grains without keeping in store as a result, fail to optimize profits that would have realized by selling grain off season when prices are high, which is a deviation from entrepreneurship characteristics. The fundamental attribute and core function of entrepreneur is desire to generate profit (GEM, (2022).

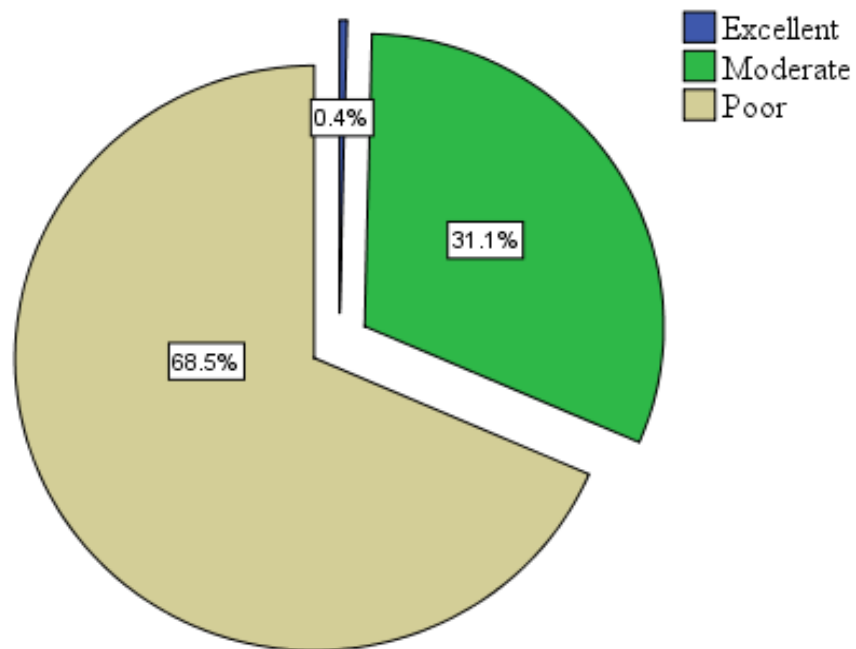
The results further indicate that most of respondents (68.9%) disagree that the storage facilities are located near farm, whereas one third of respondents (15.4%) agree that storage facilities are located near farm yard. It can be construed that the distance from farm to storage facility may affect growers' motivation to utilize storage facilities. Moreover, short term post-harvest storage practices such as the use of sacks or plastic drums are commonly used by growers since grains are sold relatively shorter time after harvesting due to various factors including financial needs and influence of other actors in grain market value chain such as, agro-dealers, assembly traders, large traders, warehouse receipt system, off takers and processors..



**Figure 4.2: Effect of Local Storage Practices**

#### 4.2.3.2 Modern Storage Practices

Analysis of modern storage practices indicate that almost 70% of respondents do not have modern storage facilities, however nearly one fourth (21.3%) of respondents have access to modern storage facilities and perform associated practices (Figure 4.3). Although the percentage of modern storage practices appear to be three times lower than those who do not engage in modern storage practices, this mean that there is a growing trajectory on modern storage facilities utilization.



**Figure 4.3: Effect of Modern Storage Practices**

The finding is justified by 85.4 % of respondents who agree that grains pay well after storage than small proportions of respondents (12.2%) who disagree (Table 4.4). These findings relate to Karuho and Collins (2020) who did a study on Improving African Grain Markets for Smallholder Farmers in East Africa. The overall effects of local storage practices mostly appear to be poor transitioning to

moderate (50.0%). Figure 4.2 summarizes the effect of local storage practices

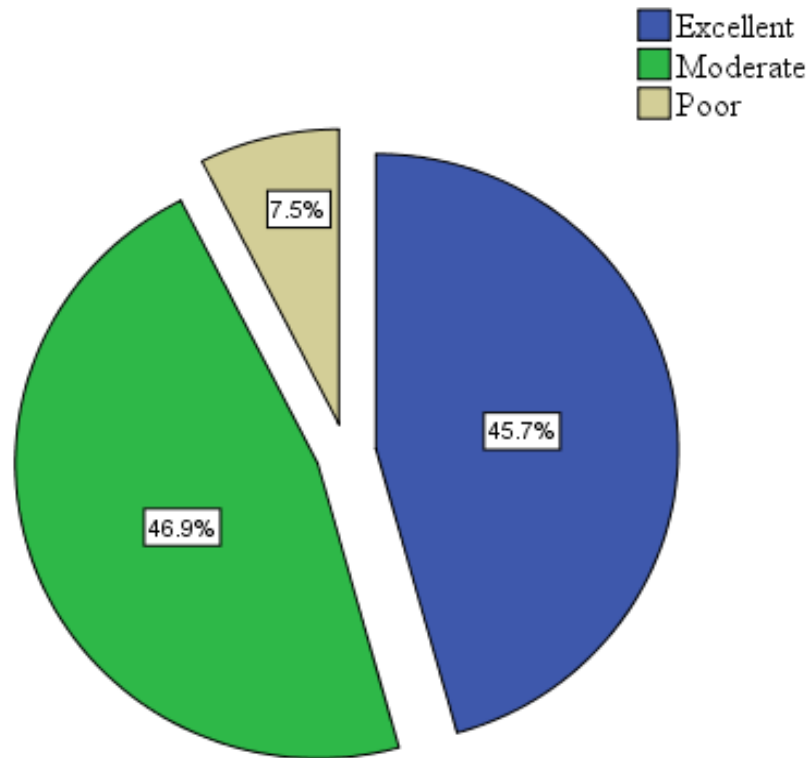
#### **4.2.3.3 Other Storage Practices**

As presented in table 4.4, most of respondents assert that other storage practices have significant contribution on profitability of grain business. This finding is supported by 70.9% of respondents who agree that significant profit is made with other storage practices, however 20.8% of respondents disagree profitability is made with other storage practices. In spite of respondents' awareness on contribution of other storage practices on profitability of grain business, it was revealed that majority of respondents (66.9%) sell grains without keeping them in store.

It can be deduced that growers' financial constraints and fear to lose money might cause poor motivation to undertake long term storage practices, as a result confronted by post-harvest loses, thus fail to take advantage of selling grains off season when prices are high. The final assessment of other storage practices in comparison to the rest of post-harvest storage practices, indicate the effect to be moderate (46.9%) transiting to excellent effect (45.7%), while 7.5% indicates that the effect is poor (Figure 4.4). These findings suggest that there is significant role played by other storage practices than local storage practices which are familiar to the respondents.

As presented in table 4.4, most of respondents assert that storage practices have significant contribution on profitability of grain business. This finding is supported by 70.9% of respondents who agree that significant profit is made if post-harvest storage practices are used, however 20.8% of respondents disagree that significant

profit is made with storage practices. In spite of respondents' awareness on contribution of storage practices on profitability of grain business, it was revealed that majority of respondents (66.9%) sell grains without keeping them in store..



**Figure 4.4: Effect of other Storage Practices**

It can be deduced that growers' financial constraints and fear to lose money might cause poor motivation to undertake long term storage practices, consequently affected by post-harvest losses, and fail to take advantage of selling grains off season when prices are high. The final assessment of the effect of other storage practices in comparison to rest of storage practices indicate moderate effect by 46.9% of the total scores while 45.7% depicts that the effect is excellent, and only 7.5% indicates the effect is poor (Figure 4.4). These findings suggest that there is significant role played by other storage practices than local storage practices which are familiar to the respondents.



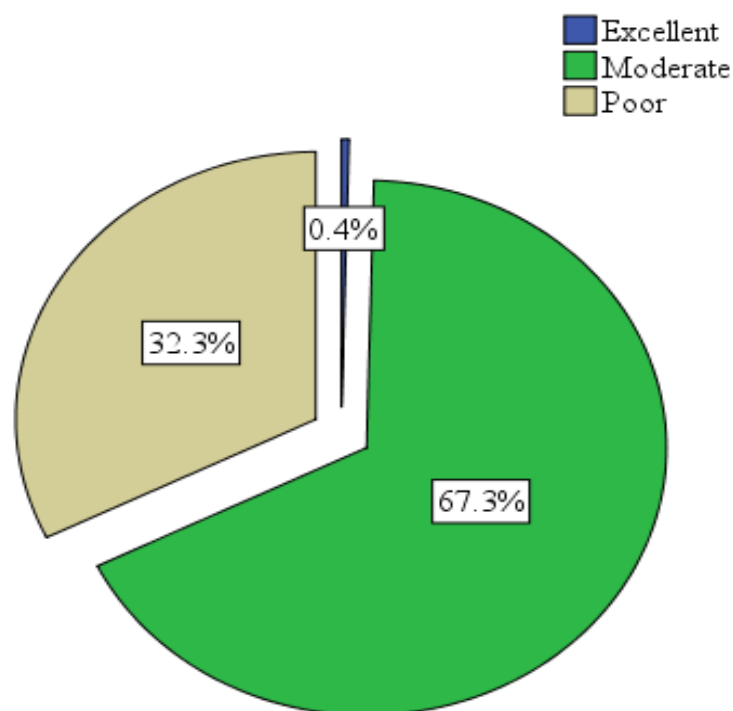
Similarly, it was found that respondents are reluctant to use common warehouse for grain storage, as 84.6% of respondents disagree on common use of warehouse, as compared to 7.1% who agree on common warehouse use for grains storage, and 8.3% were undecided (Table 4.4). This findings shade the light as to why there reported slowing down of growers adoption to government Warehouse Receipt System (WRS) which is a major marketing and storage strategy introduced to support of smallholder farmers.

**Table 4.4: Effect of Post-Harvest Storage Practices in Percentage (n = 254)**

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

**Source:** Field Data (2022).

Examining the overall effect of storage practices on agribusiness transformation, it was found that 67.3% of respondents state that the effect of post-harvest storage practices on agribusiness transformation is moderate, while 32.3% of respondents indicate the effect of post-harvest storage practices on agribusiness transformation is poor. It was revealed that almost none (0.4%) of respondents affirm that the effect of storage practice is excellent (Figure 4:5). This finding is 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. According to Kumar and Kalita, as much as 50%–60% 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 post-harvest management practices that lead to between 14% and 36 loss of maize grains.



**Figure 4.5: Effect of Storage Practices on Agribusiness Transformation**

#### **4.2.4 Marketing Practices**

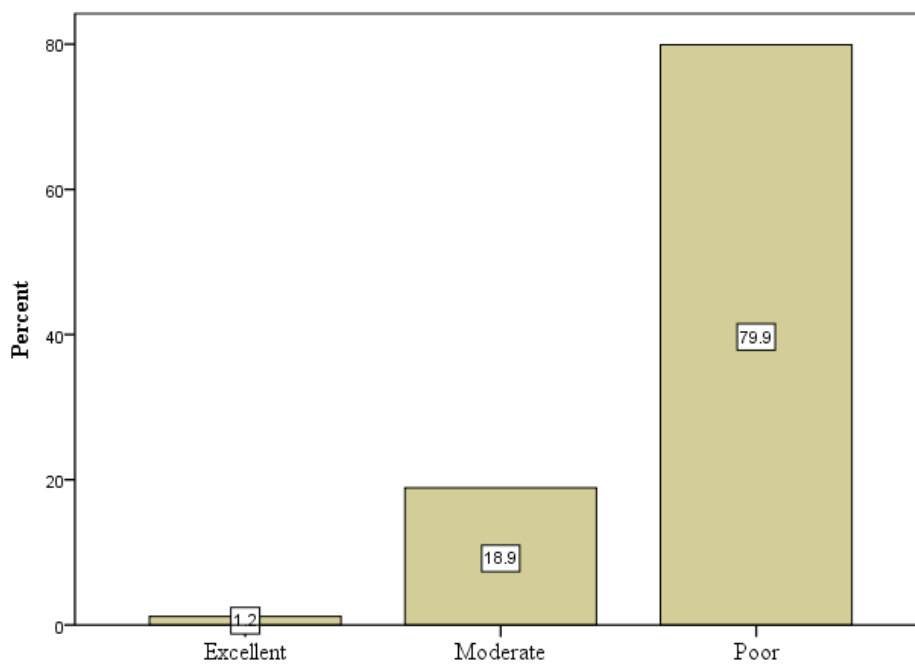
##### **4.2.4.1 Promotional Practices**

Table 4.5 summarize the findings on the effect of marketing practices on agribusiness transformation. It was revealed that majority of respondents (97.2%) never use radio to advertise farm products, though few (2.4%) often use radio for promotion. It was also found that 90.7% of respondents never used social media to do promotion as compared to 8.3% who often use social media for grain promotion. It was found that 35.8% of respondents often use mobile phone as a marketing tool to search for customers. However relatively large number of respondents (63.8%) never use mobile for promotion, and 0.4% were indifferent. It was revealed that majority of respondents depend on friends and relatives to assist them to share information about grain to enable selling, except 35% of the respondents who do not depend on friends and relatives to fetch for customers to buy the grains.

Furthermore, the results indicate that traders are the main grain market outlet than village market, as only 25.6% of respondents often sell through village market while majority (61.8%) sell through traders (Table 4.5). This presents both bitter and sweeter repercussions, on one side grain producers overcome transaction and other overhead costs which would have encountered by taking grains to the market, on the other side purchasing grains from farm yard or at primary processing point as preferred by majority of traders lower prices given to growers in expense of logistics costs incurred by traders. On exhibition participation, for instance farmers' day (famous known as Nane-nane), it was revealed that although very few (2.4%) respondents effectively participate while majority of respondents (95.2%) have never

participate effectively in exhibition. Since most of exhibitions are meant to improve knowledge and skills of the participants and promoting agribusiness, it is likely that failure to participate in exhibitions accelerate a knowledge gap which affects agribusiness transformation negatively.

Moreover, it was revealed that 52% of respondents never listen to media when get time, only 22.4% of respondents listen to media when get time while 25.2% were undecided (Table 4.5). It can be deduced that since majority of respondents underperform promotion practices the probability is that agribusiness transformation is dwindled. These findings are comparable to Gichangi (2010) who assessed the Structure, Conduct and Performance of sweet potato marketing system in Kenya and found that not much of sweet potato sales promotion was carried out apart from some sorting and grading.



**Figure 4.6: Effect of Promotion**

Generally, the effect of promotion on overall marketing practices is poor as asserted by majority of respondents (79.9%), whereas 18.9% of respondents indicate that the effect is moderate, and small proportions of respondents (1.2%) assert that the effect is excellent. It can be deduced that although the effect of promotion among respondents is found to be poor, there is indication of growing trajectory towards moderate (18.9%) and excellent effect (1.2%) as summarized in figure 4.6.

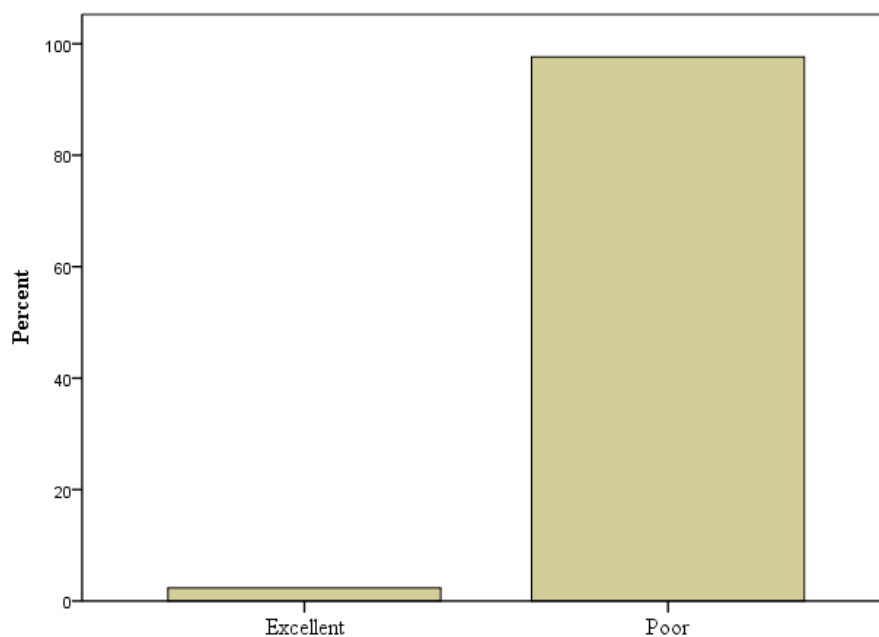
#### **4.2.4.2 Branding and Packaging**

In examining branding and packaging practices Table 4.5, the results indicate that majority (90.5%) of respondents have never engaged in contract farming, whereby 4.3% indicate to have engaged in contract farming, and 0.4% were undecided. This implies that there is limited pre-organized grains market channels, which would have set systematic branding and packaging requirements, as it is normally deemed necessary in contractual farming arrangements. It was found that most of respondents (96.9%) never practiced labelling and packaging of their grains, except 3.1% of respondents who often practice packaging and labelling.

On business names, only 2.7% of respondents had their business names appeared on the products package, while majority (96.9%) do not have business names on their product package. This means that majority agribusiness owners do not practice product branding which is one of the key entrepreneurship practice. Similarly, 72.8% of respondents never packed well grains products before selling, while 24.4% of respondents do packaging before selling, and 2.8% were uncertainly. On business logo identity and formal business name registration, the results indicate that 97.8% and 98.8% of respondents never had business logo neither formalized their

agribusiness enterprise respectively. However, the indication for agribusiness growth and formalization is conspicuous as 1.2% and 2.4% of respondents possessed business logo and their business formally registered with business names respectively (Table 4:5).

The overall effect of branding and packaging as part of marketing practices was analysed by recoding eight statements under branding and packaging into different variables to obtain three groups of effects namely poor, moderate and excellent. The results in Figure 4.7 indicate that almost all of the respondents (97.6%) affirm that the effect of branding and packaging as part of marketing practices is poor while 2.4% of respondents indicate the effect is excellent. This might have been due to the fact that most of agribusiness owners inactively participating in branding and packaging of grain-products, and lack of registered business names, logos and other property rights,



**Figure 4. 7: Effect of Branding and Packaging**

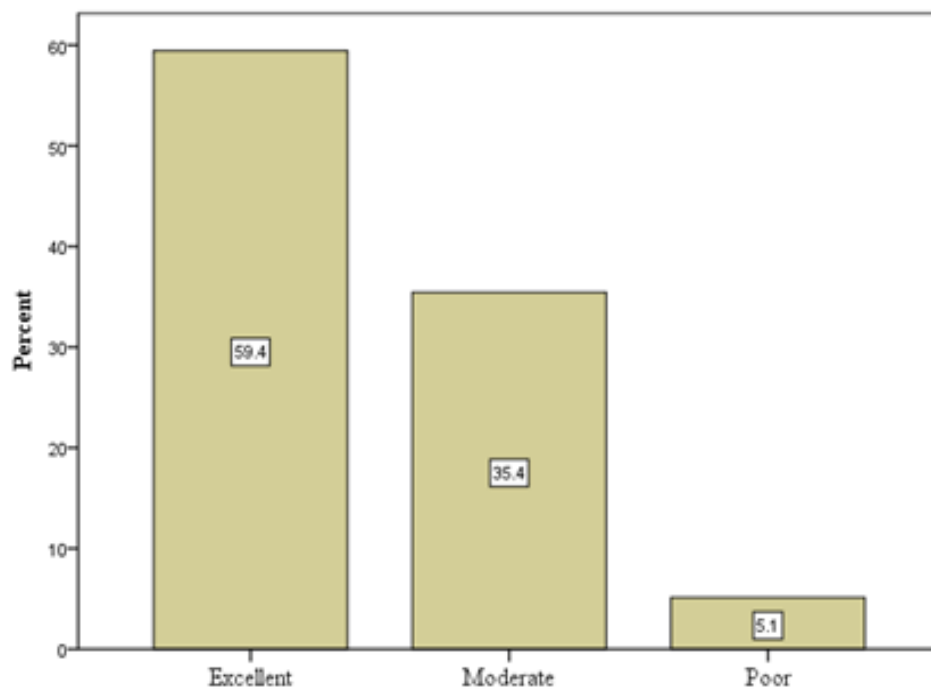
#### **4.2.4.3 Grading and Pricing**

It was found that 57.9% of respondents indicate that customer buy grains because of the low price, while 21.7% of respondents disputed, and 20.4% were undecided whether lowering the price could be the reason for selling or not. It can be deduced that since majority of agribusiness owners consider price lowering as a main attribute for increasing sales volume, it follows that the essential roles of proper grading, packaging, branding and price setting might be compromised to fulfil growers desire to sell quickly.

On assessing whether grading and pricing influence sales, it was revealed that 68.7% of respondents affirm that often all times customers come to buy grains themselves, while 28% of respondents disputed and 3.1% were indifferent. This means that customers are not attracted by prices in the first place but demand and supply forces. In assessing whether there is shortage of grains production, in which case marketing practices might have no much effect due to demand-supply forces, it was revealed that 69% of respondents indicate that grain producers are many than buyers, while 7.5% of respondents refuted, and 22.8% were undecided. However, it was evident that during high season grain production is higher than available buyers, especially during bumper crops, nevertheless as the harvesting season start to fade out, the grain scarcity occurs immediately.

The overall effect of grading and pricing indicate excellent effect by the majority of respondents (59.4%), followed by moderate effect (35.4%) whereas 5.1% indicate that the effect of grading and pricing on overall marketing practices was poor (Figure 4.8). It can be deduced that grading and pricing are good predictors of marketing

effect than promotion, branding and packaging. This can be justified by majority of respondents (57.9%) in Table 4.5 who indicate that customers buy grain due to low price in which case price was a strong determinant on selling grains. Likewise, in Table 4.5, majority of respondents (68.9%) affirm that normally customer come to buy grain themselves. This means that the price matrix influence sales such that grain producers optimize in pricing setting practices than promotion, branding and packaging.



**Figure 4.8: Effect of grading and pricing**

#### 4.2.4.4 Market Structure Conduct Performance

The Structure Conduct Performance (SCP) theory underpinned grain marketing practices and prevailing marketing characteristics. Agribusiness owners operate within multiple of structures such as agricultural actors across the value chain which renders multiple effects on transformation process. Under this context agribusiness



owners appear partially engaged with structures that facilitate selling. As it observed in section 4.2.4.1 throughout section 4.2.4.3 promotion platform including radio, social media, national exhibitions among others of which are not well exploited. Since majority of small-scale agribusiness enterprises do not conduct promotion, this directly influence the context of conduct theory negatively.

Furthermore, decision making which constituted SCP theory appears traditional oriented rather than contemporary entrepreneurial oriented. Lack of agribusiness product branding, formal registration of the agribusiness firms, product package and related sales and marketing drivers affect performance of agribusiness firms hence contradict basis of SCP theory. The SCP comprises crucial facets as structure which describe components and characteristics of the various markets and industries in an economy basically environment in which organizations operate within a specific market. The conduct explains all actions and behaviour of the organizations on the decisions being taken and the reasons behind them, for instance the way the price is set by agribusiness firm.

Performance measure efficiency, profitability and growth in which case are compromised with structure and conduct attributes of agribusiness owners. Although SCP model can be adopted to examine behaviour of the firms and industries, the critics state that the model does not give exact relationship between structure, conduct and performance. On the other hand, SCP has been criticised for providing a snapshot of competitive conditions. It does not explain the historical growth of the firm neither explain how the future change that may affect organization structure, behaviour and performance (SM, 2016).

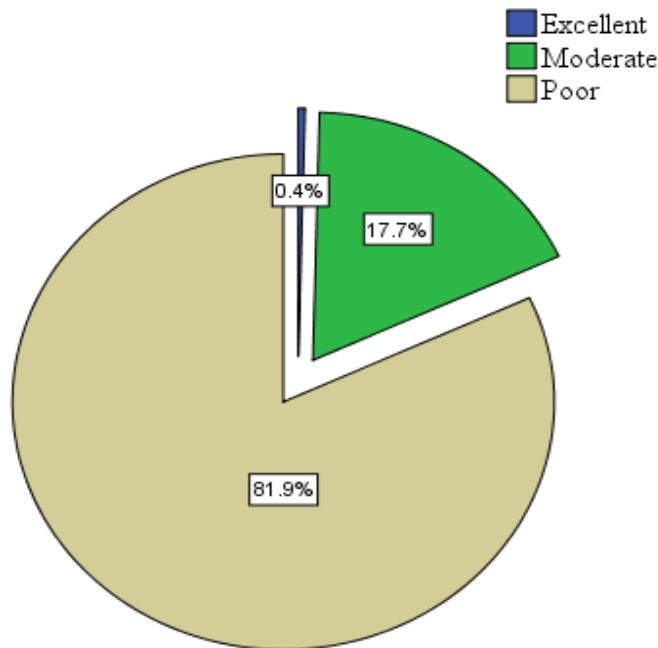
**Table 4.5: Effect of Marketing Practices in Percentage (n =254)**

<b>Marketing practices</b>	<b>Never</b>	<b>Often</b>	<b>Sometimes</b>	<b>Total</b>
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 phone used in 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 gathering used to advertise grains (pro)	69.3	8.7	22	100
Grains are taken to market place for selling (pro)	61.4	25.6	13	100
Packaging and labelling practiced (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 appear on product package (bp)	96.9	2.7	0.4	100
Customer buy my crop due to lower price (gp)	21.7	57.9	20.4	100
Pack well my product 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 effective on exhibition like Nane Nane (pro)	95.2	2.4	2.4	100
Promotion increase sales (pro)	72.8	15.4	11.8	100
Approach market differently every season (bp)	68.9	19.3	11.8	100
Listen to media when got time (pro)	52.4	22.4	25.2	100

**Source:** Field Data (2022).

The overall assessment of the effect of marketing practices on agribusiness transformation is presented in Figure 4.9. The results show that majority of respondents (81.9%) affirm that the effect of marketing practices on agribusiness transformation is poor while 17.7% indicate the effect of marketing practices on agribusiness transformation is moderate, and 0.4% of respondents who considered as

negligible indicate the effect of marketing practices on agribusiness transformation is excellent (Figure 4:9). Therefore, it can be deduced that amid excellent effect of price and grading as components of marketing, the overall marketing practices as core function of entrepreneurship practices demonstrate poor effect on agribusiness transformation in the study area.



**Figure 4.9: Effect of Marketing Practices on Agribusiness Transformation**

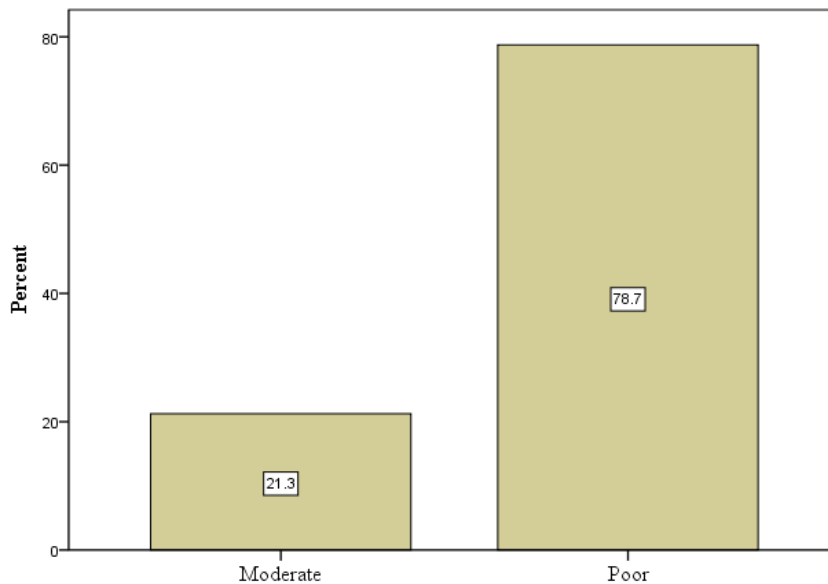
#### **4.2.5 Agro Processing Practices**

##### **4.2.5.1 Primary Agro-processing Practices**

The results indicate that 61.8% of respondents disagree that they sell grains at farm gate price, while 17.3% indicate to use farm gate price to sell, and 20.9% were undecided. This means that respondents practice primary processing to enable them to transport convenient grains from farm to home yard. It can be argued that due to small acreage that most of smallholder agribusiness undertakes, it makes cost prohibitive for traders to purchase direct from farm, instead traders use collection

centres to buy grains. It was found that 33.5% of respondents outsource agro processing services while 46.1 % do not outsource, and 20.4% were undecided. Since most of respondents (94.9%) state that agro-processing machines are expensive, while 2% of respondents disputed (Table 4.6), this suggests dominance of horizontal function among respondents.

The overall influence of primary agro-processing practices was assessed by recoding statements under primary agro-processing into different variables to determine levels of influence namely poor, moderate and excellent. The results in Figure 4.10 indicate majority (78.7%) the respondents assert that the influence of primary processing as a component agro-processing practices is poor whereas 21.3% of respondents indicate that the influence is moderate.

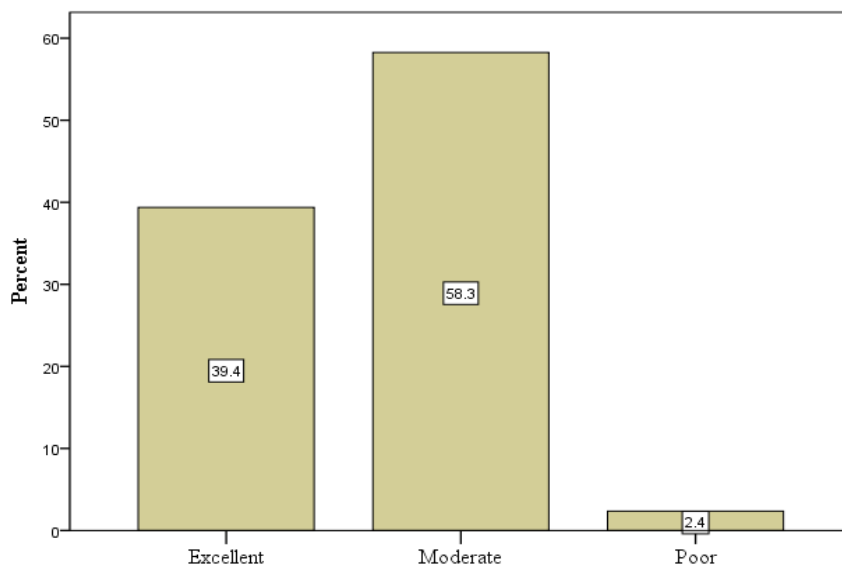


**Figure 4.10: Effect of Primary Processing**

#### 4.2.5.2 Simple Agro-processing Practices

Assessing the extent of simple agro-processing practices, it was found that 85.4% of

respondents agree that simple processing machines are used than advance machines whereas 7.1% of respondents disagree. Furthermore, majority (92.9%) of respondents disagree that grains undergo simple processing before selling, whereby 4.3% of respondents agree that grains are processed before selling, and 2.8% were indifferent. It can be deduced that majority of agribusiness owners do not engage in simple agro-processing of grains as it involves changing the form of the grains for instance maize grains to maize flour, contrary to primary agro-processing practices which are carried out mainly when grains are harvested to support packaging and easy transportation. Table 4:6 summarizes these findings.



**Figure 4.11: Effect of Simple Agro-processing Practices**

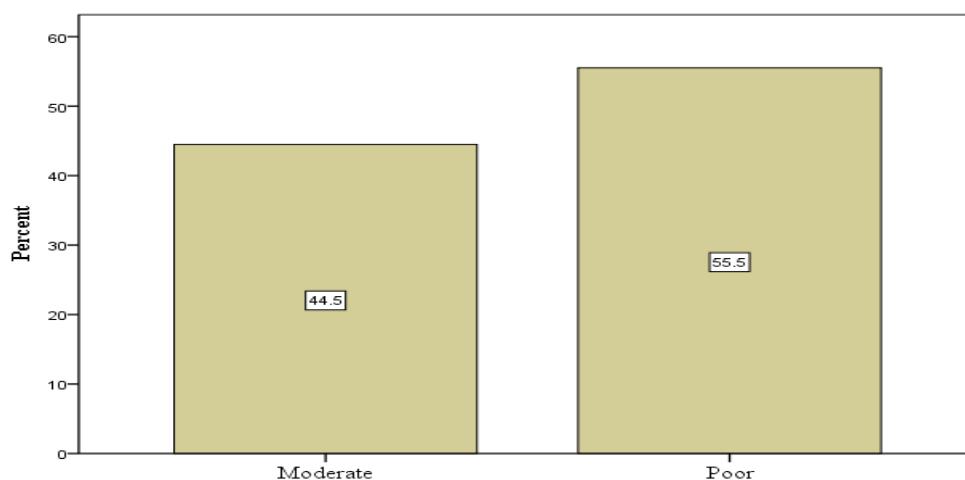
Simple agro-processing was analysed using five scaled statement from 1 strongly disagree to 5 strongly agree and was recoded into three levels of influence i.e. poor, moderate and excellent. The overall influence of simple agro-processing practices on general agro-processing practices was found to be moderate (58.3%) with some indication of improvement as 39.4% of respondents affirm that simple agro-

processing demonstrated excellent influence on general agro-processing practices (Figure 4.11). This means that simple agro-processing is good predictors of general agro-processing practices.

#### **4.2.5.3 Advanced Agro-processing Practices**

Table 4.6 presents results of advanced agro-processing practices, it was found that majority (68.1%) of respondents are not exposed to advanced agro-processing machine and associated practices, while 21.1% of respondents agree to have been exposed to advanced agro-processing machines and associated practices, and 10.8% were uncertain. It can be deduced that agro-processing options are limited to primary and simple processing practices. Majority of respondents (63.4%) disagree that training and seminars are organized to educate agribusiness owners on agro-processing while one quarter (25.6%) of respondents agree that trainings and seminars for agro-processing are organized, and 11% of respondents neither agree nor disagree (Table 4.6). These findings suggest that capacity building programs on agro-processing especially on simple and advanced agro-processing practices is an appropriate point of departure to enable majority of agribusiness owners engage in the process as potential entrepreneurs.

Therefore, the advanced agro-processing practices appear to have relatively poor influence on overall agro-processing practices as strongly agreed by 55.5% of respondents. However, 44.5% of respondents denote that there is moderate influence of advanced agro-processing practices on overall agro-processing practices as indicated in Figure 4.12.



**Figure 4.12: Effect of advanced Agro-processing Practices**

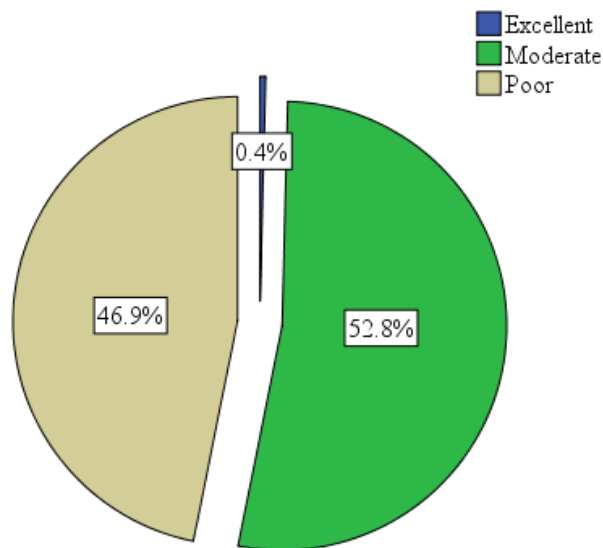
Assessing whether some agribusiness owner stopped agro-processing due to high costs of operations, it was revealed that no indication whether some respondents stopped agro processing due to high running costs as majority (80.3%) of respondents disagree to have stopped agro-processing due to running costs, though minority (16.1%) of respondents agree that high running costs made them stop agro-processing, and 3.6% undecided (Table 4.6).

**Table 4.6: Effect of Agro-processing Practices in Percentage (n = 254)**

Agro processing activities	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 add more profit	45.7	43.7	10.6	100
Agro-processing machines are expensive	94.9	2	3.1	100
Agro-processing lead to high taxes than selling unprocessed grains	82.7	10.6	6.7	100
Source out agro-processing services	33.5	46.1	20.4	100
Advance 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 seminar organized 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).

The results indicate that almost half of the total scores (46.9%) depicts there is poor influence of agro-processing practices on agribusiness transformation, whereas as 52.8% of the total score indicate the influence of agro-processing practices on agribusiness transformation is moderate, and small proportions (0.3%) of the total scores depict that there is excellent influence of agro-processing on agribusiness transformation as indicated in Figure 4.13.



**Figure 4.13: Effect of Agro-Processing Practices on Agribusiness Transformation**

Therefore the overall influence of agro-processing practices on agribusiness transformation indicate poor to moderate trajectory with small proportion of agribusiness growers indicate the influence to be excellent. This means that there is a growing initiatives in improving agro-processing practices. Mmbengwa, *et al.*, (2018) conducted relatively similar study and found that, market access linkages could significantly improve agro-processing participation practices among smallholder agro-enterprises. URT (2013) underpin storage, market, mechanization, transportation, and agro-processing facilities as important infrastructure for agribusiness transformation though largely underdeveloped.



## **CHAPTER FIVE**

### **VERTICAL AND HORIZONTAL DETERMINANTS OF AGRIBUSINESS TRANSFORMATION**

#### **5.1 Chapter Overview**

This chapter presents moderation effect of vertical and horizontal determinant of agribusiness transformation. Specifically, the chapter analyse agricultural production technology, post-harvest storage, marketing and agro processing practices in relation to vertical and horizontal function. Finally it presents assessment of agribusiness transformation pin pointing on profit generation, sales status, capital investment, and employment creation in respect to vertical and horizontal integration.

#### **5.2 Vertical Integration Model**

Theoretical implication of vertical integration was analysed to determine its moderation effect on agribusiness transformation as far as entrepreneurship practices are concerned. As summarized in Table 5.1, the results indicate that most of agricultural production technologies are hired from other service providers; as such 81.5% of respondents refute to possess agricultural production technologies, except 9.1% of respondents who possess technologies for grain production as indicated in Table 5.1. It was revealed that 83.9% of respondents have no control over trucks transporting farm inputs and grains distribution, only 13.4% of respondents indicate to have control over trucks for farm inputs and grains transportation. As expected, majority (79.1%) of respondents use seeds and fertilizers purchased from other suppliers while 7.1% of respondents use seeds and fertilizers from own sources rather than suppliers. Moreover, it was revealed that small proportions (3.5%) of

respondents can manage all agronomic expertise in the farm, as compared to majority (89%) who do not possess agronomic expertise for grains production.

In examining vertical function on sales process, it was found that 76.8% of respondents do not get demand from well-known processors to sell, except 5.1% who indicate often get demand from well-known processors to sell grains. This implies that there is absence of assured market to sell such that every agribusiness owner search for own market outlet to sell. Lack of assured market to sell is evident since it was revealed that majority of respondents (76.8%) do not sell grains through cooperatives or associations, except few proportions (11.8%) who often sell to cooperatives or associations. It was further found that there are no formal groups established by grain growers to facilitate selling process as affirmed by 87.4% of respondents, very few (11.8%) respondents established formal bargaining groups to facilitate selling of grains as indicated in Table 5.1.

On analysing vertical function on post-harvest storage practices, it was found that 66.5% of respondents do not have enough post-harvest storage facilities, as compared to 29.9% who often have enough post-harvest storage facilities for grains. These results implying that majority of respondents outsource storage facilities if the need arise, and if this happens then agribusiness owners are to follow terms and condition of services provider hence lack of control on storage facilities which is the manifestation of horizontal function characteristic as compared to vertical function. It was revealed that 94.5% of respondents do not have premises to sell grains, except 1.6% of respondent who possess premise to sell grains. It was noted that majority of respondents (57.5%) do not perform self-negotiation for market without external

support whereas only small proportions (29.9%) of respondents perform self-negotiation to acquire market for grain without external support. This means that majority of respondents depend of supporting structures which implies horizontal function on marketing.

Furthermore, it was revealed that 65.4% of respondents have not attended entrepreneurship training as compared to minority 5.9% of respondent who attend entrepreneurship trainings. It can be deduced that lack of entrepreneurship training among the majority of respondents (65.4%) impair efficiency and effectiveness on agricultural production technologies, postharvest storage practices as well as marketing and agro-processing practices as result render poor effect on agribusiness transformation.

Regarding the role vertical function in marketing practices, it was found that 60.6% of respondents do not perform marketing of grains, this mean that selling of grains mostly takes place voluntarily. This trend makes most of agribusiness owner surfer from prevailing market forces due to unpreparedness. This might be essence why most of growers have negative perception on performing agricultural marketing practices. Therefore, considering theoretical implication of the study, it can be concluded that vertical function is predominated by horizontal function. As such, most of agribusiness owners lack meaningful control of upstream and downstream entrepreneurship practices i.e. agricultural production technology, post-harvest storage, marketing and agro-processing practices which contravene vertical function model.

**Table 5.1: Effect of Vertical Function on Horizontal Function in Percentage (n =254)**

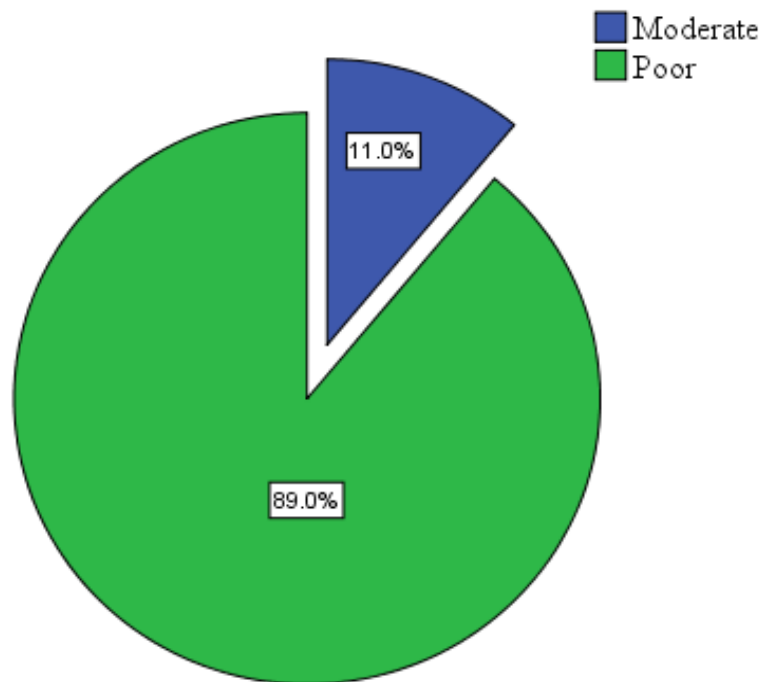
Statements	Not at all	Often	Occasionally	Total
Use seeds produced from my farm (V)	80.3	19.7	0	100
Control trucks transporting input and crop distribution (V)	83.9	13.4	2.7	100
Seeds and fertilizers purchased from other suppliers (H)	7.1	79.1	13.8	100
Most services hired during land preparation (H)	55.1	31.1	13.8	100
Possess technologies for grain production (V)	81.5	9.1	9.4	100
Grains harvested sold to open market (V)	16.9	18.5	64.6	100
Sell grain to middleman or processors (H)	16.5	16.6	66.9	100
Get demand from well know processors to sell (H)	76.8	5.1	18.1	100
Possess own premise to sell grains (V)	94.5	1.6	3.9	100
Full agronomic expertise are under agribusiness owner (V)	89	3.5	7.5	100
Sell directly to end consumer (V)	84.6	15	0.4	100
Negotiate for market without external support (V)	57.5	29.9	12.6	100
Sale grains through cooperatives or associations (H)	76.8	11.8	11.4	100
Formed own group to enable sales (H)	87.4	11.8	0.8	100
Hiring tractor or Power tiller every season (H)	28.3	60.7	11	100
Perform marketing (V)	60.6	24.4	15	100
Enough storage capacity (V)	66.5	29.9	3.6	100
Attended entrepreneurship training (V)	65.4	5.9	28.7	100
Depend on government and others to produce and sell (H)	71.3	21.6	7.1	100

**Source:** Field Data (2022).

### 5.3 Agribusiness Transformation as Determined by Vertical and Horizontal Functions

It was found that vertical function is not a significant predictor of agribusiness transformation as compared to horizontal function. The sum of scores of vertical function indicates that 89% of respondents depict that vertical function is poor determinant of agribusiness transformation compared to horizontal function. It was revealed that 11% of sum of scores indicate that horizontal function is a moderate

determinant of agribusiness transformation (Figure 5:1). It can be deduced that agribusiness transformation can be much conspicuous with horizontal function orientation.



**Figure 5.1: Effect of Vertical Function on Agribusiness Transformation**

Moreover, after analysis of individual statements under specific practices (technology, storage, marketing and agro-processing), respondents were asked to give a general overview of entrepreneurship practices (Agricultural production technologies, post-harvest storage, marketing and agro-processing practices) in relation to their day to day agribusiness occupation. It was revealed that 91.7% of respondents indicated horizontal orientation except 8.3% who indicated vertical orientation on agricultural production technologies. Similarly, on post-harvest storage and marketing of grains, 63.8% and 56.7% indicated horizontal orientation while 36.2% and 43.3% portrayed vertical orientation respectively.

As expected, on agro-processing practices, majority (90.6%) of respondents indicated horizontal characteristics as compared to minority (9.4%) who followed characteristics of vertical function (Table 5:2). It can be deduced therefore that vertical function had insignificant effect on agribusiness transformation as compared to horizontal function. It can be concluded that horizontal function demonstrated significant effect on agribusiness transformation. Kenton (2019) presented similar findings that horizontal integration reduces the level of competition in the market while boosting the revenue of the participants who otherwise may not have prevailed in a fierce market environment independently.

**Table 5.2: Effect of Vertical and Horizontal Function on Agribusiness Transformation (n =254)**

Entrepreneurship practices	Vertical function percent	Horizontal function Percent	Total Percent
Agricultural production technologies	8.3	91.7	100
Post-harvest storage	36.2	63.8	100
Marketing of grains	43.3	56.7	100
Agro processing of grain	9.4	90.6	100

**Source:** Field Data (2022).

## 5.4 Agribusiness Transformation

In measuring agribusiness transformation four variables were considered as indicated in conceptual framework. The variables are profit generated from agribusiness, Sales volume, capital growth in the farm enterprise and employees' number possessed by agribusiness owners. Using descriptive statistics findings are presented as follows.

### 5.4.1 Profit Generation

The results indicate that majority (86.2%) of respondents assert that grain is a profitable business whereas 8.3% of respondents refuted that grains production is

profitable business, and 5.5% of respondents were undecided. Respondents were asked if they had plan to quit grain production, 91.3% affirmed that they had no plan to quit farming of grains, this was further supported by the finding that most of respondents (86.2%) declare that grain is profitable business. It was however found that 85% of respondents manage to procure some assets through selling grains as compared to the few (7.1%) respondents who did not manage to purchase assets from grains selling. It was evident that most of respondents (78%) did not generate losses in the last three seasons of grains production except minority (5.5%), and 16.5% of respondents were undecided (Table 5.3). Since profitability is linked to growth of an enterprise, it can be deduced that there is slow but steady conspicuous agribusiness transformation.

**Table 5.3: Profit as a Measure of Agribusiness Transformation in Percentage (n = 254)**

Statements	Mostly No	Mostly Yes	Neither Yes nor No	Total (%)
Grains is profitable business	8.3	86.2	5.5	100
Plan to quit farming	91.3	2	6.7	100
Bought assets from grains selling	7.1	85	7.9	100
Pay for social services comfortable	5.1	85	9.9	100
Capital in farm business has grown	6.7	27.2	66.1	100
Increased crop productivity	3.5	90.2	6.3	100
Generated loss last 3 grain seasons	78	5.5	16.5	100

**Source:** Field Data (2022).

#### 5.4.2 Sales Status

It was revealed that 64.6% of respondents assert that grains are sold quickly after harvesting whereby 13% of respondents disagree that grains are sold quickly after harvesting, and 22.4% were undecided. This result presents dual implications, firstly it can be construed that demand of grain is reasonably high thus why grains sold

quickly after harvesting, and secondly, it can be interpreted as lack of effective post-harvest storage practices in which case the only option is to sell grains just after harvesting. It was found that there is no pre sales agreements that agribusiness owner signed with buyers before harvesting, as 64.2% of respondents refute that buyers give purchasing orders (PO) before grains are harvested, except few (9.1%) respondents accessed purchasing order from buyers before grains harvested, and 26.7% were indifferent. Furthermore, it was found that most of respondents do not face hardship in getting grain buyers. This is justified by 64.6% of respondents who disagree that it is hard to get buyers for grains (Table 5.4). It can be deduced that sales status of grains is reasonably good though the extremes are subjective to individual agribusiness owners' entrepreneurship practices.

**Table 5.4: Sales Status as a Measure of Agribusiness Transformation in Percentage (n = 254)**

Statements	Mostly No	Mostly Yes	Neither Yes nor No	Total
Grains sold quickly after harvesting	13	64.6	22.4	100
Buyers give purchasing order before harvest	64.2	9.1	26.7	100
Hard to get customer to sell crop	64.6	3.5	31.9	100
Grains demand is higher than supply	8.3	73.2	18.5	100
Happy about market availability	7.5	26.8	65.7	100

**Source:** Field Data (2022).

### 5.4.3 Capital Investment

The results indicate that 77.6% of respondents did not take loan from bank for farming whereas, small proportions (14.6%) of respondents accessed loans from bank for farming, and 7.8% of respondents were undecided. It was revealed that apart from taking bank loan, majority of respondents (66.9%) mostly not borrow in



kind for agribusiness enterprise whereas 15.4% of respondents borrow in kind, and 7.8% of respondents were undecided. Borrowing in kind involve taking none financial loan for instance tractors, power tillers, agro-processing machines and related equipment.

It was found that 63.8% of respondents have no improved farm structures, except 15.7% of respondents who indicate to have improved farm structures, and 17.7% of respondents were undecided. As narrated above inability of getting loan both financially and in-kind lead to agribusiness owners fail to improve farm structures which mostly require funds for reinvestment. In assessing capacity building programs as part of human resource investment, it was found that 89.4% of respondents have not travelled in other countries for agripreneurship learning, except 9.8% of respondents who travelled in other countries for agripreneurship learning, and 0.8% of respondents were undecided.

As a justification to lack of improved farm structure, 38.6% of respondents do not have irrigation systems in their grains farms, whereas half of respondents (50%) were indifferent, and 10.6% of respondents indicate to have irrigation system in their grain farms (Table 5.5). The high percent of indifferent response could have been caused by the fact that most of respondents rely on rainfall and conventional furrow as irrigation system compared to modern irrigation system such as drip irrigation. It can be deduced that capital investment is a barrier among respondents which restrain agribusiness transformation.

**Table 5.5: Capital as a Measure of Agribusiness Transformation in Percentage (n = 254)**

Agribusiness transformation	Mostly No	Mostly Yes	Neither Yes nor No	Total
Took loan from bank for farming	77.6	14.6	7.8	100
Borrowed in kind for agribusiness enterprise	66.9	15.4	17.7	100
Improved farm structures	63.8	15.7	20.5	100
Access bank loan wherever needed	86.2	5.5	8.3	100
Travelled other countries to learn	89.4	9.8	0.8	100
Irrigation system in place	38.2	10.6	51.2	100

**Source:** Field Data (2022).

#### 5.4.4 Employment

As expected, 63% of respondents depend on family labour whereas 22% of respondents do not depend on family labour, and 15% of respondents were undecided. In connection to this, it was found that 61% of respondents create employment for none, though 24% of respondents have created employment, and 14.6% were indifferent. These findings indicate that most of respondents have not substantially created formal employment, except casual labourers as affirmed by 63% of respondents. It was found that very small proportions of employment created (<6%) which can translate to meaningful agribusiness transformation in the study area. The summarize of results are tabulated below (Table 5:6)

**Table 5.6: Employees as a Measure for Agribusiness Transformation in Percentage (n = 254)**

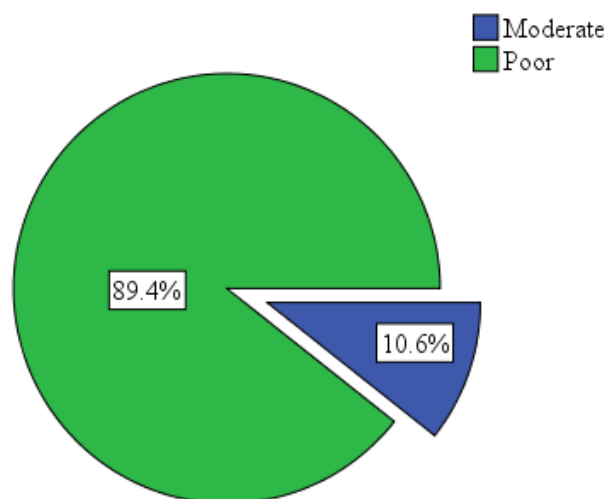
Agribusiness transformation	Mostly No	Mostly Yes	Neither Yes nor No	Total
Depend on family labour	22	63	15	100
Mostly use causal labours	25.6	63	11.4	100
Possess more than 3 employees	78	5.9	16.1	100
Possess less than 3 employees	85	7.5	7.5	100
Employed none	24.4	61	14.6	100

**Source:** Field Data (2022).

The analysis of total agribusiness transformation was estimated through data matrix computation of sum scores of entrepreneurship practices as indicated in Table 3.2.

Total scores were categorized into three groups based on the level of effect such that the sum of scores below 184 implies that the impact is poor, whereby the sum of scores between 185 and 290 indicate the impact is moderate, and sum of scores above 291 indicates the impact of entrepreneurship practices on agribusiness transformation is excellent. These score were considered as expected index number which were compared to actual scores generate from data analysis. The sum scores of entrepreneurship practices were computed in SPSS whereby TAT was recoded into different variables named as poor, moderate and excellent.

The results in Figure 5:2 reveals that 89.4% of the sum scores indicate the impact of entrepreneurship practices on agribusiness transformation is poor whereas 10.6% of the sum scores indicate that the impact of entrepreneurship practices on agribusiness transformation is moderate. Therefore from the descriptive statistics point of view, the impact of entrepreneurship practices on agribusiness transformation is poor with exceptional of minority who assert that the impact of entrepreneurship practices on agribusiness transformation is moderate.



**Figure 5.2: Agribusiness Transformation**

## **CHAPTER SIX**

### **INFLUENCE OF ENTREPRENEURSHIP PRACTICES ON AGRIBUSINESS TRANSFORMATION**

#### **6.1 Chapter Overview**

This chapter presents the research findings using inferential statistics which begins by carrying out statistical test to determine sample characteristics. Specifically, the chapter presents the findings on hypothesis testing focusing on effect of agricultural production technologies, post-harvest storage, agro-processing and marketing practices on agribusiness transformation. Moreover, the hypothesis testing on vertical integration function as moderating variable on agribusiness transformation and correlation analysis among variables in the general econometric equation is statistically presented. Finally, the discussion of findings is presented.

#### **6.2 Correlation Analysis**

According to Ademola (2016) correlation analysis investigate direction and strengthen of relationship between the variables. The Spearman's order correlation analysis was applied due to non-parametric data characteristics. The correlation analysis reveals the following; There is 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, 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 significant positive strong correlation with AT respectively. MAKP indicates significant positive strong correlation with AT ( $r = 0.526$ ,  $n = 254$ ,  $p = .000$ ). These results are relatively similar with interpretation of

coefficients of regression analysed above which indicated STORP, MAKP and APRP are significant predictors of AT under HF than VF moderation. Furthermore, the significant strong positive correlation is observed between MARK and HF ( $r = 0.604$ ,  $n = 254$ ,  $p = .000$ ). Although APRP depicts significant strong positive correlation with VF ( $r = 0.791$ ,  $n = 254$ ,  $p = 0.000$ ), it depicts insignificant weak positive correlation with HF ( $r = .077$ ,  $n = 254$ ,  $p = 0.222$ ) as indicated in Table 6.1.

**Table 7.1: Correlation Analysis between Entrepreneurship Practices and Moderation effect of Vertical Function (n = 254)**

		APT	STORP	MAKP	APRP	VF	HF	AT
APT	Correlation Coefficient	1.000	.294**	.276**	.281**	.296**	.327**	.274**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	254	254	254	254	254	254	254
STORP	Correlation Coefficient	.294**	1.000	.516**	.426**	.539**	.491**	.417**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	254	254	254	254	254	254	254
MAKP	Correlation Coefficient	.276**	.516**	1.000	.534**	.509**	.608**	.526**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	254	254	254	254	254	254	254
APRP	Correlation Coefficient	.281**	.426**	.534**	1.000	.791**	.077	.335**
	Sig. (2-tailed)	.000	.000	.000		.000	.222	.000
	N	254	254	254	254	254	254	254
VF	Correlation Coefficient	.296**	.539**	.509**	.791**	1.000	.182**	.186**
	Sig. (2-tailed)	.000	.000	.000	.000		.004	.003
	N	254	254	254	254	254	254	254
HF	Correlation Coefficient	.327**	.491**	.608**	.077**	.182**	1.000	.451**
	Sig. (2-tailed)	.000	.000	.000	.222	.004		.000
	N	254	254	254	254	254	254	254
AT	Correlation Coefficient	.274**	.417**	.526**	.335**	.186**	.451**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.003	.000	
	N	254	254	254	254	254	254	254

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

**Source:** Field Data (2022).

### 6.2.1 Correlation Analysis on Vertical and Horizontal Function

The Spearman's Correlation analysis reveals that there is a weak statistical positive significant correlation between vertical and horizontal functions ( $r = 0.182$ ,  $n = 254$ ,  $p = 0.004$ ), as result null hypothesis is rejected. Similarly, there is weak statistical positive significant correlation between vertical function and agribusiness transformation ( $r=0.186$ ,  $r=254$ ,  $p=0.003$ ). However, correlation between horizontal function and agribusiness transformation indicate strong statistical positive significant correlation ( $r=0.451$ ,  $n=254$ ,  $p =0.000$ ) as detailed in Table 6.2. This finding suggests that agribusiness transformation is conspicuous horizontal based than vertical orientation in the study area.

**Table 8.2: Correlation Analysis Vertical and Horizontal Functions (n =254)**

			Vertical function	Horizontal function	Agribusiness Transformation
Spearman's rho	Vertical function	Correlation Coefficient	1.000	.182**	.186**
		Sig. (2-tailed)	.003	.004	.003
		N	254	254	254
	Horizontal function	Correlation Coefficient	.182**	1.000	.451**
		Sig. (2-tailed)	.004	.000	.000
		N	254	254	254
	Agribusiness Transformation	Correlation Coefficient	.186**	.451**	1.000
		Sig. (2-tailed)	.003	.000	.000
		N	254	254	254

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

**Source:** Field Data 2022

### 6.3 Ordinal Logistic Regression Analysis Findings

The general regression model indicated in equation 16 was applied to analyse influence of entrepreneurship practices on agribusiness transformation among the

respondents with the moderation effect of vertical function. The Ordinal Logistic Regression Analysis give model fitting information with statistically significant p value ( $p < 0.000$ ) which indicate the regression model is appropriate for the data set. There is significant difference between intercept only and the final model after inclusion of predictors as shown in Table 6.3.

**Table 9.3: Model Fitting Information (n = 254)**

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	1255.234			
Final	1131.988	123.247	6	.000

Source: Field Data 2022

### 6.3.1 Testing of Hypothesis

The research study outlined four null hypotheses to be tested which originated from specific objectives of the study in section 1.4 and 1.5. The series of regression models indicated in section 3.8 were used to run inferential statistics to determine nature and strength of each predictor on dependent variable. In this case, analysis of APT on AT is predicted by TRAC, PTIL, and ANPLO as shown in equation 3.1. Similarly, variables of STORP i.e. STORLO, STORIMP and STOROTH and its effect on AT was analysed using the model presented in equation 4.1. MAKP was analysed using the regression model indicated in equation 5.1, the model is sought to find effect of PROM, BRAPA and GRAPRI on MAKP and its effect on AT.

Likewise, APRP is predicted by PRIMP, SIMACH and ADMACH and its effect on AT as shown equation 6.1. The effect of VF and HF on AT is given by regression model equation 7.1 such that moderation role of VF on AT was analysed. Finally the AT and TAT are statistically analysed and inferred by the use of econometric

regression models in equation 10.1 and 10.2. The model analysis output and hypothesis inference is as following.

**Table 10.4: Coefficient of estimates (n =254)**

Variables	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
APT	0.126	.387	.106	1	.745	-.632	.884
STORP	1.686	.480	12.322	1	.000	.745	2.627
MAKP	2.418	.630	14.719	1	.000	1.183	3.654
APRP	0.803	.321	6.256	1	.012	.174	1.432
VF	-1.193	.352	11.478	1	.001	-1.884	-.503
HF	1.107	.421	6.912	1	.009	.282	1.933

**Source:** Field Data 2022

### 6.3.1.1 General Hypothesis

**H<sub>0</sub>: There is no Significant Impact of Entrepreneurship Practices on Agribusiness Transformation in Tanzania**

The findings indicate that a one percent increment in entrepreneurship practices (EP) impact likelihood of the probability to increase agribusiness transformation (AT) as per the corresponding percentage. However Wald test for EP is statistically significant at 0.05 of significance level ( $p < 0.00$ ). This confirms the alternative hypothesis for AT. Therefore there is statistically significant impact of entrepreneurship practices on agribusiness transformation. However, the moderation effect of vertical function (VF) indicates that a one percent increment in vertical function impact likelihood of the probability to decrease agribusiness transformation by 12 percent, in spite the Wald test for VF is statistically significant at 0.05 of significance level ( $p < 0.001$ ). These results match with descriptive analysis in



chapter five (figure 5.2) which indicates the overall impact of entrepreneurship practices on agribusiness transformation under the moderation effect of VF is poor.

Moreover, the findings indicate that a one percent increment in independent variables (APT, STORP, MAKP and APRP) impact likelihood of the probability to increase agribusiness transformation (AT) as per the corresponding percentages in table 6.4. Except for the APT, the Wald test for STORP, MAKP and APRP are statistically significant at 0.05 of significance level ( $p < 0.00$ ), ( $p < 0.00$ ) and ( $p < 0.012$ ) respectively. This confirms the rejection of null hypothesis for STORP, MAKP and APRP whereas confirms acceptance of the null hypothesis for APT ( $p > 0.745$ ). Therefore with exception to APT there is statistically significant impact of entrepreneurship practices (STORP, MAKP and APRP) on agribusiness transformation.

### **6.3.1.2 Specific Research Hypothesis**

**$H_0$ : Agricultural Production Technology Practices have no significant effect on Agribusiness Transformation**

In Table 6.4 the findings indicate that a one percent increment in agricultural production technologies (APT) influence the likelihood of the probability to increase agricultural transformation (ATP) by 0.13 percent. This means that APT is a good predictor of AT such that as scores of APT increases there is probably increase in effect of agribusiness transformation. However Wald test for APT is statistically insignificant at 0.05 of significance level ( $p > 0.745$ ). This confirms the null hypothesis for APT. Therefore there is no statistically significant effect of agricultural production technologies on agribusiness transformation.

**i) H<sub>0</sub>: Effect of Post-Harvest Storage Practices on enhancing Agribusiness Transformation is Insignificant**

The findings in Table 6.4 indicate that a one percent increment in post-harvest storage practices (STORP) effect the likelihood of the probability to increase agribusiness transformation (AT) by 1.69 percent. This mean that as the scores of STORP increase there is predicted increase in agribusiness transformation. Thus, STORP is good predictor of AT. Furthermore, the Wald test for STORP is statistically significant at 0.05 of significance level ( $p < 0.000$ ). This confirms the alternative hypothesis for STORP. Therefore there is statistically significant effect of post-harvest storage practices on agribusiness transformation.

**ii) H<sub>0</sub>: Marketing Practices have no Significant effect on Agribusiness Transformation**

The findings reveal that a one percent increment in marketing practices (MAKP) influence the likelihood of the probability to increase agribusiness transformation (AT) by 2.42 percent. This mean that as the scores of MAKP increase there is predicted increase in agribusiness transformation. Thus, MAKP is good predictor of AT. Likewise, Wald test for MARK is statistically significant at 0.05 of significance level ( $p < 0.000$ ). This confirms rejection of the null hypothesis for MAKP. Therefore there is statistically significant effect of marketing practices on agribusiness transformation (Table 6.4).

**iii) H<sub>0</sub>: There is no Significant effect of Agro-Processing Practices on Agribusiness Transformation**

The findings shows that (Table 6.4) a one percent increment in agro-processing

practices (APRP) influence the likelihood of the probability to increase agribusiness transformation (AT) by 0.80 percent. This mean that as the scores of APRP increase there is predicted increase in agribusiness transformation. Thus, APRP is a good predictor of AT. Moreover, the Wald test for APRP is statistically significant at 0.05 of significance level ( $p < 0.012$ ). This confirms the alternative hypothesis for APRP. Therefore there is statistically significant effect of agro-processing practices on agribusiness transformation.

**iv)  $H_0$ : There is no significant effect between vertical function and horizontal function as determinants of agribusiness transformation.**

It was found that a one percent increment in vertical function influence the likelihood of the probability to decrease agribusiness transformation (AT) by 1.19 percent. This mean that as the scores of VF increase there is predicted decrease in agribusiness transformation. Thus, VF is not a good predictor of AT. Moreover, the Wald test for VF is statistically significant at 0.05 of significance level ( $p < 0.001$ ). This confirms the alternative hypothesis for VF. Therefore there is statistically significant effect between vertical function and horizontal function as determinants of agribusiness transformation.

On the other hand, the results indicate that a one percent increment in horizontal function influence the likelihood of the probability to increase agribusiness transformation (AT) by 1.11 percent. This mean that as the scores of HF increase there is predicted increase in agribusiness transformation. Contrary to vertical function (VF), horizontal function (HF) is a good predictor of AT. Moreover, the Wald test for HF is statistically significant at 0.05 of significance level ( $p < 0.009$ ).

This confirms the alternative hypothesis for HF. Therefore, there is statistically significant effect between horizontal function and vertical function as determinants of agribusiness transformation.

It can be inferred that although the Wald test indicate statistically significant moderation effect for both VF and HF on agribusiness transformation, a one percent increment in vertical function (VF) influence the likelihood of the probability to decrease in agribusiness transformation as compared to horizontal function (HF). Thus, the effect of vertical function as a moderating variable in agribusiness transformation is statistically significant but not a good determinant for agribusiness transformation as compared to HF.

#### **6.3.4 Total Agribusiness Transformation**

The complete econometric equation 10.2 was regressed to analyse total agribusiness transformation. It was revealed that a one percent increment in TRAC influence the likelihood of the probability to increase TAT by 0.71 percent. However, the Wald test for TRAC is statistically insignificant at 0.05 of significance level ( $p > 0.457$ ). This confirms the null hypothesis for TRAC. Therefore, there is no statistically significant effect of tractor (TRAC) on agribusiness transformation. Similarly, a one percent increment in PTIL and ANPLO influence the likelihood of the probability to increase TAT by 1.22 and 0.68 percent respectively. The Wald test for PTIL and ANPLO is found to be statistically insignificant at 0.05 of significance level ( $p > 0.529$ ) and ( $p > 0.566$ ), which confirm the null hypothesis for PTIL and ANPLO respectively. Therefore there is no statistically significant effect of Power Tiller (PTIL) and Animal Plough (ANPLO) on total agribusiness transformation.

Contrarily, the results indicate that a one percent increment in HHOE influence the likelihood of the probability to decrease TAT by 0.09 percent. It can be deduced that hand hoe (HHOE) is not a good predictor of total agribusiness transformation (TAT). The Wald test for HHOE is statistically insignificant at 0.05 of significance level ( $p > 0.894$ ). This confirms the null hypothesis for HHOE. Therefore there is statistically insignificant effect of hand hoe on total agribusiness transformation. Conclusively, despite the fact that an increment of TRAC, PTIL and ANPLO impact the likelihood probability increase in TAT by the specified magnitude, an increment of HHOE indicate the likelihood of the probability to decrease in TAT.

Likewise, the regression analysis results indicate that a one percent increment of STORLO influence the likelihood of the probability to increase TAT by 3.54 percent. The Wald test for STORLO is statistically insignificant at 0.05 of significance level ( $p > 0.408$ ). This confirms the null hypothesis for STORLO. Therefore there no statistically significant effect of post-harvest local storage practices (STORLO) on total agribusiness transformation (TAT). Similarly, it was revealed that one percent increment in STORIMP and STOROTH influence the likelihood of the probability increase TAT by 0.29 and 0.01 percent respectively.

However, the Wald test for the latter is statistically insignificant at 0.05 of significance level ( $p > 0.596$ ) and ( $p > 0.996$ ) which confirms the null hypothesis for STORIMP and STOROTH respectively (Table 6.5). Thus, there is no statistically significant influence of post-harvest improved storage practices (STORIMP) and other post-harvest storage practices (STOROTH) on total agribusiness transformation (TAT). It can be deduced that although for everyone percent

increment in *STORLO*, *STORIMP* and *STOROTH* influence the likelihood of the probability increase in *TAT*, the Wald test for the latter reveal that there is no statistically significant influence on total agribusiness transformation.

In assessing effect of individual marketing practices, regression analysis results indicate that a one percent increment in *PROM* influence the likelihood of the probability to increase *TAT* by 2.14 percent. This means that as the scores of promotion (*PROM*) increase there is probability increase in effect of total agribusiness transformation (*TAT*). The Wald test for *PROM* is statistically insignificant at 0.05 of significance level ( $p > 0.438$ ). This confirms the null hypothesis for *PROM*. Therefore there is no statistically significant effect of promotion practices (*PROM*) on total agribusiness transformation (*TAT*).

Likewise, the results show that for everyone percent increment in *BRAPA* and *GRAPRI* influence the likelihood of the probability to increase *TAT* by 1.10 and 2.72 percent respectively. This means that as the scores of *BRAPA* and *GRAPRI* increase there is probability increase in effect of *TAT*. Moreover, the Wald test for *BRAPA* and *GRAPRI* is statistically insignificant at 0.05 of significance level ( $p > 0.617$ ) and ( $p > 0.406$ ) respectively which confirms the null hypothesis for *BRAPA* and *GRAPRI* (Table 6.5). Therefore there is no statistically significant influence of branding and packaging (*BRAPA*) and grading and pricing (*GRAPRI*) on total agribusiness transformation (*TAT*). Generally, it can be inferred that *PROM* and *GRAPRI* indicate relatively higher probability likelihood to increase *TAT* than *BRAPA* whereas, statistically, the marketing variables (*PROM*, *BRAPA* and *GRAPRI*) are insignificant ( $p > 0.05$ ).

On agro-processing practices, the results indicate that a one percent increment in ADMACH influence the likelihood of the probability to decrease TAT by 1.63 percent. This means that as the scores of ADMACH increase there is corresponding decrease on total agribusiness transformation, hence ADMACH is not a good predictor of TAT. The Wald test for ADMACH is statistically insignificant at 0.05 of significance level ( $p > 0.411$ ) which confirms the null hypothesis for ADMACH (Table 6.5). Therefore there is no statistically significant effect of advanced agro-processing practices (ADMACH) on total agribusiness transformation.

Moreover, it was found that a one percent increment in PRIMP and SIMACH influence the likelihood of the probability to increase TAT by 3.10 and 0.10 percent respectively. This can be construed that as the scores of primary agro-processing practices (PRIMP) and simple agro-processing practices (SIMACH) increase there is relatively increase on total agribusiness transformation respectively. Hence, PRIMP and SIMACH are good predictor of TAT. The Wald test for PRIM and SIMACH is statistically insignificant at 0.05 of significance level ( $p > 0.859$ ; and  $p > 0.452$  respectively). Therefore there is no statistically significant effect of PRIMP and SIMACH on TAT.

Finally, analysis of VF and HF functions indicate that for everyone percent increment in VF influence the likelihood of the probability to decrease total agribusiness transformation by 0.19 percent. Contrary, it was found that for everyone percent increment in HF influence the likelihood of the probability to increase total agribusiness transformation by 4.22 percent. The Wald test for both VF and HF are statistically insignificant at 0.05 of significance level ( $p > 0.904$ ; and  $p > 0.418$ )

respectively. This confirms the null hypothesis for VF and HF (Table 6.5). Therefore, there is no statistically significant effect of vertical and horizontal functions on total agribusiness transformation (TAT). It can be construed that the impact of entrepreneurship practices on agribusiness transformation decrease with increase in moderation effect of vertical function and surge with a unit increment in horizontal function (HF).

**Table 11.5: Coefficient of Estimates for the Total Agribusiness Transformation**

(n = 254)

Variables	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
TRAC	.714	.960	.554	1	.457	-1.167	2.596
PTIL	1.227	1.951	.396	1	.529	-2.596	5.050
ANPLO	.682	1.189	.329	1	.566	-1.649	3.013
HHOE	-.098	.732	.018	1	.894	-1.533	1.337
STORLO	3.549	4.291	.684	1	.408	-4.862	11.960
STORIMP	.298	.562	.282	1	.596	-.803	1.400
STOROTH	.011	.253	.002	1	.966	-.485	.506
PROM	2.137	2.754	.602	1	.438	-3.261	7.535
BRAPA	1.106	2.210	.250	1	.617	-3.226	5.438
GRAPRI	2.722	3.279	.689	1	.406	-3.704	9.149
PRIMP	3.108	3.784	.675	1	.411	-4.308	10.524
SIMACH	.100	.559	.032	1	.859	-.996	1.195
ADMACH	-1.633	2.172	.565	1	.452	-5.891	2.624
VFm	-.195	1.613	.015	1	.904	-3.357	2.966
HFm	4.218	5.209	.656	1	.418	-5.990	14.427
[ACRES=1]	.048	.492	.009	1	.923	-.918	1.013
[ACRES=2]	-.017	.426	.002	1	.968	-.853	.819

Source: Field Data (2022).

### 6.3.5 Discussion of Findings

#### 6.3.5.1 Agricultural Production Technology Practices

The results show that for everyone unit increment in agricultural production technology practices (APT) there is relatively increase in agricultural transformation



by a specified magnitude. It was revealed that agricultural production technology is a good predictor of agribusiness transformation such that as scores of agricultural production technology increases there is probability increase in effect of agribusiness transformation, despite the fact that, statistically, there is insignificant effect of agricultural production technology practices on agribusiness transformation ( $p > 0.745$ ).

These results are comparable with Ameh, *et al.*, (2017) who empirically analysed the effect of Agricultural Input on Agricultural Productivity in Nigeria from 1990 to 2016 by using secondary annual time series data, and adopted unit root test by Augmented Dickey-Fuller (ADF) approach; a test for longrun relationship (Johansen cointegration), Granger causality test as methodology, and then the Ordinary Least Squares (OLS) multiple regression method, then revealed that agricultural production technologies (machines), agricultural credit and gross domestic product were found to be statistically insignificant. Moreover, the correlation analysis between agricultural production technology practices and agribusiness transformation is found to be significant weak positive (Sub section 6.2) which further coincide Ameh, *et al.*, (2017) empirical findings.

Although there is statistically insignificant effect of agricultural production technology practices on agribusiness transformation, the APT variables (HHEO, ANPLO, PTIL and TRAC) portray varied effect on agribusiness transformation. The TRAC, PTIL, and ANPLO indicate to be a good predictor of agribusiness transformation as compared to HHOE which is not a good predictor of agribusiness transformation. While HHOE is not a good predictor of agribusiness transformation,

it was revealed in section 4.2.2.1 that majority (78.7%) of respondents use hand hoe for agricultural production. These results are supported by the fact that in Africa, the farming technologies and mechanization as a whole still primitive, largely underdeveloped Africa and require backbreaking manual work (URT, 2013; ACET, 2017). Thus, any agricultural production technological interventions intended to accelerate agribusiness transformation if it is to produce required transformation in agribusiness then avoidance of HHOE and subsequently invest in ANPLO, PTIL and TRAC is of paramount important.

On the other hand, section of 6.3.1.2 of this study indicates that a one percent increment in agricultural production technology (technology investment) is likely to increase agribusiness transformation by 0.13 percent. This means that technology investment is a good predictor of agribusiness transformation, such that, as scores of technology investment increases there is probability increase in effect of agribusiness transformation. Wang and Huang (2018) observed similar results that application of agricultural science and technology investment and e-commerce model can promote agricultural economic growth, thus agribusiness transformation.

#### **6.3.5.2 Post-Harvest Storage Practices**

In figure 4.5 the results indicate that the overall effect of storage practices on agribusiness transformation is moderate. In addition, section 4.2.3.1 reveals that majority of agribusiness owners (63.8%) lack storage facilities. Lack of storage facilities has been reported as a major cause of post-harvest losses incurred by farmers. This finding is 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. As much as 50% – 60% cereal grains can be lost during the storage stage due only to the lack of technical efficiency along storage practices (Kumar and Kalita, 2017).

Although Tanzania government put in place some intervention to curb the conundrum for instance introduction of Warehouse Receipt System (WRS) which meant to communally used by farmers, this study found that majority of agribusiness owners (84.6%) are reluctant to use communal warehouse due to several reasons including security issues, crop quality issues, quick money and foreign buyers influence. Consequently, the adoption of WRS as a crucial marketing and storage strategy perform below expectation. Similarly, Tefera (2012) found that one of the key constraints to improving food and nutritional security in Africa is the poor post-harvest management practices that lead to between 14% and 36 loss of maize grains. On the other hand, examining the effect post-harvest 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 2-months period, while traders lose 3.3% of yam stored in a month.

As from the regression analysis results economic advantage of post-harvest storage practices on agribusiness transformation is vividly. It was establish that for everyone percent increment in post-harvest storage practices i.e., STORLO, STORIMP and STOROTH there is likelihood of the probability to increase agribusiness transformation by the specified magnitude in section 6.3.1.2(ii), though statistically insignificant ( $p > 0.408$ ;  $p > 0.596$  and  $p > 0.996$ ) as indicated in section 6.3. This result coincides Ansah, *et al.*, (2018) who found that although postharvest storage

practices enhanced the welfare outcomes for traders in Ghana, there was statistically insignificant effect detected for farmers. The point of divergence in Ansah *et al.*, (2018) study is that entrepreneurship attributes were not integrated as it is the case in this study.

As presented in Table 4.4, majority of respondents (70.9%) assert that storage practices have significant contribution on profitability of grain business as compared to minority (20.8%) who disagree that significant profit is made with storage practices. Contrasting with Abass *et al.*, (2019) show mixed opinion with regards to the profitability of metallic silos; bigger silos are profitable for farmers who have economies of scale to use them while smaller ones are profitable only within the context of higher grain price and bigger seasonal price gap. Abass *et al.*, (2019) assessed the profitability of selected improved grain storage technologies and the potential impact of their adoption on food security and income of smallholder maize producers in Tanzania. Using on-farm experiment data, time series maize price data, and household survey data.

Majority of agribusiness owners resort in local storage practices (STORLO) than improved storage practices (STORIMP) as indicate in session 4.2.3.1. The overall effects of local storage practices mostly appear to be poor transitioning to moderate (figure 4.2). Moreover, short term post-harvest storage practices such as the use of sacks or plastic drums are commonly used by growers since grains are sold relatively shorter time after harvesting due to various factors including financial needs and influence of other actors in grain market value chain such as, agro-dealers, assembly traders, large traders, warehouse receipt system, off takers and processors. This is

what Karuho and Collins (2020) found from the study on Improving African Grain Markets for Smallholder Farmers in East Africa.

On improved storage practices, it should be noted that over 70% of agribusiness owner do not have modern storage facilities though they do agree (85.4 %) that grains pay well after storage (section 4.2.3.2). Improved storage practices identified as warehouses application, concrete or metal silos, and the polypropylene bags which are widely used in commercial storage centres. However the traditional sacks made of woven jute, sisal, local grass, cotton are still used by smallholder agribusiness. These findings are similar to Mobolade, *et al.*, (2020) who found that the sacks were earlier used widely in both Africa and Asiatic origins until the introduction of the polypropylene bags, however; farmers still use jute or sisal bags, which come in different sizes ranging from 25 kg bags to 100 kg bags.

### **6.3.5.3 Marketing Practices**

Marketing practices are made up of promotion (PROM), branding and packaging (BRAPA), grading and pricing (GRAPRI) practices. The activities related to promotion such as advertisement through the use of local radio, social media, telephoning etc., appear to be underutilized. This is justified by the majority (97.2%) and (90.7%) of agribusiness owners who neither use local radio nor social media to substantially promote grains respectively. One would have expected that with the current fair price in Short Message Services (SMS) whereby a customer can access up to ten thousand (10,000) SMS bundle per month for Tanzania shillings between 1,000 and Tsh. 2,000 only, majority of agribusiness are capacitated to utilize SMS bundles for marketing of grain, though the actual situation is the opposite that

majority (63.8%) never use mobile for promotion.

On the other hand, branding and packaging indicate that most of agribusiness owners (96.9%) never practice labelling and packaging of their grains neither have business names on their product package (96.9%). The 72.8% of the agribusiness owners who never package well their grains products before selling, and 97.8% and 98.8% of respondents never had business logo neither formalized their agribusiness enterprise respectively (Table 4:5). Since product branding and packaging is among of the core elements in entrepreneurship tendency, which is not practice. Then the effect branding and packaging practices are poor as indicated in Figure 4.7. Likewise, in Nairobi and Kisumu, Gichangi (2010) affirms that not much of sweet potato sales promotion was carried out apart from some sorting and grading. 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.

The analysis of grading and pricing on influencing sales as a fundamental parameter for agribusiness transformation depict that most grain customers (68.7%) often all times buy grains owing to supply and demand forces than being influenced by grading and pricing practices. This might have led to situation where agribusiness owners less utilize and invest in postharvest storage facilities as result renders significant postharvest loses (section 4.2.3). Comparatively, the effect of grading and pricing on marketing turned out significant than branding and packaging figure 4.8. The overall comparison of the effect among the key parameters of marketing suggest grading and pricing practices outweigh promotion, branding and packaging

in the transformation process. These findings relate to Mignouna, *et al.*, (2017) who found that the higher the yam yields (bumper crop) the greater the tendency for the farmers to sell yam (grading and pricing).

Similarly, Okou, *et al.*, (2022) reveal that the net import dependence, consumption share of staples, global food prices, and real effective exchange rates are key factors that govern changes in local staple food prices. Among these drivers, the consumption share of each staple has the largest price effect. Though the external factors drive food price inflation but domestic factors can mitigate these vulnerabilities. On the external side, Okou *et al.*, (2022) found that Sub-Saharan African countries are highly vulnerable to global food prices, with the pass-through from global to local food prices estimated close to unity for highly imported staples. On the domestic side, staple food price inflation is lower in countries with greater local production and among products with lower consumption shares.

Moreover, this give a clear correlation between marketing practices (especially GRAPRI) and agribusiness transformation, as indicated by significant positive strong correlation with AT ( $r = 0.526$ ,  $n = 254$ ,  $p = .000$ ). These results are relatively similar with interpretation of coefficients of regression analysed in section 6.3.2 which indicated that MAKP is statistically significant ( $p=0.000$ ). Likewise, Mignouna, *et al.*, (2017) investigated the underpinning drivers of market participation among small scale farmers in the yam belt of West Africa, using a multistage random sample of 1,400 households from Ghana and Nigeria found that the yield of yam (productivity) is positively and significantly related to probability of participating in marketing activities (marketing practices). Mignouna, *et al.*, (2017)

study established statistical significant effect of marketing practices (marketing activities) on agribusiness transformation which termed as productivity by Mignouna, *et al.*, (2017).

Despite most of marketing activities being performed below expectation, regression analysis reveals its economic importance such that for everyone percent increment in marketing practices (MAKP) there is estimated increase in agribusiness transformation by 2.42 percent section 6.3.1.2 (iii). In addition, the statistically significant Wald test results of marketing practices ( $p < 0.000$ ) validate the necessity of thorough investment and capacity building on marketing practices among the key actors in grain value chain in Tanzania.

Linking of the structure, conduct and performance model to the grain market in the study area, it came out obvious that majority of agribusiness owners fail to optimize the utilization of the market structure as justified by 90% of respondents in the study area who neither use social media, radio nor participate in agricultural exhibition (e.g. Nane-nane). Likewise, the 79.9% of respondents indicate the poor conduct of marketing practices especially promotion (section 4.2.4), albeit, the marketing practices reveal significant positive strong correlation with agribusiness transformation ( $r = 0.526$ ,  $n = 254$ ,  $p = .000$ ) section 6.2. These results match Gichangi (2010) who assessed the structure, conduct and performance of sweet potato marketing system in Nairobi and Kisumu and found that that not much of sweet potato sales promotion was carried out apart from some sorting and grading. 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. Similarly, on structure, conduct and performance of the market, Omayio, *et al.*, (2020) found that marketability of guavas was significantly different ( $p \leq 0.05$ ) between the two counties with market access being more difficult in Taita Taveta ( $\chi^2 = 105.3, p < .001$ ) compared to Kitui.

#### **6.3.5.4 Agro Processing Practices**

Despite primary processing (PRIMP) and simple processing (SIMACH) practices being good predictor of agribusiness transformation, majority of respondents (92.9%) in the study area depict that grains are sold without being processed, meaning that majority of agribusiness owners do not engage in agro-processing of grains. These results are comparable to Omayio, *et al* (2020) who assessed the production, utilization, preservation and processing of guavas in Kitui and Taita Taveta counties, Kenya and found that most (60%) of the respondents did not know of any processed guava products irrespective of their levels of education and gender ( $p > .05$ ). As it is the case to guava farmers, majority of respondents in this study carried out primary processing of grains not for value addition rather to support packaging and easy transportation.

The scarcity of processing facilities in the study area, coupled with low or no determination to process grains count for insignificant effect of agro processing practices on total agribusiness transformation (TAT). This could be linked to the reason why the Wald test for PRIM and SIMACH generate statistically insignificant p-values ( $p > 0.859$ ; and  $p > 0.452$ ) respectively at 0.05 significance level, justifying that there is no statistically significant effect of PRIMP and SIMACH on TAT.

However, the advanced processing practices (ADMACH) appear to be poor predictor of agribusiness transformation i.e., a one percent increment in ADMACH influence the likelihood of the probability to decrease TAT by 1.63 percent, as compared to both primary processing (PRIMP) and simple processing practices (SIMACH) which are good predictors of agribusiness transformation i.e., a one percent increment in PRIMP and SIMACH influence the likelihood of the probability to increase TAT by 3.10 and 0.10 percent respectively. Thus, a thoughtful intervention in improving agro-processing practices may bring about desirable effect if primary and simple processing practices are prioritized. The tailor made training could be one of the possible intervention as majority of respondents (63.4%) indicate that there neither training nor seminars organized to educate them on agro-processing.

Moreover, Omayio, *et al.*, (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 of agribusiness products are in the form of raw commodities, typically sold at prices lower than those of leading competitors due to value addition (processing).

Since, regression analysis indicate statistical significant p-value (0.012) meaning that there is significant positive effect of agro-processing practices (APRP) on agribusiness transformation, and that the coefficients of estimate indicate that for everyone unit increase in agro processing, there is predicted increase of 0.80 percent

in agribusiness transformation, Asom & Ijirshar (2016) established varied results when empirically examined the impact of agriculture value added (agro processing) on the growth of the Nigerian economy. Asom & Ijirshar (2016) found that agriculture value added had positive but insignificant influence on the growth of the Nigerian economy (transformation) in both the short and long run. Likewise, the correlation analysis between agro processing practices and agribusiness transformation reveals significant positive moderate correlation ( $r = 0.335$ ,  $n = 254$ ,  $p = .000$ ) under horizontal function as a moderation variable.

The discrepancy of the results of two studies could have been due to variation in units of analysis and scope of the study, i.e., Asom & Ijirshar (2016) empirically analysed macro-economic aspect of the Nigerian economy as compared to micro-economics of small-scale agribusiness owners in this study. Surprisingly, with moderation effect of vertical function, the effect of agro processing practices on agribusiness transformation is found to be similar with what was observed by Asom & Ijirshar (2016) i.e. statistically insignificant effect and that the coefficient of estimate indicate that for everyone unit increase in agro processing practices, there is predicted decrease of 1.19 percent in agribusiness transformation.

#### **6.3.5.5 Vertical and Horizontal Function**

As from the analysis of marketing practices in this study, majority of respondents (95.3%) do not practice contracting farming which implies that the marketing outlet is mostly vertically integrated. These findings match Mutura *et al* (2015) who analysed vertical and horizontal factors influencing the choice of dairy market outlet by the small holder dairy farmers, and found that vertically integrated households

used own outlet as marketing channel while horizontally integrated households used cooperative and farmers associations as milk marketing channel. However, promotion activities mostly (61.5%) appear to be horizontally integrated as friends and relatives of agribusiness owners played key role in assisting to fetch customers to purchase grains.

Moreover, the results show that majority of agribusiness owner (62.2%) cultivate between 2 and 4 acres of grains per season, lack meaningful control of upstream and downstream of agribusiness practices (89%) i.e. agricultural production technologies, post-harvest storage, marketing and agro-processing practices which determines the farmers decision for vertical or horizontal integration. The results conform to Benmehaia & Brabez, (2017) findings that the important factors affecting significantly the farmer's decision for vertical backward integration are farm size, off-farm activities, and participation in government programs, ownership structure, and geographical location.

Similarly, linking Benmehaia & Brabez, (2017) findings with this study, majority of respondents (81.5%) lack agricultural production technologies, neither have own premises to sell grains (94.5%), nor engage in performing marketing to sell grains (60.6%). Likewise, there significant difference between the vertical and horizontal integration the regression as justified by statistically significant p-value ( $p = 0.001$ ). It is also established that the vertical integration is not a good predictor of agribusiness transformation, verified by the coefficient of estimates which indicate that for everyone unit increase in vertical function there is predicted decrease in agribusiness transformation.

In testing actors' perceptions of the three commonly cited forms of accountability identified in the literature i.e. vertical, horizontal, and hybrid, the results indicate that some respondents practice both vertical and horizontal integration in undertaking entrepreneurship practices, for instance, majority of respondents do not possess own tractors (94.5%) apart from hiring (horizontal function), some (21.2%) possess own local storage facilities (vertical integration) which contextualize a hybrid model as presented by Reddick, *et al.*, (2020) that, there is both vertical and horizontal accountability present in city governments in the United States supporting a hybrid model using structural equation model.

Furthermore, majority of respondents (89%) indicates that the effect of vertical function on agribusiness transformation is poor as compared to horizontal function which portrayed a moderate to good effect on agribusiness transformation. These results mimic Roy *et al* (2022) findings that horizontal cooperation has a greater impact on the market performance of radical innovation while vertical cooperation has no impact on the market performance of radical innovation. Roy *et al* (2022) analysed the impact of cooperation on the market performance of product innovation, introduce a key distinction between the two main types of cooperation, i.e., vertical versus horizontal cooperation whereas built a set of four hypotheses and test them on a sample of 763 new products in the video game industry in the United States.

## **CHAPTER SEVEN**

### **CONCLUSION AND RECOMMENDATIONS**

#### **7.1 Chapter Overview**

The study was conducted to assess the impact of entrepreneurship practices on agribusiness transformation among agribusiness owners. The study involved 254 respondents whom involved in grains agribusiness. Vertical integration function was adopted as moderating variable in measuring effect of entrepreneurship practices on agribusiness transformation

#### **7.2 Summary of the Findings**

##### **7.2.1 Agricultural Production Technology Practices**

It was revealed that majority (78.7%) of respondents use hand hoe and depends on family labour (61.4%) for agricultural production, whereas few (2.4%) respondents possessed tractors. These findings reinforce the fact that the use of hand hoe for agricultural production is dominant among agribusiness owners. There is low utilization of Power tillers for agricultural production, as only 11.4% of respondents stated to use power tiller for agricultural production as compared to 72% who do not use power tiller for agricultural production. It was found that 57.1% of respondents use animal plough as an alternative to Power tiller. Utilization of animal plough for agricultural production appears to be the second to hand hoe.

The overall effect of agricultural production technologies as entrepreneurship practice on agribusiness transformation is found to be moderate (80.7%) whereas 18.5% of respondents indicate the effect of agricultural production technologies on agribusiness transformation is poor. Therefore it can be concluded that the effect of

agricultural production technologies on agribusiness transformation is moderate to poor.

Inferential analysis using a complete econometric equation (no. 7.4) was carried out whereby the results indicate that the TRAC, PTIL, and ANPLO generate statistical insignificant p-value i.e.  $p = 0.457$ ;  $p = 0.529$ ; and  $p = 0.566$  respectively. This implies that the effect of TRAC, PTIL and ANPLO on TAT is the same. However, coefficients of estimate revealed that for everyone unit increase in TRAC there is predicted increase of 0.714 on TAT. Similarly, for everyone unit increase of PTIL and ANPLO there is predicted increase on 1.227 and 0.682 on effect of TAT respectively.

Contrarily, it was found that for everyone unit increase in HHOE there is predicted decrease of 0.098 on TAT. The overall analysis of the effect of APT on TAT generates statistical insignificant p-value ( $p > 0.745$ ) which indicate that the effect among agricultural production technologies on agribusiness transformation is the same. However, coefficient of estimate ( $\beta_1$ ) indicates that for everyone unit increase in APT there is predicted increase of 0.126 on AT. This means that APT is a good predictor of APT such that as scores of APT increases there is probably increase in effect of agribusiness transformation.

### **7.2.2 Postharvest Storage Practices**

It was found that storage practices have significant contribution on profitability of grains business as asserted by (70.9%) of respondents. However, despite respondents understanding contribution of storage practices on profitability of grains business, it

was revealed that majority of respondents (66.9%) sell crops without keeping them in the storage and maximize profit during off season when prices are high. The results show that 56.7% of respondents assert that storage facilities are neither affordable nor efficient, this means that financial constraints and fear to lose money might cause poor motivation to undertake long term storage practices by the respondents. It was revealed that the overall effect of post-harvest storage practices on agribusiness transformation is moderate with minority (32.3%) indicating that the effect of post-harvest-storage practices on agribusiness transformation is poor.

Econometric analysis of *STORLO*, *STORIMP*, *STOROTH* indicate statistically none significant p-value (i.e.  $p = 0.408$ ;  $p = 0.596$  and  $p = 0.996$ ) respectively. This implies that there is no difference among variables of post-harvest storage practices i.e. *STORLO*, *STORIMP* and *STOROTH*. Nevertheless, coefficients of estimate indicate that for everyone unit increase in *STORLO* there is predicted increase of 3.549 on TAT. It was revealed that for everyone unit increase in *STORIMP* and *STOROTH* there is corresponding predicted increase of 0.298 and 0.011 on TAT respectively. It can be argued that out of the analysed post-harvest storage practices, *STORLO* indicate relatively higher coefficient of prediction on TAT than *STORIMP* and *STOROTH*.

The overall econometric analysis of the effect of post-harvest storage practices generate statistical significant p-value ( $p = 0.000$ ) as a result null hypothesis was rejected. It can be construed therefore that there is significant effect of post-harvest storage practices on AT. It was found that the coefficient of estimate ( $\beta_2$ ) shows that for everyone unit increase in *STORP* there is predicted increase of 1.686 on AT. As



the scores of storage practices increase there is predicted increase on AT.

### **7.2.3 Marketing Practices**

The results show that majority of respondents (61.5%) depend on friends and relatives to assist them to do promotion. It was found that most of respondents (61.4%) do not take grains to market place for selling as compared to minority (25.6%) who often send grains to market place for selling. This suggests that traders and other actors in agribusiness value chain purchase the produce at farm yard or at the primary processing point. The results indicate that traders are the main grains market outlet than village market as only 25.6% of respondents often sell through village market while majority (61.4%) sell through traders.

Moreover, 96.9% of respondents neither practice branding and proper packaging nor had formalized their agribusiness enterprises. This means that branding and packaging practices are poorly performed which is contrary to entrepreneurship characteristics. Thus, the overall effect of branding and packaging as marketing practices is found to be poor. On the other hand, grading and pricing indicates excellent effect (59.4%) thus grading and pricing are good predictors of marketing effect than promotion, and branding and packaging. However, amid excellent effect of pricing and grading on marketing practices, the results indicate that overall effect of marketing practices on agribusiness transformation in the study area is poor.

Inferential statistics reveals PROM, BRAPA, GRAPRI are statistical insignificant p-value ( $P = 0.438$ ;  $P = 0.617$ ;  $P = 0.406$ ). This means that the effect of individual marketing practices on TAT is the same. However, it was observed that for everyone

unit increase in PROM there is predicted increase of 2.137 on TAT. Likewise for everyone unit increase in BRAPA and GRAPRI there is predicted increase of 1.106 and 2.722 on TAT respectively.

It can be deduced that PROM and GRAPRI present relatively higher effect TAT than BRAPA. This means that as the scores of PROM and GRAPRI increase there is probability increase in effect of TAT. Therefore, the overall statistical analysis of MAKP on TAT generates significant p-value ( $p = 0.000$ ) hence null hypothesis was rejected. This implies that there is significant positive effect of marketing practices on agribusiness transformation. Coefficient of estimate ( $\beta_3$ ) indicates that for everyone unit increase in MARP there is estimated increase of 2.418 on AT. This means that as scores of marketing practices increase there is probability increase in agribusiness transformation as per the specified coefficients of estimate.

#### **7.2.4 Agro Processing Practice**

The results indicate mixed perception about whether agro-processing contribute to adding profit or not as 45.7% of respondents assert that agro-processing add profit while 43.7% refuted. This implies that there is partial understanding on profitability of agro-processing. Majority (82.7%) linked agro-processing with increase taxes than selling unprocessed grains. The overall influence of primary agro-processing prices is found to be poor. Regarding simple processing, the results show that majority (92.9%) of respondents sell grain without undertaking simple processing. It was found that primary processing is undertaken mainly to easy packing and transportation of the grains from the farm. Awareness about simple agro-processing was found to be reasonably high (67.9%) The overall influence of simple agro-

processing practices is found to be moderate with some indication of improvement (39.4%). About advance agro-processing practices, most of agribusiness owners (68.1%) are not exposed to the latter except 21.1% who are exposed to advance agro-processing, whereas 10.8% were uncertain. This implies that agro-processing practices are predominant in form of primary and simple agro-processing practices. The study reveals that the overall effect of agro-processing practices on agribusiness transformation is moderate transitioning to poor (46.9%).

On inferential analysis, the results indicate that PRIMP, SIMACH and ADMACH are statistically insignificant p value ( $P > 0.05$ ) i.e.  $P = 0.411$ ;  $P = 0.859$ ; and  $P = 0.452$  respectively. Thus, there are no significant differences among agro-processing practices. The coefficient of estimate indicate that for everyone unit increase in PRIMP and SIMACH there is predicted increase of 3.108 and 0.100 on TAT respectively. Contrarily, it was found that ADMACH is not a positive predictor of TAT, such that for everyone unit increase in the scores of ADMACH there is predicted decrease of 1.633 on TAT. Thus, it can be argued that PRIMP is effective predictor of TAT than SIMACH, this could be due to majority of agribusiness owners practicing more PRIMP than SIMACH.

Nevertheless, the ADMACH is not a good predictor of TAT which could also be due to the fact that most of respondents cultivate small farms to economically justify ADMACH investment and application. Therefore, the overall statistical analysis of APRP on TAT generates significant p-value ( $p = 0.012$ ) in which case null hypothesis was rejected. This means that there is significant effect of APRP on AT. The coefficient of estimate ( $\beta_4$ ) indicates that for everyone unit increase in APRP,

there is predicted increase of 0.803 on AT.

### **7.2.5 Entrepreneurship Tendency**

The results reveal that majority of respondents (65.4%) never attended entrepreneurship training. Lack of entrepreneurship training among majority of respondents (65.4%) may bring about poor effectiveness in entrepreneurship practices i.e. agricultural production technologies and postharvest storage practices as well as marketing and agro-processing practices. This might be the essence why most of agribusiness owners (60.6%) do have negative perception on performing agricultural marketing to increase sales, as such selling of grains mostly take place voluntarily which poses market risks due to unpreparedness. Despite proper components of the SCP theory which guided marketing practices for agribusiness transformation, it was found that agribusiness owners underperform marketing practices i.e. structures related to promotion, branding and packaging, and pricing and grading which render poor effects on Conducts and eventually Performance of agribusiness enterprise in terms of efficiency and profitability.

### **7.2.6 Vertical and Horizontal Function as Moderation Variables**

It was found that the moderating effect of vertical function is predominantly horizontal function. This means, most of respondents lack meaningful control of upstream and downstream of entrepreneurship practices i.e. agricultural production technologies, postharvest storage, marketing and agro-processing practices which is controvert vertical integration function. The results show that vertical function is not a significant predictor of agribusiness transformation as compared to horizontal function.

The Spearman's Correlation analysis reveals that there is a weak statistically positive significant correlation between vertical and horizontal functions ( $r = 0.182$ ,  $n = 254$ ,  $p = 0.004$ ) meaning that there is statistical difference between the effect of vertical function and horizontal function on agribusiness transformation. The results indicate weak positive statistical significant correlation between vertical function and agribusiness transformation ( $r=0.186$ ,  $r=254$ ,  $p=0.003$ ) whereas strong positive statistical significance correlation ( $r=0.451$ ,  $n=254$ ,  $p =0.000$ ) is observed between horizontal function and agribusiness transformation which validate that agribusiness transformation is more conspicuous in horizontal than vertical function.

Likewise, the regression analysis generate statistical significant p-value ( $p = 0.001$ ) in which case null hypothesis is rejected. Therefore, the effect of VF and HF on AT is not the same. The coefficient of estimate( $\beta$ ) indicates that the moderation function of VF is significant negative predictor of AT. This means that for everyone unit increase in VF there is predicted decrease 1.193 on AT. As the scores of vertical function increases there is predicted decrease of AT under the specified coefficient of estimates (-1.193). On HF results show statistical significant positive prediction on AT. Coefficient of estimate indicates that for everyone unit increase in HF there is estimated increase of 1.107 on AT. Thus, as the scores of HF increases there is predicted increase on AT.

### **7.2.7 Agribusiness Transformation**

The results reveal that majority (86.2%) of respondents assert that grains business is profitable, whereas 8.3% refuted, and 5.5% were undecided. In addition, 85% of respondents managed to procure some assets and pay for key social services through

grains production, whereas 90.2% of respondents indicate that grains productivity has increased, which further justify increase in marginal profit among agribusiness owners. Since profitability is linked to growth of an enterprise, this account for agribusiness transformation process as far as profitability is concerned. On sales performance, it was revealed that (64.6% ) grains sold quickly after being harvested which implies that demand of grains is reasonably high, very few (7.5%) respondents are unhappy about market availability.

On capital investment, it was found that capital investment is a barrier among respondents which restrain agribusiness transformation. This emanated from the fact that 77.6% of respondents never took loan from bank for grain business. Since access to loan is linked to capital growth hence agribusiness transformation, majority of respondents are capital stagnated hence decelerate agribusiness transformation. On employability, the results indicate agribusiness owners created insignificant direct employment (<6%) as majority (63%) depend on family labour.

Therefore, the results show that the impact of entrepreneurship practices on agribusiness transformation is poor (89.4%) with some potential (10.6%) transitioning to moderate transformation. It was found that although APT is statistically insignificant predictor of TAT, the STORP, MAKP and APRP are significant predictors of TAT under HF moderation. The correlation analysis indicate significant positive weak correlation between APT and TAT ( $r = 0.274$ ,  $n = 254$ ,  $p = 0.000$ ), VF and TAT ( $r=0.186$ ,  $r=254$ ,  $p=0.003$ ) respectively. It was found that correlation between STORP and AT ( $r=0.417$ ,  $n=254$ ,  $p=0.000$ ); APRP and TAT ( $r = 0.335$ ,  $n = 254$ ,  $p = .000$ ), and HF and AT ( $r = 0.451$ ,  $n = 254$ ,  $p = 0.000$ ) indicate

significant positive moderate correlation with TAT respectively. MAKP is found to be significant positive strong correlation with TAT ( $r = 0.526$ ,  $n = 254$ ,  $p = .000$ ). Furthermore, the significant strong positive correlation is observed between MARK and HF ( $r = 0.604$ ,  $n = 254$ ,  $p = .000$ ). Although APRP depicts significant positive strong correlation with VF ( $r = 0.791$ ,  $n = 254$ ,  $p = 0.000$ ), there is insignificant positive weak correlation with HF ( $r = .077$ ,  $n = 254$ ,  $p = 0.222$ ).

In validating general hypothesis, regression analysis generates statistical significant p-value ( $p < 0.05$ ) such that the general null hypothesis is rejected. Thus, the impact of entrepreneurship practices on TAT is statistically significant. However, the moderation effect of VF indicate negative coefficient of estimate (-1.193) which means that although entrepreneurship practices depict statistical significant impact on TAT, the transformation process is more conspicuous horizontal than vertical moderated. As such, when the scores of VF increases there is predicted decrease on TAT. Controversy, as the scores of HF increases there is predicted increase on TAT.

### **7.3 Recommendations**

- a) It is recommended that agribusiness micro financing schemes are established due to small proportions of respondents (14.6%) accessing loans from bank for agribusiness. This may act as financial inclusion strategy among small-scale grain producers, Tanzania Agricultural Development Bank (TADB) is a right point for taking off.
- b) Since 94.5% of respondents did not possess own tractors, it is recommended that ministry of agricultural mobilize stakeholders specifically on mechanisations to find out appropriate modalities such that grains producers

can access power tillers and tractors for agricultural production

- c) Traders are found to be the main market outlet of grains than village local markets; it is recommended that relevant authorities develop Traders Trust Fund which among other functions will empower grains producers' farm infrastructures.
- d) Since majority of respondents (85.4 %) affirm that grains pay well after storage, it is recommended that extension officers and non for profit organizations increase awareness on post-harvest storage practices to expedite agribusiness transformation.
- e) Agricultural production technologies were found to be good predictor of agribusiness transformation, it is recommended that a robust campaign on application of agricultural production technologies is launched which should include among other actors technology manufacturers.
- f) Since post-harvest storage practices indicate statistical significant effect on agribusiness transformation, simple construction of storage facilities is recommended in which case grains producers can conveniently access storage facilities.
- g) As to the post-harvest storage practices, marketing practices were found to have statistical significant effect on agribusiness transformation, it is recommended that capacity building programs organized by Tanzania Ministry of Agriculture through District Agricultural and Livestock Departments officials to improve sales and marketing skills among growers.
- h) Since majority of agribusiness owners indicate to have no entrepreneurship skills, it is recommended that training package on entrepreneurship skills is



organized as part of agribusiness transformation agenda.

- i) Agro-processing practices indicate statistical significant effect on agribusiness transformation, recommended reinforcement of agro-processing by laws within local administration for value addition on grains so as to improve profitability of the agribusiness owners.
- j) The vertical function indicate negative effect on agribusiness transformation, it is recommended that horizontal function is promoted as viable model for agribusiness transformation than vertical function model.
- k) Since Marketing practices indicate strong correlation with agribusiness transformation than other practices, upcoming and existing government and development partners programs should integrate the component of sales and marketing techniques.
- l) The study recommends that political leaders incorporate entrepreneurship practices in policy frameworks and other platforms to increase efficiency in agribusiness subsector, youth employability and eventually contribute to growth of Gross Domestic Product (GDP).
- m) It is recommended that international development partners in food and agriculture value chain finance entrepreneurship practices, specifically production technologies, post-harvest storages, marketing and agro-processing to impact agribusiness.

#### **7.4 Areas for Future Studies**

- i. Since majority of agribusiness enterprises have not been formalized with business names and brands, a comparative analysis research study between

formalized and non-formalized smallholder agribusiness enterprises; a roadmap for formalization of smallholder agribusiness enterprise in Tanzania is crucial.

- ii. Impact of taxation schemes on agro-processing among smallholder grain growers is recommended to ascertain the findings that agro-processing lead to high taxes than selling unprocessed grains, as indicated by majority of agribusiness owners (82.7%)
- iii. Since majority of respondents indicate to have generated profit through grain selling and managed to pay for social services, the study on agribusiness enterprises profitability assessment is recommended to quantify profitability and quality of social services accessed and assets owned.
- iv. As it was observed most of agribusiness owners still use hand hoe and animal plough than power tiller and tractors, the research need to be conducted to develop an inclusive mechanization model that will enable access of agricultural production technologies.
- v. Comparative analysis study between horizontal and vertical integration approach is needed so as to improve agribusiness performance i.e. profitability and efficiency. Such study can be grounded on Structure Conduct Performance Theory.
- vi. Exploration study on post-harvest micro storage technologies is essential to enable growers sell off season when prices are high.
- vii. Making farming a business requires entrepreneurship capacitation among small-holder growers, explorative study is recommended so as to find out contemporary market driven entrepreneurship skills on agribusiness sub-

sector.

- viii. The study on assessing agro-processing linkages mechanisms to accelerate value addition in grains is necessary so as among others things to determine roadmap for a win-win situation between producers and processors.

## REFERENCES

- Abass, B. A. (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*, 82, 98-109.
- ACET, (2017). Africa Transformation Report; *Agriculture Powering Africa's Economic Transformation*. African Center for Economic Transformation. Accra, Ghana.
- Adam, A. M. (2021). A Study on Sample Size Determination in Survey Research. *New Ideas Concerning Science and Technology*, 4, 125–134.
- Ademola A (2016). Spearman Correlation SPSS Step-By-Step Guide Retrieved on 29<sup>th</sup> July, 2022 from; <https://www.youtube.com/watch?v=XGxMCp8cg-c>.
- Aderemi, H. O., Ilori, M. O., Suyanbola, W. O., Adegbite, S. A. & Abereijo, I. O., (2008). An Assessment of the Choice and Performance of Women Entrepreneurs in Technological and Non-Technological Enterprises in South-western Nigeria, Full Length Research Paper, *African Journal of Business Management*, 2(10), 165-176.
- AFI, (2014). Small and Growing Entrepreneurship in African Agriculture. Montpellier Panel Report.
- 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).
- Ameh, O. E., *et al* (2017). An Empirical Analysis of the effect of Agricultural Input on Agricultural Productivity in Nigeria. *International Journal of Agricultural Science and Food Technology*. Nigeria.
- 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.
- Bezu, S. Villanger, E., and Kinyondo, A. A. (2018). Can Smallholders benefit from the new market opportunities from the extractive industry in Tanzania? Baseline Report for an impact study of the project: “Food Value Chain Development for Gas and Mining Industry in Southern Tanzania”. CMI, Bergen, Norway.
- BQ, (2019) - Business Queensland. The 7Ps of Marketing. Queensland Government. Retrieved on 29<sup>th</sup> July, 2018 from; <https://www.business.qld.gov.au/running-business/marketing-sales/marketing-promotion/marketing-basics/seven-ps-marketing>.
- Cherry, K. (2019). Cross-Sectional Research Method: How Does It Work? Advantages and Disadvantages. Retrieved on 05<sup>th</sup> April, 2019 from; <https://www.verywellmind.com/what-is-a-cross-sectional-study-2794978>.
- Cookey, M. T (2012). Entrepreneurship Skills for Growth-Orientated Businesses. Report for the Workshop on ‘Skills Development for SMEs and

- Entrepreneurship, Dublin Institute of Technology retrieved on 08<sup>th</sup> Nov., 2022 from; [https://www.oecd.org/cfe/leed/Cooney\\_entrepreneurship\\_skills\\_HGF.pdf](https://www.oecd.org/cfe/leed/Cooney_entrepreneurship_skills_HGF.pdf).
- Davidsson, P. (2006). Entrepreneurship as Growth: Growth as Entrepreneurship - In Davidsson, P, Delmar, F, & Wiklund, J (Eds.) 'Entrepreneurship and the Growth of Firms', pp. 21-38, England: Edward Elgar Publishing.
- Dercon, S. & Gollin, D. (2014). Agriculture in African Development: A Review of Theories and Strategies. CSAE Working Paper WPS/2014-22.
- Dimitri, C., Effland, A. & Conklin, N. (2005). The 20<sup>th</sup> Century Transformation of U.S. Agriculture and Farm Policy. USDA.
- Divanbeigi, R. & Saliola, F. (2016). Regulation and the Transformation of Agriculture. Development Economics, Global Indicators Group, World Bank, Washington DC, USA.
- Ene, H. (2022). Determinants of Agribusiness Output in Nigeria: An Empirical Analysis Michael Okpara University of Agriculture, Abia State, Nigeria [<https://amity.edu/UserFiles/admaa/67d04AJAB%20henry%20paper.pdf>] site visited on 10<sup>th</sup> November, 2023.
- Essays, (2018). The Structure Conduct Performance Framework in Industrial Organizations Economics Essay. Retrieved on 01<sup>st</sup> March, 2022 from; <https://www.ukessays.com/essays/economics/the-structure-conduct-performance-framework-in-industrial-organizations-economics-essay.php?vref=1>.
- FAO & AfDB. (2019). Agricultural Transformation Centres in Africa. Practical guidance to promote inclusive agro-industrial development, 196 pp. Rome.

- FAO & World Bank (2010): FAO/World Bank Workshop on Reducing Post-Harvest Losses in Grain Supply Chains in Africa; Lessons Learned and Practical Guidelines. Rome, Italy.
- FAO, (2017). Agricultural transformation in Africa. *The role of natural resources. Nature & Faune journal*, 31(1), 2026-5611.
- Fernandes, A. P., & Tang, H. (2012). Determinants of vertical integration in export processing: Theory and evidence from China. *Journal of Development Economics*, 99(2), 396-414.
- FEWS, (2018). Tanzania: Market Fundamental Summary, August, 20<sup>th</sup> 2018. [[https://fews.net/sites/default/files/documents/reports/Tanzania\\_MFR\\_Summary\\_Report\\_August\\_2018.pdf](https://fews.net/sites/default/files/documents/reports/Tanzania_MFR_Summary_Report_August_2018.pdf)] site visited on 4<sup>th</sup> March 2020.
- GEM, (2022). Global Entrepreneurship Monitor 2021/2022 Global Report. Opportunities amid Disruption. Babson College. Retrieved on 10<sup>th</sup> June, 2022 from; <https://gemconsortium.org/file/open?fileId=50900>.
- Ghasemi, A. & Zahediasl, S., (2012). Normality Test for Statistical Analysis: A guide for Non-Statisticians. *Int. Journal Endocrinol Metab.* 10(2), 486 – 489.
- Gichangi, A. (2010). Analysis of Structure, conduct and performance of sweet potato marketing: the case of Nairobi and Kisumu, Kenya.
- Giller, K. E. (2021). *The future of farming: Who will produce our food? Food Sec.*, 13, 1073 – 1099.
- Glenn, D. I. (1967). *Determining Sample Size*. Retrieved on 14<sup>th</sup> Sept., 2022 from; [<https://www.tarleton.edu/academicassessment/documents/Samplesize.pdf>] site visited on 18<sup>th</sup> December 2019.
- GoT, (2012). National Sample Census of Agriculture 2007/2008: Crop Sector –

- National Report. Tanzania.
- GoT, (2018). National Population Projections. Tanzania: National Bureau of Statistics.
- Gujarati, D. N. & McGraw-Hill, I. (2004). *Applied Econometrics*. Singapore (SG): Mc. Graw-Hill International Editions.
- Gujarati, N. (2004). Basic Econometrics. Third Edition. New York: McGraw-Hill Book Company.
- Guthiga, P. M. (2007). Does use of draft animal power increase economic efficiency of smallholder farms in Kenya? Center for development research. University of Bonn [<https://www.jstor.org/stable/44490536>] site visited on 8<sup>th</sup> June, 2022.
- Hazell, P. (2007). Transformations in Agriculture and their Implications for Rural Development. *The Electronic Journal of Agricultural and Development Economics*, 4, 47-65.
- Heo, M., Kim, N. & Faith, M. S. (2015). Statistical power as a function of Cronbach alpha of instrument questionnaire items. *BMC Med Res Methodol.*, 15(86),
- 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. Rome: FAO.
- Karuho, O. and Collins, K., (2020). Improving African Grain Markets for



Smallholder Farmers. AGRA.

Kenton, W. (2019). Vertical Integration. Retrieved on 5<sup>th</sup> September, 2019 from;  
<https://www.investopedia.com/terms/v/verticalintegration.asp>.

Kereth, G., K., Lyimo, M., Mbwana, H., Mongi, R. & Ruhembe, C., (2013).  
 Assessment of post-harvest handling practices: knowledge and losses of  
 fruits in Bagamoyo district of Tanzania. *J. Food Qual. Manag.*, 11. 8-15.

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.

Koch, F., Nordqvist, S., Carter, M., Hunter, S. (2018). Entrepreneurship in the  
 Agricultural Sector: A Literature Review and Future Research Opportunities.  
*Entrepreneurship Theory and Practice*, 42, 129-166.

Kothari, C. R. (2009). *Research Methodology: Methods and Techniques*, 2<sup>nd</sup> Revised  
 ed. Delhi: New Age International..

Kumar, D. & Kalita, P. (2017). Reducing Postharvest Losses during Storage of Grain  
 Crops to Strengthen Food Security in Developing Countries. *Foods*, 6(1), 8.

Kumar, G. (2020). Data analysis and Training. Kumar, G. (2020). *Data analysis and  
 Training*, 84, Retrieved on 02<sup>nd</sup> May, 2022.

Laborde, D, Lallemand, T., McDougal, K., Smaller, C. & Traore, F., (2019).  
 Transforming Agriculture in Africa & Asia: *What are the policy priorities?*  
 International Institute for Sustainable Development and International Food  
 Policy Research Institute agriculture-africa-asia.pdf..

Mobolade, A. J. (2020). Traditional methods of food grains preservation and storage

- in Nigeria and India, *Annals of Agricultural Sciences* 64(2019) 196-205.
- Mpoyi, R. T. & Bulington, K. E. (2004). Performance Implications of Changing Vertical Integration Strategies. *American Business Review*, 22, 93-101,
- Munishi, R. G., Mgelwa, A. S. & Guan, X. (2017). Exploring factors affecting performance of smallholder tea farmers in Tanzania. *Journal of Economics and sustainable development*, 8(20), 95-106.
- Mutura, K. J., Nyairo, N., Mwangi, M. & Wambugu, S. K. (2015). Vertical and Horizontal Integration as Determinants of Market Channel Choice among Smallholder Dairy Farmers in Lower Central Kenya. *Asian Journal of Economics and Empirical Research*, 2(2), 83-90.
- Muzari, W. (2022). Agricultural Entrepreneurship. Retrieved on 20<sup>th</sup> October, 2022 from; 09<sup>th</sup> November, 2022 from; [https://www.researchgate.net/publication/366004474\\_agricultural\\_entrepreneurship](https://www.researchgate.net/publication/366004474_agricultural_entrepreneurship) site visited on 9<sup>th</sup> November 2023.
- Naminse, E. Y. & Zhuang, J. (2018). Does farmer entrepreneurship alleviate rural poverty in China? Evidence from Guangxi Province. Retrieved on 30<sup>th</sup> June, 2022 from; <https://doi.org/10.1371/journal.pone.0194912>.
- Neumann, T. (2021). The impact of entrepreneurship on economic, social and environmental welfare and its determinants: a systematic review, 71, 553–584.
- Ngowi, R. A., Mauki C, R. & Mpenda, Z. (2018). Challenges facing Agribusiness entrepreneurs in East Africa; A comparative study. Research Report Series, FAO.
- 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.

NRI, (2021). Norwegian Research Training Institute, retrived on 12<sup>th</sup> June, 2022 from; <https://www.youtube.com/>.

Okou, C., Spray, J. & 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., Gachuiiri, C., Mwang'ombe, A. (2020). Trends and Constraints in Guava (*Psidium GuajavaL.*) Production, Utilization, Processing and Preservation in Kenya. *International Journal of Fruit Science*, 20. 1-12.

Payumo, J., Lemgo, E., Maredia, K.(2017). Transforming Sub-Saharan Africa's Agriculture through Agribusiness Innovation. *Global Journal of Agricultural Innovation, Research & Development*, 4. 1-12.

Poetz, K. (2014). Agribusiness entrepreneurship in Tanzania; Policy Brief. DFC File No. 11-077 LIFE.

REPOA, (2013). Tanzania Markets Pan: Post-harvest Losses in Tanzania; Challenges and Options for Mitigation. Policy Brief, No 3.

Ricker-Gilbert, J., Feleke, S., Abdoulaye, T. & Channa, H., (2022); Overcoming smallholder farmers' post-harvest constraints through harvest loans and storage technology: Insights from a randomized controlled trial in Tanzania, *Journal of Development Economics*, 157, 1-26.

Saunders, M. N. K. (2009). Understanding research philosophies and approaches. [[https://www.researchgate.net/publication/309102603\\_Understanding\\_research\\_philosophies\\_and\\_approaches](https://www.researchgate.net/publication/309102603_Understanding_research_philosophies_and_approaches)] site visited on 7<sup>th</sup> March 2020.

Suleiman, R., (2017). *Journal of Stored Products and Postharvest Research*

Understanding postharvest practices, knowledge, and actual mycotoxin levels in maize in three agro-ecological zones in Tanzania. *Journal of Stored Products and Postharvest Research*, 8, 73-84.

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.org/10.1007/s11165-016-9602-2>] site visited on 18<sup>th</sup> March, 2023.

Tefera, T. (2012). Post-harvest losses in African maize in the face of increasing food shortage. *Food Sec.*, 4, 267 – 277 (2012).

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 (UNCTAD).

URT, (2016) Agricultural Sector Development Strategy II 2015/2016–2024/2025. FAO [<http://extwprlegs1.fao.org/docs/pdf/tan160643.pdf>] site visited on 3<sup>rd</sup> September 2019

URT, (2019). National Postharvest Management Strategy 2019 -2029. Ministry of Agriculture, Dodoma, URT.

URT, (2007). Regional Report Volume VI. National Sample Census of Agriculture 2002/2003. Mbeya region retrieved on on December, 2019 from; <http://www.fao.org/tempref/AG/Reserved/PPLPF/ftpOUT/GLiPHA/DATA/Queue/Working/tanzania/MBEYA%20REGION%20REPORT.pdf>.

- URT, (2013). National Agriculture Policy Draft November 2013: Ministry of Agriculture Food Security and Cooperative. Dar es Salaam. Retrieved on on 4<sup>th</sup> Sept. 2019. [http://www.tzdpd.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](http://www.tzdpd.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).
- URT, (2014). Tanzania Agriculture Statistics Strategic Plan (2014/15–2018/19). National Bureau of Statistics. Dar es Salaam. URT.
- USDA, (2018). Grain and Feed Annual: 2018 Tanzania Corn, Wheat and Rice Report. Washington, DC.: USDA.
- 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.
- 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, 44-65.
- WB, (2016). Transforming Vietnamese Agriculture: Gaining More from Less. Vietnam Development Report. Washington, D.C. World Bank.
- WB, (2018). Country partnership framework for Tanzania. Retrieved on 28<sup>th</sup> Aug., 2021 from; <http://documents.worldbank.org/curated/en/669801521338458808/pdf/Tanzania-CPF-FY18-22-SECPO-February-14-02212018.pdf>.
- Younhee, K. (2010). Stimulating Entrepreneurial Practices in the Public Sector: The Roles of Organizational Characteristics. Volume: 42 issue: 7, page(s): 780-

814; Issue published: November 1, 2010.

Zedstatistics, (2018). *What is Heteroscedasticity*. Retrieved on 16<sup>th</sup> May, 2022 from;  
<https://www.youtube.com/watch?>

Zhang, D., (2013). The Revival of Vertical Integration: Strategic Choice and Performance Influences. *Journal of Management and Strategy*, 4(1), 2013.

Zungo, M. & Kilima, (2019). Inter- commodity price transmission between maize and rice prices in Tanzania. Evidence from co-integration analysis and error correction model. *Journal of Co-operative and Business Studies (JCBS)*, 4(1), 2019.

## APPENDICES

### Appendix 1: Questionnaire for Agribusiness Transformation

Dear Respondent,

I am **Peter Stewart Mkufya**, PhD student from The Open University of Tanzania (OUT). I would kindly invite you to assist me in filling the questionnaire below.

The questionnaire seeks to respond to the research study entitled **“Impact of Entrepreneurship Practices on Agribusiness Transformation in Tanzania”**

Any agribusiness owner residing in Mbeya region is a right respondent for this questionnaire. I thank you in advance for your time.

Sincerely yours

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**Research project: Impact of Entrepreneurship practices on agribusiness transformation in Tanzania; Vertical Integration Approach on grains.**

**Objectives of the research:**

- i. To examine effect of agricultural production technologies practiced on agribusiness transformation in Tanzania.
- ii. To examine effect of post-harvest storage practices on agribusiness transformation.

- iii. To assess effect of marketing practices on agribusiness transformation.
- iv. To examine influence of agro-processing practices on agribusiness transformation.
- v. To examine relative effects of agribusiness transformation determinants in the context of vertical integration.

### Questionnaire for Agribusiness Transformation in Tanzania

Dear Respondent,

I am **Peter Stewart Mkufya**, PhD student from The Open University of Tanzania (OUT). I would kindly invite you to assist me in filling the questionnaire below.

The questionnaire seek to respond to the research study entitled “*Impact of Entrepreneurship Practices on Agribusiness Transformation in Tanzania*”

#### A. Background information

1. Respondents Name and Phone: _____	3. Age _____
2. Residence: i. District _____ ii. Ward _____ iii. Village _____	4. Education level _____ 5. Gender _____ 6. Education level _____ 7. Planted acres _____
8. What are major crops produced? _____	

#### B. Agricultural production technologies

Score the following entrepreneurial practices which portray effect of application of technology for agricultural production with a score of 1 indicating **Not at all true**, 2 = **Slightly true**, 3 = **Undecided**, 4= **mostly true** and 5 = **completely true**.



<b>Technological practices on production</b>	<b>Level of effect</b>				
Tractors used more often than others					
Hand hoe used more often than others					
Possess own tractor (s)					
Production implements are hired from non-farmers					
Use power tillers more often					
Animal plough used more often					
Both animal plough and power tillers used					
Use Combine Harvesters to harvest					
Depend on human labour for agricultural production					
Family labour used more often in agricultural production					
Few used hand hoe for agricultural production					

### **C. Effect of post-harvest storage practices**

Score the following entrepreneurial practices which explains effect of storage practices with a score of 1 indicating **completely disagree**, 2 = **mostly disagree**, 3 = **neither disagree nor agree** and 4 = **mostly agree** and 5 = **completely agree**.

<b>Storage practices</b>	<b>Level of effect of storage practices</b>				
Storage facilities located near farm yard					
Owns private storage facility					
Use modern storage facility					
Utilized communal owned crop storage facility					
Access ample storage capacity across the season					
Storage affordable and efficient					
Constructed own storage facility					
Crop pay well after storage					
Sell without keeping crops on store					
Use common warehouse to store crops					
Significant profit made if storage practiced					
Government officials support storage facilities					
Stakeholders insist on application of storage					
Storage facility located very far					
Store crops and sell when price is high					

**D: Effect of marketing practices deployed**

Score the following entrepreneurial practices to validate your satisfaction over marketing techniques used by indicating number **1** for **Never**, **2 = Rarely**; **3 = Sometimes**, **4 = Often** and **5 = Always**.

1. Use radio to advertise my farm products.....
2. Customers normally come to buy themselves.....
3. Practices contract farming.....
4. Use social media to promote.....
5. Mobile phone used in search for customers.....
6. Friends and relatives help to look for customers.....
7. Social gathering used to advertise crops.....
8. Crops are taken to market place.....
9. Packaging and labelling practiced.....
10. Crop sold through village market than to traders.....
11. Crops need to be transported to market for selling.....
12. More producers than buyers.....
13. My business name appear on product package .....
14. Customer buy my crop due to lower price.....
15. I pack well my product before selling.....
16. I have business logo.....
17. Registered with business name.....

- 18. Registered with company name.....
- 19. Participate effective on exhibition like Nane Nane.....
- 20. Promotion increase sales.....
- 21. Approach market differently every season.....
- 22. Listen to media when got time.....

**E. Influence of agro-processing practices**

Score the following entrepreneurial practices which measures accessibility of processing facilities with a score of **1** indicating **strongly disagree**, **2 = disagree**, **3 = neither agree nor disagree**, **4 = agree** and **5 = Strongly agree**.

Agro processing activities	Level of influence				
Crops processed before selling (pp)					
Crops sold at farm gate price (pp)					
Know nothing about processing (ap)					
Processing add more profit (sp)					
Process machines are expensive (sp)					
Lead to high taxes than selling unprocessed crops(ap)					
Source out processing services(sp)					
Advance processing machines available(ap)					
Simple processing machines used (sp)					
Training and seminar organized on processing(ap)					
Stopped processing due to running costs(ap)					
I know where to procure processing machine (sp)					

**F. Vertical functions on agribusiness transformation**

Score the following statements basing on your best practices in agribusiness by indicating number **1** for **Not at all**, **2 = Little**, **3 = Occasionally**, **4 = Often all the time**, and **5 = always**. Note: V and H are identifiers for Vertical and Horizontal functions.

Insert Score	Items
	Use seeds produced from my farm (V)
	Control trucks transporting input and crop distribution (V)
	Seeds and fertilizers purchased from other suppliers (H)
	Most services hired during land preparation (H)
	Own technologies for grain production (V)
	Crop harvested sold to open market (V)
	Sell crop to middleman or processors (H)
	Got demand from well know factories to sell (H)
	Possess own shop to sell grains (V)
	Full agronomic expertise are under agribusiness owner (V)
	Sell directly to end consumer (V)
	Negotiate for market without external support (V)
	Sale crops through cooperatives or associations (H)
	Formed own group to enable sales (H)
	Hiring tractor or Power tiller every season (H)
	Perform marketing (V)
	Enough storage capacity (V)
	Attended entrepreneurship training (V)
	Depend on government and others to produce and sell (H)

### G. Assessment of Vertical Integration and horizontal integration on AT

Tick the appropriate column against each the nature of entrepreneurship practices

	Horizontal integrated	Vertical integrated
Agricultural production technologies		
Storage		
Marketing		
Agro-processing		

### H. Agribusiness Transformation

Score the following items using your perfect experience in doing farming as business

by indicating number **1** if **absolutely no**, **2 = mostly non**, **3 = neither yes nor no**, **4**

**= mostly yes** and **5** if **absolutely yes**.

Items	Absolutely no	Mostly non	Neither yes nor no	Mostly yes	Absolutely yes
Grains is profitable business (P)					
Plan to quit farming (P)					
Bought assets from crop selling (P)					
Pay for social services comfortable (P)					
Crop sold quickly after harvesting(S)					
Customer give order before harvest(S)					
Hard to get customer to sell crop(S)					
Grains demand is higher than supply(S)					
Happy about market availability (S)					
Took loan from bank for farming (C)					
Borrowed in kind for farm business (C)					
Improved farm structures (C)					
Capital in farm business has grown (P)					
Depend on family labour (E)					
Mostly use causal labours (E)					
Possess more than 3 employees (E)					
Access bank loan wherever needed (C)					
Possess less than 3 employees (E)					
Employed none (E)					
Increased crop productivity (P)					
Generated loss last 3 grain seasons (P)					
Travelled other countries to learn (C)					
Irrigation system in place (C)					

**Identifier:** C = Capital; E = Employees P = Profit; and S = Sales

**Appendix 2: Some of the grains in the study area**



**Appendix 3: Some photos during data collection**



Mr. Peter Mkufya as arrived in Mbeya town for data collection



Mr. Peter Mkufya in interview with DALDO's office staff in Mbeya, Mr. Aidan Mlawa





A banner displayed in front of SONGWE office



Mr. Peter Mkufya interview some of Rogimwa Agri Com. Ltd Staff in Mbeya



## Appendix 4: Research clearance letter for data collection

### THE OPEN UNIVERSITY OF TANZANIA

#### DIRECTORATE OF POSTGRADUATE STUDIES

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REF: PG201800519

District Executive Director,  
Mbeya Urban District,  
P. O. Box 5,  
**MBEYA.**

5<sup>th</sup> June, 2020

#### RE: RESEARCH CLEARANCE

The Open University of Tanzania was established by an Act of Parliament No. 17 of 1992, which became operational on the 1<sup>st</sup> March 1993 by public notice No.55 in the official Gazette. The Act was however replaced by the Open University of Tanzania Charter of 2005, which became operational on 1<sup>st</sup> January 2007. In line with the Charter, the Open University mission is to generate and apply knowledge through research.

To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you Mr. Peter Stewart Mkufya, Reg No: PG201800519 pursuing PhD Economics. We here by grant this clearance to conduct a research titled "*Impact of Entrepreneurship Practices on Agribusiness Transformation in Tanzania*". He will collect his data in your district between 15<sup>th</sup> June to 31<sup>st</sup> December, 2020.

In case you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O. Box 23409, Dar es Salaam. Tel: 022-2-2668820. We lastly, thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours Sincerely,

Prof. Hossea Rwegoshora  
For: VICE CHANCELLOR  
THE OPEN UNIVERSITY OF TANZANIA