

**FACULTY OF AGRICULTURE AND ANIMAL SCIENCES
DEPARTMENT OF AGRIBUSINESS AND EXTENSION**

**PROFITABILITY ASSESSMENT OF PLANTATION FORESTRY IN PAIDHA TOWN
COUNCIL, ZOMBO DISTRICT**

BY

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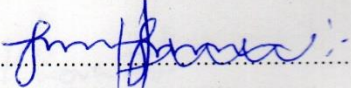
**A SPECIAL PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF
AGRIBUSINESS AND EXTENSION IN PARTIAL FULFILMENT OF THE
REQUIREMENT FOR THE AWARD OF A BACHELOR'S DEGREE OF
AGRIBUSINESS OF BUSITEMA UNIVERSITY**

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DECLARATION

I ONENCHAN ROBERT hereby declare that this research report is my own work and has never been presented by anyone to any institution for any award.

The sources used to compile additional information are cited in the document.

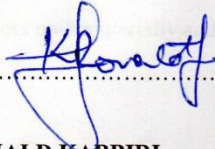
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APPROVAL

This is to certify that this research report is ready for submission for the award of a Bachelor Degree of Agribusiness.

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DEDICATION

I dedicate this research report to the almighty God for continuous grace throughout my life especially through this academic journey. Dedication also goes to my parents Mr. Oneka Patrick Kerodong and Mrs. Oneka Evelyn, my Uncle MR Kerodong Paskwale Acayerach and his family for their continuous support, as well as all my family members who have greatly contributed to my progress both materially and emotionally.

Table of Contents

DECLARATION	Error! Bookmark not defined.
APPROVAL	Error! Bookmark not defined.
DEDICATION	III
LIST OF TABLES	VII
LIST OF FIGURES	VIII
LIST OF ABBREVIATIONS	IX
ABSTRACT	X
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background	1
1.2 Profitability concept in plantation forestry	2
1.3 Problem statement	2
1.4 General Objective	3
1.5 Specific Objectives	3
1.6 Research questions	3
1.7 Justification for the study	3
1.8 Significance of the study	3
1.9 Conceptual framework	4
1.10 Dependent variable and independent variables.	4
CHAPTER TWO	5
LITERATURE REVIEW	5
2.0 Introduction	5
2.1 Profitability concept in plantation forestry	5
2.2 Costs involved in plantation forestry industry	6
2.3 Benefits/ expected revenue streams	6
2.4 Profitability assessment	7
2.5 Factors Influencing Profitability:	7
2.5.1 Tree Species Selection	7
2.5.2 Silvicultural Practices	8
2.5.3 Management Efficiency.....	8
2.5.4 Market Conditions	8
2.5.6 Government policy Frameworks	8
2.5.7 Climate Variability.....	8
2.5.8 Labor and Operational Costs	8
2.5.9 Price fluctuations	8

CHAPTER THREE	9
METHODOLOGY	9
3.1 Introduction.....	9
3.2 Research design and approach:.....	9
3.3 Description of the study area	9
3.4 Study population	9
3.5 Sampling strategies:	10
3.6 Data collection methods	10
3.6.1 Interviews.....	10
3.6.2 Observations	10
3.7 Data collection methods	10
3.7.1 Questionnaire	10
3.8 Data processing	11
3.9 Data Analysis:	11
3.10 Ethical Considerations:	11
3.11 Limitations:	11
CHAPTER FOUR.....	12
RESULTS AND DISCUSSIONS	12
4.1 Socio economic characteristics of the respondents	12
4.1.1 Age of the respondent	12
4.1.2 Gender of the respondent.....	12
4.1.3 Marital status of respondents	12
4.1.4 House-hold size of respondents	13
4.1.5 Average monthly income	13
4.2 Factors affecting profitability	15
4.2.1 Land size and acquisition of respondents	15
4.2.2 Education level of respondents.....	15
4.2.3 Experience in tree growing.....	16
4.2.4 Size of the plantation	16
4.2.5 Predominant Tree Species.....	17
4.2.6 Major Purpose for Growing Trees	17
4.3 Costs and benefits of plantation forestry	19
4.3.1. Costs.....	19
4.3.1.1 Initial Investment Cost:.....	19
4.3.1.2 Maintenance Costs:.....	19
4.3.1.3 Government Policy on Supply of Wood Products:.....	20

4.3.2 Benefits/Revenue Streams:.....	20
4.3.2.1 Timber Sales	20
4.3.2.2 Wood and Charcoal:.....	20
4.3.2.3 Poles:.....	20
4.3.2.4 Other	20
4.4 Influence of financial factors, such as initial investment costs, operational costs and revenue on profit margins.....	21
4.4.1 Costs associated with tree growing	21
CHAPTER FIVE	26
CONCLUSION AND RECOMMENDATIONS.....	26
5.1 Conclusion	26
5.2 Recommendations	27
5.3 Areas of further studies	27
REFERENCES.....	28
APPENDICES	31
APPENDIX 1: RESEARCH QUESTIONNAIRE	31
APPENDIX 2: THE MAP ZOMBO DISTRICT SHOWING PAIDHA TOWN COUNCIL.....	36

LIST OF TABLES

Table 1: showing the study population size and their parishes	10
Table 2 showing the socio-Economic characteristics of the respondents	14
Table 3 Showing factors affecting profitability	18
Table 4 Descriptive statistics on costs and benefits.....	21
Table 5: Costs associated with tree growing	22
Table 6: showing revenue stream, cost/acre, gross profit margin and return on investment	25

LIST OF FIGURES

Figure 1: showing the conceptual framework for the study	4
Figure 2: Impact of government policy frameworks on supply of wood product and profit margin	23

LIST OF ABBREVIATIONS

NFA	National forestry authority
FAO	Food and Agriculture organization
MAAIF	Ministry of Agriculture and animal industry and fisheries
UN	United Nations
UBOS	Uganda Bureau of statistics
Shs.	Shillings
Ha	hectares
FRA	Forest resources assessment
MWE	Ministry of water and environment
NTFP's	Non timber forest products
WWF	World wide fund for nature
ROI	Return on investment
GPM	Gross profit margin
PM	Profit margin
SPSS	Statistical package for social scientist

ABSTRACT

The major aim of this study was to assess the profitability of plantation forestry production in Paidha town council, Zombo district. The objectives of the study were to; characterize the farmers engaged in plantation forestry in Paidha town council, Zombo district, assess the costs and benefits involved in plantation forestry production and assess the factors that contribute to the profitability of plantation forestry production. The study adopted a cross-sectional approach with a sample size of 65 respondents. The results indicated that majority of the respondents (74%) were male with majority (63%) having a household size of 5-10 members, with 55% attaining primary education, most of them having a tree growing experience of above 15 years justified by the largest population (43%) falling in the age 45-60 years. Majority (74%) had a land holding size of 1-4 acres with 55% owning plantations of 1-5 acres and 55% attaining primary education (majority). The dominant average monthly income of the respondents (43%) was shs.100,000-300,000. The predominant tree species grown (58%) was eucalyptus with timber identified as the major purpose for growing these trees (70.8%). Through a combination of return on investment and gross profit margin analysis this research study evaluated the profitability of plantation forestry operations in Paidha town council Zombo district, with four revenue streams identified; Timber production, the highest revenue earner (shs. 52,500,000) generated a 90.8% gross profit margin followed by wood and charcoal (shs.24,000,000) with 84.8% profit margin whereas recreational activities (shs. 18,000,000) and poles (shs.3,000,000) being the third and fourth revenue stream with gross profit margins of 73.1% and 45.6% respectively. Findings also indicate that profitability in plantation forestry is influenced by factors such as tree species selection, management practices, market dynamics, and policy frameworks. The implications of this research study therefore extends to various stakeholders including investors, policymakers, forest managers, and local communities. Insights from this study can also help inform decision-making processes related to land use planning, investment prioritization, and policy development aimed at promoting profitable and sustainable plantation forestry practices. Furthermore, the study points out the need for collaborative and innovative approaches to address the many challenges facing the forestry sector in achieving both economic and environmental objective

CHAPTER ONE

INTRODUCTION

1.1 Background

Plantation forestry is a forest management approach characterized by intentionally cultivating fast-growing tree species in organized stands, primarily to produce timber and wood products (Freer-Smith et al., 2019).

According to the Global Forest Resources Assessment (FRA) report published by the Food and Agriculture Organization of the United Nations (FAO) in 2020, the total forests area globally is 4.06 billion hectares (ha), covering 31% of the total land area.

Two broad categories of forests have been identified by FRA, namely, naturally regenerating forests and planted forests. Naturally regenerating forests cover around 3.75 billion hectares (ha) or 93% of the total forest area. Meanwhile, the total area of planted forests globally is estimated to be 294 million ha or 7% of the world forest area. Asia has the largest area of planted forests which amounts to 135.23 million ha, or 46% of the total planted forest area globally, followed by Europe, North and Central America, South America, Africa, and Oceania (Seng Hua et al., 2022).

Typically composed of fast-growing species, these forests cater to economic needs by providing a consistent supply of timber and wood products, with the global trade in forest products surpassing \$270 billion in 2018 (FAO, 2018). This in turn stimulates economic growth by generating employment opportunities and income (Robertson, 2018). Beyond economic importance, planted forests also contribute significantly to environmental sustainability by sequestering carbon dioxide, aiding in climate change mitigation (Freer-Smith et al., 2019). Planted forests also face challenges such as invasive species, disease outbreaks, and poor management practices (Payn et al., 2015).

The future however suggests continued expansion of planted forests to meet growing demand for timber and wood products while emphasizing sustainability and conservation (Silva et al., 2019)

In Uganda, natural State Owned Forest Estate & Conservation of Biodiversity make up only 30% of the forestland in Uganda or about 1.5 million hectares or 7% of the total land area. With deforestation estimated at 1% per annum, this area may be reduced to about 1.2 million hectares in 2020, 70% of the forestland in the country or about 3.5 million hectares or 17% of the total

REFERENCES

- Callaghan, D. W., Khanal, P. N., Straka, T. J., & Hagan, D. L. (2019). Influence of forestry practices cost on financial performance of forestry investments. *Resources*, 8(1). <https://doi.org/10.3390/RESOURCES8010028>
- Chamberlain, J. L., Darr, D., & Meinhold, K. (2020). Rediscovering the contributions of forests and trees to transition global food systems. *Forests*, 11(10), 1–21. <https://doi.org/10.3390/f11101098>
- Chamshama, S A O and Nwonwu, F. O. C. (2004). *Lessons Learnt on Sustainable Forest Management in Africa FOREST PLANTATIONS IN SUB-SAHARAN AFRICA Forest plantations in Sub-Saharan Africa*. 55.
- Cuong, T., Chinh, T. T. Q., Zhang, Y., & Xie, Y. (2020). Economic performance of forest plantations in Vietnam: Eucalyptus, Acacia mangium, and Manglietia conifera. *Forests*, 11(3), 1–14. <https://doi.org/10.3390/f11030284>
- Dyck, B. (2003). *Benefits of Planted Forests : Social , Ecological and Economic By. March*, 1–10.
- FAO. (2013). *Climate Change and Forestry Country Report for Mauritius*. 1–12.
- Freer-Smith, P., Muys, B., Bozzano, M., Drössler, L., Farrelly, N., Jactel, H., Korhonen, J., Minotta, G., Nijnik, M., & Orazio, C. (2019). *Plantation forests in Europe : challenges and opportunities. From Science to Policy 9*. (Issue December). <https://doi.org/10.36333/fs09>
- Frey, G. E., Chamberlain, J. L., & Jacobson, M. G. (2023). Producers, production, marketing, and sales of non-timber forest products in the United States: a review and synthesis. *Agroforestry Systems*, 97(3), 355–368. <https://doi.org/10.1007/s10457-021-00637-3>
- Hardaker, A. (2021). *Evaluating the financial costs of forestry*. <https://woodknowledge.wales/home-grown-homes/afforestation/>
- Jong, W. De. (2018). *Community Forestry and the Sustainable Development Goals : A Two Way Street*. 1–18. <https://doi.org/10.3390/f9060331>
- Keenan, R. J. (2015). Climate change impacts and adaptation in forest management: a review. *Annals of Forest Science*, 72(2), 145–167. <https://doi.org/10.1007/s13595-014-0446-5>
- Lusambo, L. P., Nyanda, S. S., & Mhando, D. G. (2021). Profitability Analysis of Tree Growing in the Southern Highlands of Tanzania. *International Journal of Forestry Research*, 2021. <https://doi.org/10.1155/2021/8872211>

- Mai, Y. H., Mwangi, E., & Wan, M. (2011). Gender analysis in forestry research: Looking back and thinking ahead. *International Forestry Review*, 13(2), 245–258. <https://doi.org/10.1505/146554811797406589>
- MWE. (2020). *UGANDA: Investing in Forests and Protected Areas for Climate Smart Development Project Draft Environmental and Social Management Framework*.
- Orimoloye, I. R., Mazinyo, S. P., Kalumba, A. M., Ekundayo, O. Y., & Nel, W. (2019). Implications of climate variability and change on urban and human health: A review. *Cities*, 91, 213–223. <https://doi.org/https://doi.org/10.1016/j.cities.2019.01.009>
- Payn, T., Carnus, J.-M., Freer-Smith, P., Kimberley, M., Kollert, W., Liu, S., Orazio, C., Rodriguez, L., Silva, L. N., & Wingfield, M. J. (2015). Changes in planted forests and future global implications. *Forest Ecology and Management*, 352, 57–67. <https://doi.org/https://doi.org/10.1016/j.foreco.2015.06.021>
- PPF. (2016). *Value Chain Analysis of Plantation Wood from the Southern Highlands. Private Forestry Programme. Iringa, Tanzania*.
- Pitigala, G., & Gunatilake, H. (2011). An Assessment of Financial and Economic Feasibility of Selected Forest Plantation Species. *Sri Lankan Journal of Agricultural Economics*, 4(0), 121. <https://doi.org/10.4038/sjae.v4i0.3487>
- Products, G. F. (2018). *GLOBAL FOREST PRODUCTS*.
- Qureshi, I., Sutter, C., & Bhatt, B. (2017). The Transformative Power of Knowledge Sharing in Settings of Poverty and Social Inequality. *Organization Studies*, 39(11), 1575–1599. <https://doi.org/10.1177/0170840617727777>
- Robertson, S. R. (2018). the Role of Plantation Forestry for Promoting Sustainability in South Africa. *Tips, September*, 0–33.
- Rocheleau, D., & Edmunds, D. (1997). Women, men and trees: Gender, power and property in forest and agrarian landscapes. *World Development*, 25(8), 1351–1371. [https://doi.org/https://doi.org/10.1016/S0305-750X\(97\)00036-3](https://doi.org/https://doi.org/10.1016/S0305-750X(97)00036-3)
- Seng Hua, L., Wei Chen, L., Antov, P., Kristak, L., & Md Tahir, P. (2022). Engineering Wood Products from Eucalyptus spp. *Advances in Materials Science and Engineering*, 2022. <https://doi.org/10.1155/2022/8000780>
- Silva, L. N., Freer-Smith, P., & Madsen, P. (2019). Production, restoration, mitigation: a new generation of plantations. *New Forests*, 50(2), 153–168. <https://doi.org/10.1007/s11056->