Assessing beneficiation of black emerging macadamia farmers from the statutory levy for transformation in Vhembe District, Limpopo Province, South Africa.

By

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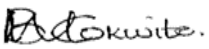
DECLARATION

I, Mokwite Basetsana Christine (11640879), hereby declare that this research dissertation for the Master of Science in Agriculture (Agricultural Economics) at the University of Venda is my work, and has not been submitted previously for any degree at this or another university. It is original in design and execution, and all reference material contained therein has been duly acknowledged.



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Date: 28 September 2022

Basetsana Christine Mokwite

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DEDICATION

I dedicate this dissertation to my handsome son Didintle Phuti Sethosa together with my husband, Isaac Malose Sethosa, my sisters; Mmarabecca, Kgomotso, Gabaiphiwe, and our beautiful mother Sheila Mokwite who has been an absolute inspiration to our lives.

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KEA LEBOGA

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ABSTRACT

In 1996, under the Marketing of Agricultural Products Act (MAP Act No. 47 of 1996), the South African government implemented statutory measures in support of the MAP Act's objective of promoting efficiency in the agricultural sector. In 2018, Macadamia South Africa NPC (SAMAC) were approved for a second term of statutory measures that enable applicable agricultural industries to collect levy funds for the expenditure on crucial generic functions: research, transformation, and information. The transformation function is enacted to fast-track rural development of previously disadvantaged farmers towards their advancing commercialisation by funding their much-needed resources to perform daily farm operations and for human capacity empowerment. With the aim to determine the objective of the MAP Act No. 47 enacted in 1996 is being realized, the study assessed the beneficiation of black emerging macadamia farmers from the transformation programme activities funded by the statutory levies in Vhembe District Municipality.

The objectives of the study were to identify and describe the socio-economic characteristics of the farmers investigate factors influencing beneficiation from the transformation programme funded by the statutory levies, evaluate the impact of the transformation programme funded by the statutory levies on beneficiaries' skills and enterprise development and explore the beneficiaries' views, and challenges faced by the beneficiaries of the transformation programme funded by the statutory levies. The study was carried out in the Vhembe District Municipality, Limpopo Province where data was collected from 152 black emerging macadamia growers using structured questionnaires. SPSS version 27 and Stata version 14 were used to capture and analyze the data. A binary logistic regression model was used to investigate the influence of socio-economic factors on the beneficiation towards a transformation programme funded by statutory levies. PCA and Tobit regression model was used to evaluate the impact of the transformation programme funded by the statutory levies on farmer's enterprise and skills development.

Analysis of socio-economic factors showed amongst other things, that majority of the respondents were males, with the average age of the respondents being was 56 years having a farm size of 6.38 hectares. Respondents' farming experience was 11 years, with an average of 11 years of schooling. Farming was the main source of income for most of the beneficiaries

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and the majority of the respondents had permission to occupy certificates from village chiefs revealing that they own the land. The binary regression model showed that socio-economic factors that influenced beneficiation were the location of the farmers, marital status, years of schooling, agricultural qualification, years of farming and membership association. The PCA and Tobit regression model found that the significant explanatory variables are farming qualification and membership association. The descriptive results of the extent to which the farmers are benefitted from the transformation programme funded by the statutory levies on farmers' development (skills and enterprise) revealed that most of the farmers (69%) did receive assistance either for enterprise and or skills development activities. In terms of enterprise development over 75% of the respondents indicated that they have been assisted while over 76.3% of them indicated that they have received skills development assistance from the transformation programme. The study established the main constraints that the beneficiaries are facing were lack of machinery and infrastructure, high input costs and theft/mutilation of the macadamia nuts. the beneficiaries' views of the transformation programme. The beneficiaries of the transformation programme also listed input subsidies, machinery and payment of staff as their major needs.

Based on the findings, the study recommends that farmers be encouraged to continue schooling as far as acquiring agricultural qualifications because education could enhance farmers' farming practices. Also, stakeholders such as agricultural extension officers and transformation managers of the industry bodies to offer the enterprise and skills development activities based on the farmer's needs, regularly monitor and evaluate the progress of the farmers that benefitted from the programmes and mentor them before assisting more individuals.

Keywords: Beneficiation, Enterprise and skills development, emerging farmers, statutory levies, transformation programme.

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LIST OF ABBREVIATIONS

ARC	Agricultural Research Council
AMMA	Agricultural Marketing Agreement Act
CASP	Comprehensive Agricultural Support Programme
DAFF	Department of Agriculture, Forestry and Fisheries
DALRRD	Department of Agriculture, Land Reform and Rural Development
FNB	First National Bank
LDARD	Limpopo Department of Agriculture and Rural Development
MAFISA	Micro-Agricultural Institutions of South Africa
MAP Act	Marketing of Agricultural Product Act
NAMC	National Agricultural Marketing Council
RADP	Recapitalization and Development Programme
RMIF	Red Meat Industry Forum
SAMAC	Macadamias South Africa
SAPA	South African Poultry Association
SAPPO	South African Pork Producer's Organisation
SPSS	Statistical Package for Social Sciences
TPFSL	Transformation Programme Funded by Statutory levies
VDM	Vhembe District Municipality

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CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Macadamia production in South Africa is one of the fast-growing, high-value tree crops with good export saturating the market (Parshotam, 2018). Maina (2020) found that the macadamia tree's nuts are very nutritious and have significant health benefits, leading to its adoption as a food and income source in many nations such as Kenya, Mozambique, South Africa and its native land Australia. With South Africa ranked one of the world's top in Africa, macadamia nut growers in the country are in direct competition with the native land of this subtropical crop. NAMC (2020) and SAMAC (2021) reported that in the past twenty years, output has scaled by a factor of 20 with the total yearly output value increasing from R32 million in 1996, the first year of cultivation in South Africa, to roughly R4.8 billion in 2021. Maina *et al.*, (2020) regarded this tree crop as "golden because of its influences to alleviate poverty and promote food security'' specifically in Kenya. In 2017, the Department of Agriculture, Forestry and Fisheries (DAFF), which has been recently reformed into the Department of Agriculture, of Land Reform and Rural Development (DALRRD), revealed that South Africa was the leading exporter of macadamia nuts, accounting for 36.78 percent of global exports. South Africa's most popular exports are nuts in shell and macadamia kernels to continents like Asia, the United Kingdom and North America (SAMAC, 2021).

The importance of the macadamia sector in South Africa should not be unheeded; thus, the agricultural sector has grown (Parshotam, 2018). However, the dualistic nature of South African agriculture must still be recognized. Kirsten and Van Zyl (1998) have been cited multiple times, including by Pienaar (2013), who emphasizes how the agricultural industry is dominated by commercial farmers. Pienaar (2013) went on to say that production resources including land, capital, and labour influence were some of the major distinctions between the two types of farming systems in the country. Additionally, Whittingham (2018) explained how the dualisms can be linked to the historical apartheid regime's agricultural policies favouring whites and leading to the development differences between emerging and commercial farmers.

The macadamia industry cannot be distinguished from the dichotomous nature of South African agriculture. Despite the government of South Africa's efforts to adopt farmer support and development projects, particularly for black small-scale and emerging farmers, the situation remains dire. While commercial farmers are advanced, efficient, and typically integrated with the

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fast-changing consumer market, smallholders face a challenging environment that includes limited resources, constrained services, and generally slow development toward commercialization.

1.2. Contextualization and theorization of the study

This study builds upon the historical agricultural dispossession that took place between 1913 and before the first democratic election of South Africa in 1994. This section provides a short background of dispossession events that lead to the MAP Act No. 47 of 1996 which made possible the 1996 statutory measures and levies for transformation (NAMC, 2015)

Literature had abounded with records of the efficiency of the black farming sector dating before the promulgation of the Natives Land Act of 1913 (Act No. 27 of 1913) that marginalized black farmers (Chauke, 1999). In 1913, farmers' proficiency was altered by the introduction of the above Act as it aimed to stifle black farming and render them labour tenants within their formerly owned farmland and allocated only 13% of the land surface (Wickins, 1981; Crochet, 2015). The Act provided massive support to the white commercial farming sector in subsidies. It ensured that they benefited from extensive market control measures through industry control boards and commodity marketing channel schemes established later in 1937 (Vink *et al*., 2012).

In 1937, the Marketing Act No. 26 of 1937 was established and regulated by 21 white-dominated control boards that also established marketing schemes to control the prices of agricultural products (Mokose, 2018). Marketing of Agricultural Products of 1937 was then replaced by the Marketing Act No 59 of 1968. In 1968, farmer-dominated agricultural marketing schemes (performed by the marketing boards) were established under the Marketing of Agricultural Products Amendment Act, No. 59 of 1968 (MAP Amendment Act) to benefit their interest and preserve their control of the marketing of agricultural products. The marketing schemes permitted control measures such as movement of commodities, fixed pricing, supply volumes, registration, levies, single-channel fixed price schemes, marketing and levies for white farmers (NAMC, 2018). For example, the single-channel system meant that producers could influence prices and restrict trades while levies and other funds were for the transformation of these dominated farmers (Mokose, 2018). Marketing systems also ensured that commercial farmers (white) received concessional borrowing rates from financial institutions compared to their black counterparts (*ibid*). The marketing schemes established ensured that white farmers endured no risk and served their interests 82% of the total output is handled by the various boards (Ntsebeza and Maenetje, 2009) and they were not resourceful for the development of black farmers (Barley,2000).

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A critical outcome of the reform process began in the 1980s when the agricultural sector was in the revolution process that involved the abolishment of the 1937 and 1968 Marketing acts, conversion and deregulating of marketing schemes as well as agricultural statutory measures that restricted non-white farmers but rather promoted white minorities in terms of price stabilization, narrowed the gap between producers and consumers (Barley, 2000; NAMC, 2014). According to NAMC (2014), an agricultural marketing council established through the provision of the 1996 Marketing Act, the purpose of establishing this legislation was motivated by the dualistic nature of the agricultural sector hence the act aimed at ensuring and promoting agricultural efficiency, market liberations and to promote transformation in the agricultural sector. The Marketing of Agricultural Products Act, No. 47 of 1996 (MAP Act), as amended, provides for the establishment of statutory measures, namely statutory levies, control of exports of agricultural products, records & returns, and registration (NAMC, 2009). As an attempt to ensure the objective of the 1996 Marketing Act of promoting transformation in the agricultural sector, an amount (statutory levy) is deducted and paid by the agricultural industry's key role players to fund a variety of functions, including administration, information and liaison, research, consumer assurance and consumer education and transformation on behalf of previously disadvantaged individual PDI (*ibid).* In terms of the 1996 Marketing Act, a minimum of 20% of the levy is mandated to be used to empower black individuals and entities to participate in the macadamia industry (SAMAC, 2018). In the Macadamia industry, this levy is paid by all industry participants and is collected by the industry body (Macadamias South Africa NPC) on behalf of the previously disadvantaged black macadamia growers.

Macadamias South Africa (SAMAC) as a commodity body representing Macadamia farmers, has been appointed since the deregulation of the apartheid agricultural dictatorship to administer levy funds. SAMAC posits the role of ensuring that levy funds are collected from industry role players such as growers and handlers (processors and consolidators of nut in a shell) for functions such as the transformation of previously disadvantaged growers (SAMAC, 2019). The commodity body states that the establishment of this statutory levy was to enable transformation initiatives that ensure an inclusive environment. SAMAC extends transformation and development to previously disadvantaged individuals (growers) by providing producer development support, tertiary skills development support, support enterprise development, competency development, technical support and industry structure maintenance support from designated groups to participate in the formal market (SAMAC, 2020).

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The main contributors to the production and export of the crop are mainly produced by commercial farmers in South Africa. The heterogeneous character of the South African agricultural sector is well documented in the literature (Aliber & Hart, 2009; Aliber & Hall, 2012; Pienaar & Traub, 2015). The South African agricultural sector broadly comprises commercial and small farmer sectors as reported by Kirsten and Van Zyl, (1998). Throughout the world, there is also empirical evidence that indicates that to date smallholder farmers still experience challenges that impede their chances to commercialize (Baloyi, 2010; Maponya, 2021). Small-scale Macadamia growers, who are mostly previously disadvantaged black farmers in South Africa cannot be excluded from facing these challenges. Therefore, this study seeks to evaluate the extent to which black emerging macadamia farmers are benefitting from the statutory levy for the transformation programme in Vhembe District Municipality of Limpopo Province in South Africa.

1.3. Problem statement

Addressing the past injustices, inequalities and the effects of government apartheid policies that prevailed against blacks have been a challenge the South African policymakers are trying to rectify (Iheduru, 2004). The transformation of the South African agricultural sector is one principal intention that the government has always wanted to achieve through the implementation of various farmer development programmes (NAMC, 2015). Efforts have been made by the government and non-government organisations to assist smallholders and emerging farmers to improve and transform their skills in agricultural enterprises towards commercialization and to accommodate the previously disenfranchised.

This study builds upon the basis of the MAP Act No. 47 of 1996 as indicated in the conceptualization of the study in 1.2 above. The National Agricultural Marketing Council (NAMC) as a statutory organisation established through this act of Parliaments, has been mandated to oversee transformation-linked changes and the impact of investment on transformation through its statutory levy division. In terms of the Act, a minimum of 20% of the levy is authorized to be used to empower black macadamia growers and their entities. In the macadamia industry, the levy is paid by processors and consolidators of nuts in shell contributors, collected by Macadamia South Africa (SAMAC) on behalf of all previously disadvantaged farmers (PDF). SAMAC NPC is a representative commodity body for Macadamia which posits the role of ensuring that levy funds are collected from processors, consolidators of the nuts in a shell (NIS), commercial growers and importers of the nuts in a shell to fund functions such as the transformation of previously

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disadvantaged growers. Enterprise and competency development are some of the transformation variables financed by the statutory levy.

NAMC's annual report, SAMAC annual journals report the statistics (stipulated in the literature review) of the number of statutory levy funds are collected to fund the industry, empower emerging farmers and all the guidelines indicated by NAMC. What is not known is how many farmers are benefitting in the production areas, what type of skills and enterprise pillars of the farmers are being transformed. Although SAMAC has been investing in the development of their emerging farmers, the question this study seeks to unravel is “to what extent are the targeted emerging farmers benefitting from the statutory levy for the functions of empowerment, development and transformation?”. The study also wishes to determine the impact of the transformation programme on its beneficiaries in terms of skills and enterprise development. This pointed to a research gap that needed to be addressed. Assessing the beneficiation of black emerging macadamia farmers from the transformation programme funded by the statutory levy to provide answers to the above.

1.4. Justification of the study

Farmer support and development initiatives continue to be a means of empowering farmers who have previously been marginalized in the agricultural sector. The topic of agricultural transformation is important since it is linked to the National Development Plan (NDP) 2030. Identifying the activities from which beneficiaries benefited, the factors that influenced beneficiaries' ability to benefit from the transformation program, and the impact of the transformation program on farmers' enterprise and skill development would provide an overview of the extent to which the MAP Act's goal is being met. Additionally, this study is important to undertake because it may provide a guideline and recommendations to policymakers and stakeholders on areas to focus on for future farmer support projects and may provide an insight into how beneficial the transformation initiatives are while highlighting the gaps in these farmer development initiatives.

Only a few studies have been conducted on the transformation funded by the statutory levies, particularly in the Macadamia industry and in the Vhembe District. Mazibuko *et al.*, (2016) conducted a study to investigate whether statutory levies are applicable for functions related to farmer development in other countries. The outcomes of that study revealed that South Africa was the only country that compensated for functions connected to farmer empowerment.

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Another recent related study was conducted by NAMC (2021) assessing the transformation in all the agricultural industries and trusts. The report only highlighted the enterprise and human capacity activities these agricultural industries are spending the statutory levies on only. Thus, this study was essential, but it was also one of the few of its kind, particularly in the macadamia industry to evaluate if the MAP Act No. 47 of 1996's objective was being achieved and if the programme has an impact on the beneficiaries.

1.5. Objectives of the study

1.5.1. Main objective

The main objective of the study is to assess the beneficiation of black emerging macadamia farmers from the statutory levy for transformation in the Vhembe District of Limpopo Province in South Africa.

1.5.2. Specific objectives

To achieve the aim of the study, the following objectives are set:

i. To identify and describe socio-economic characteristics of black emerging macadamia farmers.
ii. To investigate the influence of socio-economic factors on beneficiation towards thestatutory levy for transformation.
iii. To investigate the impact and evaluate the use of statutory levy for the transformation of emerging black macadamia farmers' enterprise and skills developments.
iv. To explore the beneficiaries' views, experiences and challenges with the statutory levy for transformation**.**

1.6. Research questions

i. What are the socio-economic characteristics of black emerging macadamia farmers?
ii. Do socio-economic factors influence beneficiation towards the statutory levy for transformation?
iii. Does the use of statutory levy for the transformation have an impact on emerging black macadamia farmers' enterprise and skills development?
iv. What are the beneficiaries' views, experiences and challenges with the statutory levy transformation?

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1.7. Research hypotheses

The study sought to test the following hypotheses:

i. Socio-economic characteristics such as age, gender, household income and level of education do not influence beneficiation towards statutory levy for transformation.
ii. The use of statutory levy for transformation has an impact on black emerging macadamia farmers' enterprise and skills development.

1.8. Definition of the key terms and concepts

1.8.1. Statutory levies

A statutory levy is an amount deducted and paid by the agricultural industry's key role players to fund a variety of functions, including administration, information and liaison, research, consumer assurance and consumer education and transformation on behalf of the previously disadvantaged individual (NAMC 2015).In the macadamia industry, an amount of 50c/kg is payable by the nuts processors, consolidators of nuts in a shell, exporters of nuts in a shell and commercial growers to assist with the empowerment of emerging farmers (SAMAC, 2018)

1.8.2. Transformation

Transformation is also a synonym for development in this study which will be used interchangeably. DALRRD (2020) refers to development as empowerment in capacity, infrastructure and operational contributions of farmers. In the context of this study, the term transformation is applied in the context of NAMC guidelines included in the literature review in table 2.1. Black emerging macadamia farmers would be regarded as transformed/developed by the transformation programme funded by the statutory levy if they have participated and/ received skills and enterprise development. The areas of enterprise and skills development include mentorship and coaching, workshop and study groups, acquired on the job training, receiving technical support, acquiring equipment and infrastructure, acquiring professional services, input subsidies, market opportunities and financial support. Meaning, beneficiaries will be regarded as transformed if they benefited (participated and /received help in the nine key areas mentioned above through the transformation programme funded by the statutory levy.

1.8.3. Beneficiaries

The beneficiaries of the transformation programme funded by the statutory levy are all previously disadvantaged farmers associated with their produce industry bodies. Previously

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disadvantaged farmers are black, Indians and coloured farmers that experienced agricultural dispossession from 1913 to 1994 (DRDLR, 2014; NAMC, 2018). Beneficiaries of the transformation programme funded by the statutory levy for this study includes all black emerging farmers that grow macadamias.

1.8.4. Benefitting

Receiving transformation assistance funded through the statutory levy for skills and enterprise development activities included in the National Agricultural Marketing Council (2018) generic transformation guideline. Benefitting can also mean participating in the transformation programme for functions of skills and enterprise development.

1.8.5. Beneficiation and beneficiating

In the context to this study, beneficiation and beneficiating are used interchangeably and they mean means determine whether the beneficiaries of the statutory levies have benefitted from / were funded for skills and enterprise development activities as stipulated in the 2018 National Agricultural Marketing Council generic transformation guidelines.

1.8.6. Emerging farmers

In this study, the emerging farmers will be used to refer to developing, resource-poor, and historically disadvantaged farmers found in rural areas who partially participate in the marketing of agricultural products (Sebola, 2018).

1.9. Limitations of the study

- Literature on transformation programmes funded by industry bodies in the macadamia industry or any other commodity in South Africa was limited, making it difficult to present comparisons with other destinations and justification with the results.
- NAMC has indicated in the literature that there are eighteen (18) agricultural industries and trusts that are applicable for statutory levies that are collected for functions such as transformation, administration, information, research and export promotion. In accordance and respect with the NAMC, transformation pillar, the levy expenditure for farmer's growth should be spent on activities such as enterprise development, skill development and management. This study was however limited to the transformation function financed

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through the statutory levies for two farmer related needed transformation activities (enterprise and skills development) funded by the statutory levies . Additionally, the study was limited to the Vhembe District Municipality of the Limpopo province in South Africa only.

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1.10. Outline of the dissertation.

This dissertation consists of five (5) chapters as listed below**:**

CHAPTER ONE: INTRODUCTION

This chapter comprises of the background of the study inclusive of the contextualization of the study on statutory levies and transformation activities. It also presents the problems statement, the objectives of the study, research questions and hypothesis, justification of the study, definition of keywords and concepts and the limitations of the study.

CHAPTER TWO: LITERATURE REVIEW

In chapter two, each of the set objectives was reviewed from previous studies for the guiding principle of methodology, to identify the study gaps.

CHAPTER THREE: RESEARCH METHODOLOGY

It is in chapter three that the procedures and techniques of achieving the objectives, set in chapter one and guided by the literature in the chapter, will be identified and selected. The research methodology of the study description of the study area, the population and sampling methods of the study as well as the data collection and analysis methods used to achieve the objectives.

CHAPTER FOUR: RESULTS AND DISCUSSION

This chapter illustrates and discusses the findings of the study of the socio-economic characteristics of the respondents, socio-economic factors that influences beneficiation towards the transformation programme, the impact of the transformation programmes on beneficiaries' enterprise and skills development as well as the views and challenges faced by the respondents and key informants.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

Based on the results, chapter five draws a summary of the study, conclusion, makes policy recommendations and identify further areas of research.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter begins by providing an overview of the macadamia industry in South Africa as well as the transformation within the industry. The study's major questions were whether emerging macadamia farmers in the study area have benefited from the macadamia transformation programme and which transformation activities they have benefited from. To address these main questions as well as to guide Principals on factors to consider in the methodology, this chapter also looks at previous studies. This chapter goes further to determine the empirical review on factors that influences beneficiation from this transformation programme as well as the impact of the transformation programme on the beneficiary's human and physical capital development. This includes the reports and publications on transformation programme from other agricultural industries applicable for statutory measures and a review of other farmer support and developments projects that offers similar outcomes as the SAMAC transformation programme

2.2. The macadamia industry in South Africa

2.2.1. Background

The Macadamia is one of the fast-growing valuable crops in South Africa since its introduction in 1960, which has afforded the country an opportunity to become one of the largest producers in the world alongside the native country of Macadamia, Australia (SAMAC, 2018). The macadamia nut industry is formally administrated through the Macadamia South Africa NPC (SAMAC). Previously, the association was supported by grower members who paid a voluntary production levy to SAMAC for each kilogram of NIS delivered to SAMAC registered processors and marketers (SAMAC, 2013). Since November 2014, all macadamia growers are subject to statutory measures including those requiring registration, records and returns on NIS and kernel volumes handled, and related levies, as well as reporting on macadamia tree numbers, both in nursery and infield (NAMC, 2014).

Macadamia nuts are categorized into nine tree types which are mainly produced in the Middle East, North America, Asia and Africa (INC, 2015). Almonds, pistachios, cashews, walnuts and hazelnuts form the big five of the nut's basket and this constitutes up to 95% of the global tree production (Lee, 2014). In South Africa, the macadamia nuts industry is administrated by

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Macadamia South Africa NPC (SAMAC). From the early 1990s, South African commercial macadamia farms have slowly progressed with annual orchard growth. However, the limited capacities of nurseries providing plant material have hampered expected growth. SAMAC statistics indicate that the total area under macadamia trees in 2012 was around 18 600 hectares with about 5.3 macadamia trees (SAMAC, 2013). Since then, there was an increase in farming hectares to approximately 21 500 hectares consisting of 6.5 trees in 2015 (AMS, 2015). The production of macadamia is mainly done by 450 commercial farmers concentrated in Mpumalanga, Limpopo, KwaZulu-Natal (KZN), Eastern and Northern Cape. Mpumalanga is the main contributor to the growth of South Africa's macadamia followed by Limpopo Province (SAMAC, 2012).

The latest tree sale data noted a rapid growth of the Macadamia industry with approximately 1.9 trees planted between 2017-2018 on over 5000 hectares across the Southern African Macadamia Industry (SAMAC, 2018). Prior to 2008, South African macadamia was exported in kernel format. Thereafter, the NIS market began to grow in South East, particularly in China and Vietnam. The market has grown gradually from 2008 to 2015 as shown by an increase in volumes from 775 to 19 842 tones which translate to a 60 % growth rate (SAMAC, 2015). This growth in the NIS market comes at the expense of the kernel market with fewer raw products being available for processing into kernel format. Furthermore, in 2015, 42% of the entire South African macadamia crop was exported as NIS (SAMAC, 2015). Macadamia producers in South Africa are integrated into the competitive global macadamia market structure and the associated horizontal and vertical coordination process. The Department of Agriculture, Land Reform and Rural Development (DALRRD), SAMAC and countries importing South African macadamias set quality standards and regulations that impact the marketing and trade flow of the nuts. However, the export of macadamia kernel has no formal, legally promulgated product standards and requirements. SAMAC, the handlers of macadamia kernel, are however in agreement and are guided by the quality specifications proposed by the International Nut Council (INC) (SAMAC, 2015). The following section discusses the transformation of the macadamia sector in South Africa.

2.2.3. Statutory measures and transformation levies in South Africa

Statutory measures in the South African agricultural system were established after the deregulation effective through the MAP act, monitored through NAMC and promulgated for a period of a 4-year cycle. The measures include the collection and dissemination of information (levies, records and registrations) as well as levies which is charges on agricultural commodity paid by key role players of the agricultural industry, collected by the agricultural industry body to

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finance the much-needed generic functions (Matabeni *et al*., 2018). NAMC collectively with agricultural industries compiled what is regarded as generic function and further made provision on levy's expenditure on these generic functions. The criteria of how these public funds should be spent were as follows: 70% of the levies funds should be spent on information minimum of 20% of the levy funds should be spent on subject or farmer development (transformation) as well as a maximum of 10% should be allocated for administration purposes of the levies (NAMC, 2014). The key transformation activities from which 20% of the levies are to be focused are enterprise development, skills development, employment equity, socio-economic development and ownership. Table 2.1. below substantially specifies these key activities of transformation.

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Table 2.1. A transformation guideline indicating percentage usage of statutory levy for the development of black smallholder and emerging farmers.

Table 2: The new Transformation Guidelines

Pillar	Activities	Allocation %
Enterprise Development	• Fund agribusinesses of black-owned farms with the procurement of production infrastructure, material and inputs. • For field crops and horticultural products, the industry shall fund with soil preparation services. • For livestock, the industry shall fund the purchase of vaccination, dosage programmes and veterinary services. • Fund the cost of accreditation, various legal and professional services (such as Siza or HACCP). • The industry shall assist farmers to access the market including the facilitation of supply agreements or purchase contracts. • The industry shall fund the development of business plans. • The industry shall explore other funding alternatives to increase the transformation budget (such as CASP, Jobs Fund and others). • Assist in ensuring that appropriate agricultural infrastructure, machinery and equipment are in place and good condition (e.g. Electricity and water, bio-security measures, etc.). • The industry shall procure materials, inputs and services from black-owned enterprises and agribusinesses.	60%
Skills Development	• The industry shall fund training and mentoring farmers and other production chain actors such as propagators, herders, processing staff and marketers, machine and equipment users, mechanics and supervisors to develop capabilities to better manage their farm and agribusinesses. • Training shall be provided by SETA- Accredited skills developers in terms of the AgriBEE Charter • To ensure these capabilities in future to manage farm and agribusinesses the industry shall fund bursaries for black people to develop such capabilities	18%
Management Control	The industry shall fund the position of transformation manager. Only appointments in this capacity of members of Black Designated Groups that promote equity shall be funded.	17%
Ownership	The industry themselves or using funding alternatives shall or can purchase equity in existing enterprises for Black Designated Groups.	
Socio Economic Development	Industries are encouraged to do activities that contribute positively to the quality of life of workers and their communities.	5%

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Source: NAMC,2018

2.3. Conceptual framework

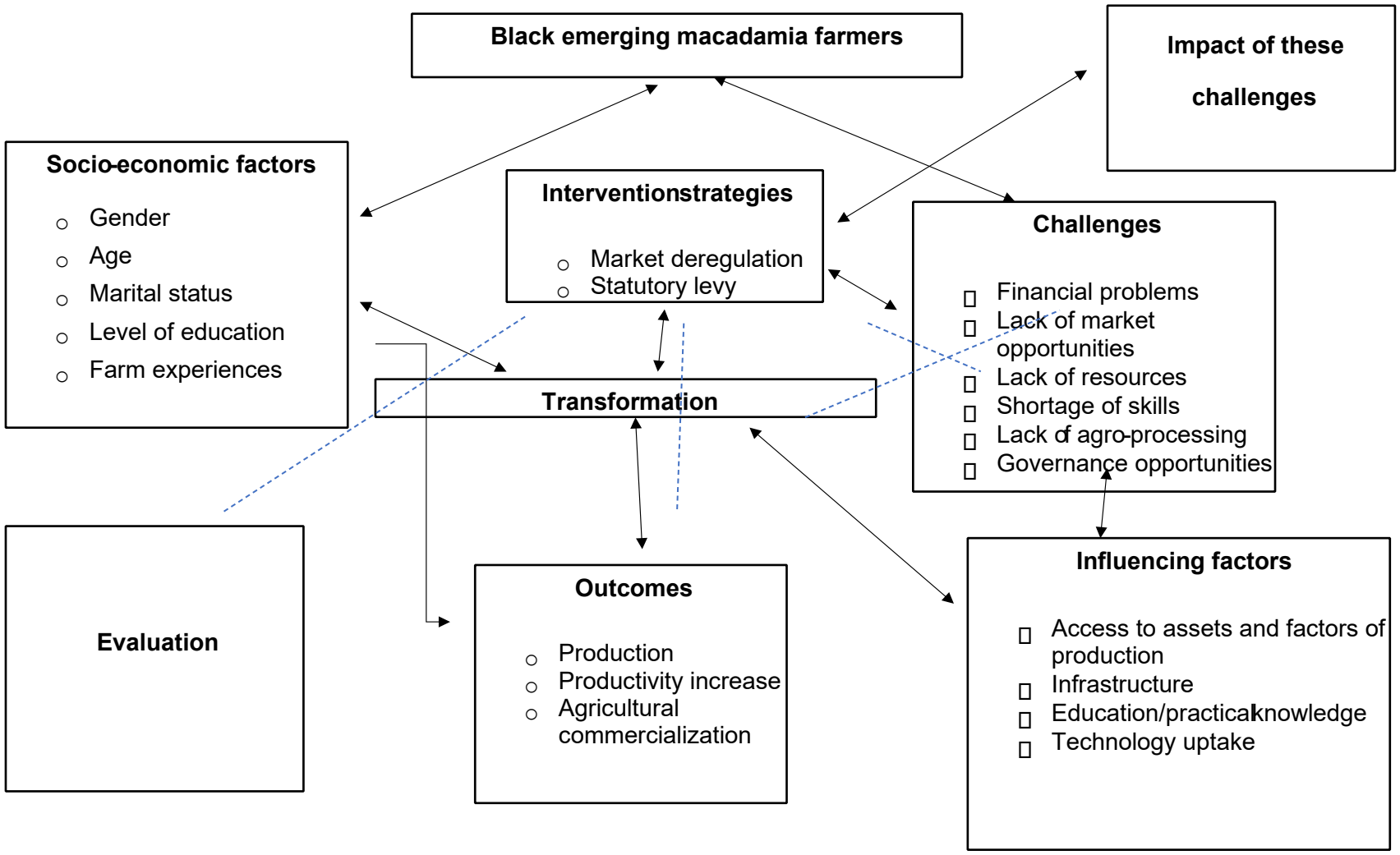

Figure 2.2.: Conceptual framework, Source: Adopted from Üllenberg *et al.*, (2017) and Chapoto *et al.*, (2013).

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2.3.1. Description of the conceptual framework

Based on the research topic and objectives of the study, this conceptual framework gives an insight into how evolving interventions could assist agricultural transformation. It is commonly known that the South African agricultural sector consists of different role players i.e. predominantly white-owned commercial agricultural sector and is that dominated by mostly black emerging farmers.

Baloyi (2015) highlighted that among otherthings, emerging farmers, particularly in Limpopo province are constrained by factors such as lack of infrastructure, financial problems, lack of resources, shortage of skills, lack of agro-processing and governance. These are some of the challenges that hinder emerging farmers to achieve agricultural goals such as increased production, access to markets, developing of their enterprises, increasing income and eventually moving towards commercialisation of their farming operations. The negative impact of these challenges stagnates the growth process of emerging farmers. Chapoto *et al.,* (2013) recognize market regulation, policies and investments, agricultural extension and entrepreneurship programmes as an intervention to agricultural transformation for production, productivity and agricultural commercialization. Üllenberg *et al.,* (2017) included an increase in income sources and employment, land use and tenure systems and social organisation as indicating variables of rural transformation based on the adopted conceptual framework of this study which proposes that the introduction of collection statutory levies forassistance to emerging farmers is a mitigation strategy to reduce the dualistic agriculturalnature of South Africa. This mitigation strategy is initiated through MAP Act No. 47 of 1996 and monitored and supported by NAMC and the Department of Agriculture, Forestry andFisheries. MAP Act No. 47 of 1996, also shows the expected outcomes of this programme are to develop their enterprises and skills, increase productivity and grow towards commercialization. The aim is to help policymakers, particularly in this study, DAFF, NAMC and SAMAC to be better informed about the measure of the feasibility and the impactof the statutory transformation levy as a means of assistance for the development of previously disadvantaged farmers in Limpopo province.

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2.4. Empirical review of literature

2.4.1. The socio-economic characteristics of farmers

Macadamia production in South Africa is primarily concentrated in Limpopo, Mpumalanga, and KwaZulu-Natal provinces, with a lesser extent in the Eastern and Western Cape provinces (SAMAC, 2019). The Vhembe District Municipality of the Limpopo province is the main production area of these high-value tree crops. Materechera and Scholes (2021) conducted a study that characterized these farming systems in the Vhembe district. The results of the study revealed that macadamia nuts, which is one of the main commodities grown in the areas together with mangos and avocados, were predominantly produced by male farmers as compared to females. The results also revealed that the most common (75%) land ownership these commodities are grown on a dominant communal land was the main by farmers with an average of age 51 years. Jaskiewics *et al*., (2015) result to a certain extent concur with the results of Materechera and Scholes (2021) who also profiled the small-scale macadamia nut farmers. His study also discovered that the majority (70%) of the household heads that farm with macadamias were male that possess PTOs (permission to occupy) as a form of land ownership. Both studies found that the most common land ownership was communal land. However, they varied in average hectares of land. Jaskiewics *et al*., (2015) found that the average hectare of land was 6.21 whilst Materechera and Scholes (2021) reported that small-scale macadamia farmers have an average land size of 4.7 hectares of land. Jaskiewics *et al*., (2015) also conducted a study in the Vhembe District Municipality specifically on Macadamia nuts and the results of the study went further to reveal that the main employment of those household heads were pensioners and that attended school to secondary or tertiary level.

2.4.2. The influence of socio-economic factors on beneficiation into transformation programmes

Numerous studies have been conducted with the aim of finding determinants that influences participation in agricultural farmer development projects (Akpan, 2as) and was as the impact of these programmes on the development and the overall welfare of the participants. One of those studies includes a study by Wiredu *et al*., (2013) conducted in Ghana on factors that influence participation in Rice development projects. The study showed that factors that influenced participation and beneficiation from the rice development projects included marital status, age, marital status, farm size and access to income, particularly non-agricultural income.

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In South Africa, Nxumalo and Oladele (2017) conducted a study in Kwa-Zulu Natal on factors affecting farmers' participation in Agricultural Programmes. The study was conducted in three municipalities of the Zululand districts where it was revealed that socio-economic variables such as the age of the farmers, gender and their income were the significant determinants of participation. Similarly, other studies identified several factors to be influencing participation in agricultural programmes such as household size beings a significant determinant of participation in agricultural projects in a study by Botlhoko and Oladele (2017) in the Ngaka Modiri Molema of the North-West province. In Mkhonto Municipality of the Mpumalanga province, Kgosiemang and Oladele (2017) in a study on the same topic found that the income of the Comprehensive Agricultural Support Programme (CASP) beneficiary among other factors is a significant determinant of farmer's participation in agricultural programmes effectiveness.

In Botswana, Binge (2019) conducted a study and the main objective was determining the effect of participation in Livestock Management and Infrastructure Development (LIMID Programme on the household welfare of small stock producers. Age of the household, as well as the gender of the household, was found to be one of the significant socio-economic factors that affect the expenditure of the households. The study went further to reveal how participating in the LIMID programme has the probability to increase household expenditure which will inevitably improve their household welfare.

Gininda *et al.,* (2014) evaluated the effect of a farmer development programme (MAFISA) on the livelihood outcomes of smallholder sugar cane farmers in Mpumalanga. The results of the micro-finance farmer development programme revealed that socio-economic among other factors include the age and marital status of the beneficiaries. In the study those factors were the most important determinants of an increase in the net income, which is a livelihood outcome, henceforth the recommendation by the study encourages young farmers to participate in agriculture.

Adebisi *et al*., (2019) explored the factors that influence farmers' participation in agricultural programs in Nigeria. The study aimed at determining the participation and repayment of the Osun Rural Enterprise and Agricultural Program (OREAP), a micro-credit loan programme in the Osun state of Nigeria. The findings which were analyzed using logit regression and ordinary least squares demonstrated that some of the socioeconomic characteristics had a significant relationship with OREAP participation. The factors include gender, marital status, household size, educational status, farm size, income, access to extension services, and membership association.

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Farmer's decision to participate in government agricultural programmes was determined in a study by Akpan (2016). The study aimed at achieving the objective of determining the level of participation of farmers in the Southern regions of Nigeria. The study revealed positive as well as negative factors that influence the decision to participate in government programmes. Household size, farming experience, land ownership, non-farm income, a visit by an extension agent, gender as well as the level of education were the positive determinants whereas farm income among other variables was also one of the factors indicating a negative association to participation.

Factors that influence farmers' beneficiation/participation in farmer support initiatives have been documented in different studies and they differ between studies. Nxumalo and Oladele (2017); Wiredu *et al*., (2013) accentuated how in some studies participation determinants are positively significant while in other studies the determinants are found to be significant with a negative influence. Based on the results of other researchers, this study can confirm that the research provided an understanding of the relationship between socio-economic factors and participation / benefitting in a farmer development programme. The studies additionally, put the research objective into perspective and provided evidence that can be supported by Etwire by the results of my findings. It is based on these findings that socio-economic variables such as gender, age, income, and marital status will be put under investigation in this study to determine their influences on the beneficiation towards the transformation programme.

The Agricultural Value Chain Mentorship project (AVCMP) is a farmer support project which assists farmers with developing entrepreneurial and technical skills for small and medium enterprises in Ghana. Etwire *et al.,* (2015) carried the research on factors influencing farmer's participants in the AVCMP project. The number of years of schooling, agricultural extension services were some of the significant factors influencing participation in the project.

Rwanda established Crop Intensification Program (CIP) as an intervention to the growing concern about land destructions, low use of inputs, and low access to extension services. Nahayo e*t al.*, (2017) conducted a study with an objective to determine socio-economic factors that significantly influence farmers' participation in crop intensification programs. The results of the study also found demographic results such as gender amongst others to influence participation in the CIP together with farm size and farming experience. The research went further to emphasise how non-farm income and land tenure positively statistically influenced participation in CIP, which in turn eased the financial need.

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Farmer development initiatives are not only focused on elderly farmers, even though literature is bound with a record of how the agricultural sector is dominated by elders who are predominately males. However, researchers such as Adeyanju *et al* (2021); Kisingú (2016); Muntaka (2012), and Soltani *et al*., (2011); gathered empirical evidence on women and youth on their participation in government farmer development programmes. In Nigeria, there is a Youth in Agriculture Programme (YIAP) where factors influencing participation were examined by Adesina (2012). It was discovered that socio-economic variables such as household size, farm size, and years of farming also influenced participation in the Youth in Agriculture programme just as these factors also influence participation in agricultural development programmes. Similar results in a study on an impact evaluation of the N-Power Agro Empowerment program in Nigeria were conducted by Ogunmodede (2020). The study revealed how the socio-economic factors such as years of agribusiness experience, education level of the youth and employment status significantly influenced participation in the program and indicate that the N-Power Agro program showed a positive and effective increase in the beneficiaries' income. With regards to women, Tologbonse (2013) showed how the level of education, age as well as marital status were statistically related to the level of participation of women in agricultural development project named Women in Agriculture (WIA). This shows how participation and benefitting in agricultural development does not necessarily depend on gender.

2.4.3. The impact and uses of the transformation programme on enterprise and skills development

Transformation in the context of NAMC and SAMAC entails developing and improving farmer's enterprises and their human capital. Mpyana (2019) further explains how a transformed agricultural sector is one that is characterized by access and availability to key areas that are related to human and enterprise development. In addressing the issue of transformation, NAMC (2014) and Macadamia South Africa (2014) has developed generic transformation guidelines which concentrate on the main activities that are funded by the statutory levies for transformation. These nine (9) key enterprise and skills activities are namely provision of input subsidies, acquisition of machinery and infrastructure, acquisition of professional, market and financial opportunities, provision of workshops and study groups, training, mentorship and coaching as well provision of technical services. In line with these enterprise and skills development guidelines, this study reviews the literature on the impact of other farmer support programmes and reviews the transformation projects of other statutory measures applicable for agricultural industries in South Africa for guiding principle purposes.

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2.3.4.1. The impact of farmer support initiatives on their development

This study aims to assess the impact of the transformation programme on the beneficiary's enterprise and skills development, however, as indicated in the introduction of this study there was a research gap discovered in the literature on transformation funded by the statutory levies. As an attempt to answer the objective, and to guide the methodological approach of the study, this section reviews and assesses the impact of other farmer development projects with similar objectives as the transformation programme funded by the statutory measures. They include initiatives within the farmer settlement programmes such as the Comprehensive Agricultural Support Programme (CASP) and Revitalization and Development Programme (RADP), and projects that assist farmers with agricultural finances and rural development such as Micro-Agricultural Financial Institutions of South Africa (MAFISA). Such programmes have assumed several forms such as grants, credit acquisition opportunities for farmers and social capital formation (NDA, 2018).

a. The impact of CASP on farmer development

Several researchers, agricultural institutions and scholars have researched the impact of these programmes on the development of their beneficiaries under various indicators of development. For instance, Phatudi-Mphahlele (2016) examined the impact of the Comprehensive Agricultural Support Programme (CASP) on the livelihood of the farmers in the Gauteng provinces. CASP is a South African farmer development programme that was launched in 2004/5 to assist farmers land reform beneficiaries, producers individuals or rural areas under the six priority areas (NDA, 2018; Nesamvuni, 2016 Mncina and Agholor, 2021). These key areas, which are similar to the enterprise and skills development variables guided in the statutory measures under the transformation programmes, includes information knowledge, technical and advisory assistance and regulatory services, training and capacity building, marketing and business development as well as off and off-farm infrastructure and financial assistance (DAFF, 2014; DALRRD, 2019). CASP's primary purpose is to address the issues of lack of access to farmer support services, improve and facilitate agricultural development

Literature is bound with the lack of human capital such as skills, knowledge and capacity to execute by the black small-scale and emerging farmers in South Africa. Focus groups and workshops are the most common techniques used in the South African agricultural sectors to disseminate agricultural related information and knowledge to the farmers (Ngaka, 2018). To highlight the impact of training on the improvement of livelihoods for beneficiaries who benefitted

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from the CASP pillar of training, the results of a study conducted by Xaba and Dlamini (2015) revealed a positive relationship between training and reported increased income levels. Another study was conducted by Remzi (2011) to determine the effect of agricultural training. The results of the study discovered that there was a significant difference between trained and non-trained farmers in their environmental consciousness level. A recommendation by Antwi and Nxumalo (2014) in their study emphasizes how skills training support needs to be a pre-requisite for all the beneficiaries of the post-settlement initiative indicates the significance of this human capital factor. Pinning it down to different enterprise development variables such as market opportunities, a study conducted by Chepape *et al*.,2019 examined the impact of developmental programmes on smallholder farmers. The outcomes of that evaluation of the CASP and Ilima -Letsema initiative identified market access as one of the main predictors of the development of smallholder farmers in the Bronkhorstspruit region in Tshwane Municipality of the Gauteng province Ncube *et al*., (2017) indicate that CASP can also have an impact on market access.

b. The impact of RADP on farmer's development

CASP was not the only farmer development project in South Africa that has been investigated for its impact on beneficiary's development. After CASP, in 2010 Recapitalization and Development (RADP) launched and administered by the Department of Rural Development and Land Reform (DRDLR) where a fraction (25%) of the government budget is allocated for the administration of the agricultural support programme (Nenngwekhulu, 2019). The goal of RADP was to replace all previous types of land reform support and to revitalize the underperforming farms by providing and focusing on human capacity development, infrastructure development and operational inputs (Mabuza 2016; Shabangu, 2021). Similarly, to the transformation programme funded by the statutory levies, RADP funds for functions such as improving farm production, reviving irrigation schemes, infrastructure and mentorship to gain knowledge, human capacity development, infrastructure development and operational inputs (Shabangu, 2021). A report by DRDLR (2015) acknowledged that the programme has the potential to influence agricultural production and thereby boost farm income, improve food security, and improve participants' quality of life which is in line with the 2030 South African National Development Plan. Additionally, Mabuza (2016) echoed how RADP can also improve the socio-economic status of the beneficiaries where progress was observed in their production, food security, employment and economic status. A recent study by Rakoena (2019) found that the overall impact of RADP on the socio-economic status, particularly the human capital, improved after the beneficiaries in Gauteng received

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assistance. She also clarifies, when citing McLeod *et al.,* (2018) that human capital involves skills, knowledge, training and technical support which is provided by knowledgeable individuals (extension agents).

c. The impact of MAFISA on farmer's development

To ensure financial support and close a funding gap for small-scale farmers, the National Department of Agriculture established a new agency for the land reform program that is also a financial component of CASP, termed Micro-Agricultural Financial Institution of South Africa (MAFISA) in 2004 (Qwabe, 2014). The credit scheme was launched in 2004 with an initial budget of R1billion (Hall, 2004) with the aim to facilitate skills development, job creation, and economic growth. MAFISA provides agricultural finance of a maximum of R500 000 at an 8% interest rate per annum compound to purchase a) production inputs (fertilizers, seeds, pesticides etc.), purchase equipment and implements as well as purchases of breeding for livestock (DALRRD,2014a). To support DALRRD, A study conducted by Oladele and Ward (2017) about the effect of MAFISA on livelihood discovered the positive relationship between the programme and livelihood when areas such as financial access and skills development were improved in the North West. This shows the impact of this finance farmer support initiative has the development of farmers.

Lack of access to credit for operational costs such as farm inputs, particularly during the planting and harvesting season is a challenge that smallholder farmers are still battling to overcome today (Ncube *et al.*,2017). The launch of MAFISA in 2006 was to provide agricultural financial services i.e. micro-loans to farmers, similarly, through the statutory measures, the transformation programme should assist its beneficiaries with the acquisition of financial opportunities. Oladele and Ward (2017) conducted a study to measure the impact of MAFISA financial services on beneficiaries' livelihoods capital of beneficiaries in the North-West Province. It was discovered in the results that micro finances from MAFISA trigger significant changes in indicators of livelihoods assets which financial capital is among them. As a result of financial capital improvement, farming management abilities and entrepreneurial capabilities are also boosted (Oladele and Ward, 2017). Phatudi-Mphahlele (2016) also conducted a study on livelihood analyzed the socio-economic impact of CASP on livelihoods. The key findings of the study were that the CASP had a high impact on changes in income. Provision of financial assistance to improve underperforming farms through grants are a purpose of RADP in its recapitalization function of the programme. One of the objectives is to improve access to additional finances(DRDLR,2012). The positive impact of financial opportunities was supported by Nennegwekhulu (2019).

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It is natural to assume that emerging farmers find it difficult to cope with the evolving and challenging production and marketing environment in South Africa. One of the notable objectives of the South African farmer support projects is that it should connect recipient farmers with strategic partners or mentors frequently (Maka, and Aliber, 2019). The transformation programme funded by the statutory levies has this purpose too. A study conducted in Ghana by Martey *et al*., (2015) found that exposing farmers to mentorship programmes may directly increase their technical capacity when the design of the development project is appropriate to farmers' needs. Ntlou (2016) also emphasized how factors such as strategic intervention (mentorship) can also assist rural farmers to be economically sustainable. In the context of statutory measures, mentorship to emerging farmers is provided by key role players in the industry value chain who often have the knowledge of the needs of the mentee within their industry. Mentorship is described as a transformative process in which an experienced person guides and shares his/her knowledge and skills with the intention of developing another individual's expertise. A testimony documented in the NAMC transformation digest (2018) revealed the importance of mentorship provided by commercial potatoes farmers to black farmers. The success of the mentor and mentee relationship was recognized by the transformed farmer's performance on the yield. In 2019 NAMC reported that sprayers, tractors and de-husking machines, water services and equipment were amongst the infrastructure and machinery that the mentees benefitted from during the interview of their monthly transformation digest issue. report. A positive impact of mentorship has been reported in other South African farmer development initiatives. Mentorship and coaching opportunities are also provided by the RADP as part of its development function (Shabangu, 2021). A study conducted by Sibisi (2015) discovered that the active engagement of mentors had a positive impact on agricultural production. This goes to show the impact that comes with exposing farmers to strategic farmers.

Emerging farmers more often use factors of production apprehensively hence farm-related knowledge such as expertise about agricultural inputs, production, markets and supply chains should be provided for sustainable production (Moagi and Oladele, 2012). A form of technical assistance required by emerging farmers includes an introduction and ensuring a clear understanding of methods; provision of advisory; and practices for productive, commercial and sustainable agriculture (Labarthe and Laurent, 2013). Poor access to inputs and technology are other factors that affect production (Baloyi, 2010). Procuring appropriate factors of production would enhance the transformation in the agricultural sector towards commercial farming for emerging farmers.

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d. The review of other agricultural industries applicable for statutory measures and transformation.

In 2020, NAMC reported that a total of 15 million was collected from the 18 agricultural industries that were applicable for statutory. As indicated in the problem statement, empirical studies on statutory measures, particularly on the transformation of the farmers funded by statutory levies are limited to support this study to track whether the objectives of the MAP Act are being realised. Research on statutory measures and transformation levies was examined in industries such as red meat, mohair, potato as well as oilseed were some of the few agricultural industries that were investigated for various causes. Though the goals and circumstances of each industry differ, the study saw a need to observe the statutory measures and transformation initiatives in other statutory measures applicable to agricultural industries in South Africa.

A recent report by NAMC in 2021 was published on an assessment of statutory levy and trust expenditures on transformation in the South African agricultural sectors between 2000 and 2019. The assessment aimed at assessing the transformation activities have been funded by industries utilizing statutory levies in the sub-sector namely: livestock field crops and horticulture It was revealed in the report that over the years in the livestock sub-sector, the most common transformation activities offered by the Wool trust, South African Poultry Association (SAPA), South African Pork Producer's organisation (SAPPO), Milk South Africa (SA) and Red Meat Industry Forum (RMIF) were offering training and mentorship to farmers, hosting events such as farm days and study groups and also offering training of extension officers. The report also highlighted the activities that have been funded for transformation in the field crops were training of small-scale farmers, mentorship, enterprise and supplier development. The horticultural sub-sector includes citrus, deciduous fruits, dried fruits, Fynbos-proteas, Macadamia nuts, Mangoes, Olives and Potatoes. It was discovered that training, mentorships, technical support and bursaries were the most funded activities over the years in terms of transformation.

A scholarly dissertation by Mpyana (2019) conducted a study on Mohair transformation intending to assess if the mohair farmers benefit from the transformation initiatives and projects in the Eastern Cape of South Africa. The researcher has similar objectives as this study which was to measure the impact of the socio-economic factors on enterprise and skills development of the beneficiaries as well as analyse the effectiveness of this programme on their beneficiaries. Mpyana's study used the Ordinal Logistic Regression (ORL) model to determine different

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attributes of the farmers skills and enterprise development which was guided by the Mohair industry and the National Agricultural Marketing Council. The findings of the ORL revealed that under the enterprise development areas, only age, education, market access and incomes has a significant impact while in the capacity development, age, land ownership, incomes, training and record-keeping were deemed significant. Acquisition of record-keeping knowledge enables the farmer's benefits such as working efficiently, keeping track of assets as well as maintaining financial records (Antwi, 2011).

In the Potato industry known as Potato South Africa (PSA), Mokose (2018) conducted a study to examine the state the empowerment of black farmers and the effectiveness of the national B-BBEE strategy. The study accentuated the importance of technical support which, when unattended to, other developmental variables such as access to finance and market access to viable marked could hinder the chances of the beneficiaries improving their livelihoods.

The poultry industry is also one of the agricultural industries applicable for statutory measures and transformation in South Africa (NAMC, 2018). A study was done by Matebeni *et al.,* (2018) on the effect of statutory measures in the eggs industry, particularly for food security and job creation. The study aimed at asserting how the statutory levies affect job security and assuming that over 70% of the levies expenditure was used to enhance the production capacity, particularly high input costs. The results of the study revealed how the funds had a positive and significant impact on the food security status of the beneficiaries, implying that expenditure on factors that must do with production capacity is associated with an increase in egg production.

A positive influence on employment was also reported by Phaleng *et al*., (2018) in the Red meat industry through the transformation programmes funded by the statutory levies. the focus of the study was on evaluating the role of the red meat industry towards employment in South Africa. Since it applied for statutory measures, the Red Meat Industry Forum has taken the responsibility of ensuring that the industry spends 20% of levy funds on the transformation of cattle and sheep smallholder farmers, developing processors, abattoirs, butchers and livestock agents.

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2.4.4. Challenges

Climate change, a lack of supportive structures, poor access to markets and information, public services such as extension services, and technology are all challenges for emerging farmers in Southern Africa. (Zhou *et al.,* 2013). These challenges hamper the transformation of emerging farmers. Hailua *et al*., (2015) adds that in countries such as Ethiopia, unreliable rainfall, a lack of farm inputs such as fertilizers, crop pests and diseases, distance to market, and a lack of irrigation infrastructure all limit emerging farmers' participation in crop commercialization.

Lack of market services support is also a challenge for transformation among emerging farmers in Africa. Most roads linking farmers to the point of selling are not accessible and constitute a blockage of their out-flow of perishable agricultural produce by most farmers. Thus, there is a lack of storage by many farmers. Tolno *et al*., (2016) also found that agricultural infrastructures are a major constraint to emerging commercialization. The challenges include poor roads conditions and underdevelopment; the provision of transportation services was insufficient; and the other types of infrastructure supporting agricultural markets.

Kadapatti and Bagalkoti (2014) found an array of challenges that include water shortage and water management, lack of access to inputs, inadequate availability, lack of quality inputs, non-availability of affordable packages, lack of knowledge and technologies. Despite the challenge faced, subsidies from the government compensate the poorest farmers with inputs. Poor access to public goods was also mentioned as a constraining factor to emerging commercialization in India. The latter includes irrigation infrastructures such as dams. Kadapatti and Bagalkoti (2014) add that poor access to suitable extension services is restricting factors to suitable decisions regarding cultivation practices and technological application.

Emerging farmers face an array of challenges due to their scale and geographical location among other characteristics. The major challenges experienced by smallholder farmers in Limpopo include inadequate access to productive resources, high prices of inputs, limited market access and transport costs (Makhura, 2001). Mpandeli (2006) further emphasizes that these challenges are also affecting small farmers in provinces such as Free State, Mpumalanga and Eastern Cape and thus they are universal in South Africa. Maponya and Mpandeli (2014) also highlighted a lack of market information and market access inputs cost and natural constraints such as drought. As shown in other papers published by Maponya and Mpandeli (2012), most people residing in Limpopo province are poor and thus cannot cope with the challenges.

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2.5. Summary of literature review

The chapter started by providing an overview and background information about the Macadamia industry in South Africa, as well as providing literature on the issue of transformation and statutory measures within the Macadamia industry across South Africa. This chapter went further to distinguish some of the demographic and socio-economic information about the macadamia farmers to provide a broad understanding of the emerging farmers in the study area. The literature went further to indicate how these socio-economic factors influence farmers from benefiting and participating in farmer support and transformation programmes both in South Africa and Africa.

Literature also reflects different dimensions taken by different farmer support initiatives and programmes both in South Africa and Africa to fast-track rural development and transformation of farmers under human, social, financial and physical capital. The empirical results of previous studies showed that the socio-economic factors, as well as transformation variables, have had a significant impact on the transformation of farmers under various programmes. The impact of the transformation programme funded by the statutory levies for rural development and transformation was not only limited to the macadamia industry only. It was revealed in this literature review that other agricultural industries applicable for statutory measures exposed their beneficiaries to different enterprise and skills development activities and the impact of those transformation activities differs. Clearly, this indicates that the uses and impact of transformation programmes differ farmer from country to country, from agricultural industries to agriculture industries as well as from one farmer project to another.

Lastly, the chapter briefly discussed the challenges faced by emerging farmers both in South Africa and globally.

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CHAPTER THREE

METHODOLOGY

3.1. Introduction

This chapter outlined the methodological framework that was adopted for undertaking this research. It discusses the description of the study area, population, sampling procedure, data analysis, and ethical considerations.

3.2. Description of the study area

The research was conducted in the Vhembe District Municipality (VDM), located in the Northern region of Limpopo Province in the Republic of South Africa. Its geographical coordinates are 22.7696°S,29.9741°E, with an area covering approximately 25 956 km^2 encompassing four local municipalities namely; Collins Chabane, Makhado, Musina, and Thulamela (Vhembe District Municipality IIDP Report 2017/18 -2021/22). It shares its borders with countries across different areas of the province, such as Zimbabwe in the Northern site, Mozambique through the Kruger National Park on the Eastern side, and Botswana in the North-Western site (Makhado Local Municipality Report, 2017). In South Africa, macadamia nuts are grown in Limpopo, Mpumalanga and KwaZulu-Natal, Eastern and Western Cape due to their sub-tropical climate (Nesamvumi *et al*,2012). This research zoomed on Makhado and Thulamela of the Vhembe district municipality to assess the emerging farmer's beneficiation from the transformation programme funded by the statutory levy. Figure 3.1. indicates the location of the Vhembe District Municipality in the map of South Africa.

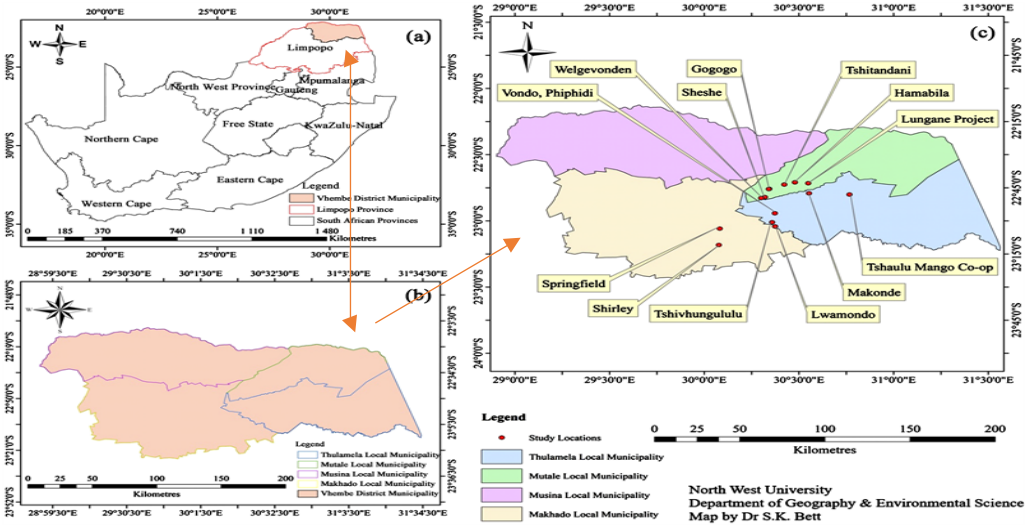

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Figure 3.1. Map of the republic of south Africa highlighting the Limpopo province, the Vhembe District Municipality, the locations and names of the areas from which the questionnaires were administered.(Source: https://www.scirp.org/journal/paperinformation.aspx?paperid=113591#f1www.municipalities.co.za/map. [Accessed on 28 March 2022].

3.3. Choice of Districts and Commodity

The study area (Vhembe District Municipality) was selected because it has large quantities of black emerging Macadamias producer's diversity of farm (DLRRD, 2020) and is one of the prime agricultural regions (Baloyi, 2010) with an ideal sub-tropical climate for macadamia. Historically, macadamia is grown in Australia, however recently, South Africa has taken over the native land, ranked first in the world for macadamia producers with the country planting over 600 000 trees per year (Parshotam,2018). SAMAC (2021) reported approximately 846 macadamias growers producing 48 925 tons of nut in shell compared to 700 growers reported by DALRRD in 2019. This is an indication of how the industry is growing. In the same journal, the commodity body conveyed that over 316 are emerging farmers with their main growing areas, planting over 1.4 million trees, located in the Mopani (in Tzaneen) and Vhembe (in Levubu) District Municipalities of the Limpopo province. Preliminary investigation by the researcher also revealed that across the Limpopo Province, statutory measures are applicable for the Macadamia commodity hence the choice of this commodity.

3.4. Population and Sampling Method

Literature abounds on how farmer support programmes and projects in South Africa are established to empower historically previously disadvantaged farmers, who are predominately black in ethnicity (Jaskiewicz, 2015; Modise, 2013; Akinola, 2018). NAMC (2019) elaborates that the beneficiaries of statutory measures are all the black smallholders and emerging producers. This study aims at assessing the beneficiation of black emerging macadamia farmers from the transformation programme funded by statutory levies. Following these guidelines, the study targeted all the black emerging macadamia growers in the Vhembe District Municipality to form part of the research. The 2021 SAMAC annual magazine reported that the total number of black emerging macadamia growers is 316 and the Mopani and Vhembe District Municipalities of the Limpopo province account for over 73 percent (305) of the population. However, n=152 samples were used to represent the population in the research study.

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Targeted population and sample size

Stephen and William (1981) and Smith (1993) recommend the use of a minimum of 10% precision when selecting a sample size from a specified population. It was based on this recommendation that the researcher found it imperative to select a representative sample size of n=152 macadamia grower respondents. Upon obtaining the population, the researcher used a random sampling method for the selection of all the 152 respondents.

Key informants

Key informants are individuals that possess industry-related knowledge to assist researchers to gain insight into the subject of interest (Cossham and Johansson, 2019). Key informants formed part of the respondents with expertise and individuals with perspectives about the transformation programme funded by the statutory levy. The chosen individuals were purposefully selected because they were either directly or indirectly involved in the programme and can provide thorough and relevant information about the statutory levy. A total of 8 key informants consisting of; commodity transformation officers, extension officers in the Thulamela and Makhado service centers, and statutory measures officials from the National Agricultural Marketing Councils (NAMC) participated in the survey. As key informants, particularly extension officers, are the experts that deal directly with the farmer and know their needs, the data collected from them was used for policy-related recommendations.

3.5. Data collection method

Data was collected using face-to-face interviews using a structured questionnaire (see, Appendix D) from a total of 152 respondents (n=152). The researcher initially surveyed 165 beneficiaries but due to double counting and incomplete questionnaires, the questionnaires that were captured on SPSS Version 27 were 152. The data collection began by engaging beneficiaries of the transformation programme funded by the statutory levies through their respective extension officers (by permission, see appendix B) then arranging for face-to-face interviews prior to meeting them. The researcher was also invited to attend LDARD macadamia farmer's information day as well as Macadamia day that took place in Levubu center of excellence. These two locations are where much of the data collection took place.

During the interviews, ethical protocols such as reading the consent form linked to the survey before the interview to ensure that they understood the purpose of this study were followed. The

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questionnaire consisted of five (5) sections that included both open-ended and closed-ended questions. The questionnaire was administered in English, but with the help of extension officers, the questionnaire was occasionally translated into the local language, Tshivenda when respondents experienced problems.

3.6. Data analysis methods

In the order of objectives, data were analysed using the following:
Objective 1: Descriptive statistics,
Objective 2: Binary logistics regression
Objective 3: Tobit regression and
Objective 4: Thematic content analysis.

For the inferential analysis, the researcher made use of the recent programme IBM Statistical Package for Social Sciences (SPSS) Version 25 and Stata Version 14.

3.6.1. Descriptive statistics

Descriptive statistics were used to summarize the socio-economic characteristics of macadamia farmers that have benefitted from the statutory levy for transformation. Descriptive statistics included include frequency distribution, percentages and tables to analyze the collected data. These socio-economic characteristics included factors such as age, gender, marital status, level of education, farming qualification and level of experience in farming.

3.6.2. Binary regression model

According to Muchabaiwa (2013), logistic regression is a statistical analysis method statistics aimed at finding the best fitting relationship between a dependent and independent variable. According to Greene (2003), the logistic regression model is suitable when the dependent variables are dichotomous to explain how a set of independent variables are related to the dichotomous dependent variable. Logistic regression is a classification algorithm used when we want to predict a categorical variable (Yes/No, Pass/Fail) based on a set of independent variables. The logistic regression model is based on the probability that Y equals one (Y=Y_1) and the value of Y is assumed to depend on the value of Xi…….Xk.

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In this study, a binary logistic regression model was used to address objective (ii) of this research which seeks to investigate whether socioeconomic factors of Macadamia farmers influence beneficiating from the transformation programme funded by the statutory levies. In this case, the dependent variable (beneficiation from the transformation programme) was a dummy variable whereas the independent variables (socio-economic factors) on the other hand took the form of both categorical and continuous data. To represent the binary outcomes of this study, dummy variables were created if an observation influences beneficiation or otherwise where y=1 if it influences beneficiation and y=0 if otherwise Following these, this model considers the relationship between binary dependent variables and independent variables.

According to Greene (2009) and Wooldridge (2009), the linear regression model is presented as follows:

Since Y is discrete, taking on the value of 0 and 1, where

$$p(Y_i) = [\frac{\beta_0 + \beta_1}{\beta_0 + \beta_1}]$$

Equation (1)

derived from a simple linear regression: $p(Y_i) = \beta_0 + \beta_1$

Assuming a vector of the dependent variable and p is the probability of Y=1 which are bonded whereby 0 ≤ p ≤.

Probabilities forecasting must always satisfy the following criteria: p ≥0 and p ≤1 however there are instances where independent variables are negative or greater than 1. To develop a function that always satisfies the p, probability of influence where p ≥0 and p ≤1, exponential points are introduced and presented as follows:
Interpretation of coefficient

$$p(Y_i) = [\frac{\exp(\beta_0 + \beta_1)}{\exp(\beta_0 + \beta_1)}]$$

Equation (2)

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$$p(Y_i = 1) = [\frac{e^{\beta_0+\beta_1}}{e^{\beta_0+\beta_1+1}}]$$

Equation (3)

Through algebra equation 3 can be expressed as In In $[\frac{p}{1-p}]=\beta_0+ \beta_1$

Which is a transformation of a linear function that is usually used in logistic regressions.

Since p must be ≤1, to satisfy the probability where $p(Y_i)$ ≥1

$$p(Y_i = 0) = 1 - P$$

$$p(Y_i = 0) = 1 - [\frac{\exp(\beta_0 + \beta_1)}{\exp(\beta_0 + \beta_1)}]$$

$$= [\frac{1}{1 + e^{\beta_0+\beta_1} e^{\beta_0+\beta_1}}]$$

Equation (4)

Interpretation of coefficient

The logit model could also be written in terms of odds and log of odds which are the transformation of linear functions of the independent variable as indicated by Wooldridge (2009) to enable comprehension of the interpretation of the coefficient for p(Y_i=0) which is a lower response level. The logistic regression can be represented as follows:

Logit $[\theta(x)]$=logit $[\frac{\theta(x)}{1-\theta(x)}] = \alpha + \beta\ X+.....+\beta\ X\ +\ U$

Derived from equation 4: the general logit model is represented as

Logit(p)=$In([\frac{p}{1-p}]=\beta_0\quad \beta_1 X_i+.+ \beta_k X_k \beta X$ ……Equation 6

where

In $([\frac{p}{1-p}]$ = Logit for the influence of the socio-economic factors (Yes or No)

$p\ (Y_i)$ =Yes; the probability that socio-economic factor influences beneficiation towards the statutory levy

$1 - p$= No; the probability that socio-economic factor does not influence beneficiation towards the statutory levy

α= the intercept term the of model

X_i= various independent variables

β_i=estimated parameters

U_i =disturbance term

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When the variables are fitted into the model in equation 6, the model is presented as:

$$In\ ([\frac{p}{1-p}]) = \alpha + \beta_1 X_1 + \beta_2 X_2 \ldots . \beta_{14} X_{14} + U_i$$

Table 3.3. below describe the socio-economic explanatory variables used to determine beneficiation from the transformation programme.

Table 3.3: Description of objective one variables and expected signs

Independent variable	Description and Measurement	Expected sign
$X_{1=}$ Local Municipality	Name of the Municipality (1 Makhado and 2 for Thulamela)	-
$X_{2=}$ Gender	Gender of the farmer (1 female and 0 for otherwise)	-
X_3=Age	Age of the farmer (Number of years)	-
X_4=Marital status	Farmer's marital status (1 for single and 0 for others)	-
X_5= Years of schooling	The years a farmer spent schooling (Number of years)	+
X_6 =Source of income	The main source of income (1 for farming and 0 for others)	+
X_7 =Household size	The number of individuals in the household (Number of persons)	-
X_8= Farming qualification	Farmer's formal agricultural qualification (1 for Yes and 0 for No)	+
X_9= Level of education	The grade the farmer completed school (1 for no formal education and 0 for others)	+
X_{10}= Years of farming	The years a farmer has been farming with macadamias (Number of years)	+
X_{11}= Tenure status	Farmer's tenure status (1 for communal land and 0 for other)	-
X_{12}= Farm size	The size of land owned by the farmer (Hectares)	+
X_{13}= Number of trees	The number of established macadamia trees (Numbers)	+
X_{14} =Agricultural extension	Farmer's exposure to agricultural extension (1 for Yes and 0 for No)	+
X_{15} =Membership	Farmers association to SAMAC (1 for Yes and 0 for No)	+

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association

Source: Author's computation

3.6.3. Principal Component Analysis

Objective two of this study aims at evaluating the use and impact of the enterprise and skills development activities on the farmers. In Section B of the questionnaire, a question was asked if the beneficiaries have received any farmer enterprise and skills development activities through the transformation programme and if they did, they also indicated all the activities they acquired that were funded by the levies. The impact of the enterprise and skills development was relative since it was based on the mean value of the number of transformation activities the farmer's benefitted from. As an approach to reducing the dimension of data points and creating indices, Principal Component Analysis (PCA) was the preferred method. Numerous studies have increasingly used PCA in diverse fields (Antwi, 2011; Boelhouwer and Stoop,1999; Dakota, 2014; Obi-Egbedi *et al*., 2020; Vyass and Kumaranaye, 2006; Phali, 2014; Sinyolo *et al*., 2014) as a multilateral, dimensionality reduction method and a technique to emphasize variation. Following these studies, PCA was adopted and used in this study to generate indices of farmers' impact level beneficiation from the different enterprise and skills development activities they received assistance through the transformation programme. PCA is a better choice as some farmers were assisted or benefitted more from other variables items than others and the skills and enterprise development variable, therefore, do not carry the same weight in impacting the overall development of the beneficiaries. The transformation guideline has a set of nine (9) activities representing the skills and enterprise development activities from which the PCA technique generated farmers' impact level indices were generated from. Table 3.4 shows the enterprise and skills development activities that the beneficiaries are expected to benefit from through the transformation programme funded by the statutory levies.

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Table 3.4: Enterprise and skills development activities

Enterprise and skills activities	Description
Input subsidies	1 if assisted with input subsidies and 0 otherwise.
Acquired marketing opportunities	1 if assisted with market opportunities and 0 if otherwise.
Acquired financial opportunities	1 if assisted with financial opportunities and 0 if otherwise.
Acquired professional services	1 if assisted with acquiring professional services and 0 if otherwise.
Acquired equipment and infrastructure	1 if assisted with equipment and infrastructure and 0 if otherwise.
Study groups and workshops	1 if exposed to study groups and workshops and 0 if otherwise.
Training	1 if offered training and 0 if otherwise.
Technical services	1 if offered technical services and 0 if otherwise.
Mentorship and coaching	1 if offered mentorship and coaching and 0 if otherwise.

Source: Author's computation

Principal Component Analysis (PCA) was used to generate the indices with the aim to quantify the impact and evaluate of the use of statutory levy for emerging black macadamia farmer's transformation. The indices were generated by summing up a total of all the enterprise and skills development activities funded by the statutory levy for transformation. By adding the activities that emerging farmers benefitted from through the statutory levy for transformation would imply that every activity benefitted has an equal influence on the total impact for transformation. The impact index was then used as a dependent variable in the Tobit model to investigate the impact and evaluate the use of statutory levy for the transformation.

The impact indices/ ratios indicate the proportion of farmer's beneficiation from the statutory levy for transformation. It is simply the skills and enterprise development activities funded by the

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statutory levy for transformation that an emerging farmer benefited divided by a total of all the skills and enterprise development activities funded through the statutory levy for transformation. Equation 1 below indicates this.

$$\text{Famers}' \text{ impact indices} = \frac{\text{A total of transformation activities a farmer bennefitted from}}{A\ total\ of\ all\ the\ transformation\ activities\ funded}$$

Equation (1)

The level of impact indices was then expressed indices, censored between a minimum of 0.00 and a maximum of 1. Where:

≥ $\frac{3}{7}$ of the mean of index = 1 (high impact level) = ($Y_{maximum}$)

≤ $\frac{3}{7}$ of the mean of index=0 (low impact level) = ($Y_{minimum}$)

The indices were used as a dependent variable (Y_i) in the Tobit model regressions to evaluate the impact of the transformation programme on the skills and enterprise development of the beneficiaries.

3.6.4. Tobit regression model

In 1958, Tobin proposed a model, which originated in the context of linear regression analysis. Popularly known as the censored regression model, meaning Tobit regression is used to estimate the linear relationship between variables or values in a certain range that are all transformed to a single value (censored) and when the dependent variable is bounded from below or above or both (Hoof,2007).

The Tobit regression model was employed in this study to analyze objective ii of this study. Tobit Regression Model was chosen for data analysis. The decision was made to use it because the model has limited metric variables the intent of the study is one of the factors that determined the choice of the economic model to adopt for this study. Shiferaw, *et al*, (2008) emphasized how the choice of an analytical model is also influenced by previously related studies. Tobit regression has been applied to estimate the impact of farmer development /support programmes on commercialization in many studies i.e.: Martey *et al*., (2015); Sinyolo (2016) and Yunusa, 2012).

The description of the study's objective relies on the potentially strong hypothesis that the

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transformation programme funded by the statutory levies should have impacted black emerging macadamia farmers' skills and enterprises. For this research, transformation is equated to commercialization from emerging farming. Moreover, the transformation was measured by the development in the farm enterprise and skills and the ability to produce, market, and commercialize.

In this study, the Tobit regression was used as an analysis tool to estimate the statistical relationship between socio-economic factors and the level of skills and enterprise variables that the farmers benefitted from the index that was generated by PCA. The PCA-derived composite index of skills and enterprise variables was used as the dependent variables (Y_i) Given the right and left censoring of ($Y_{minimum}$) and ($Y_{maximum}$) scores. The discrete decision of whether statutory levy for transformation has had an impact on emerging macadamia farmers' enterprise and skill was estimated using a Tobit regression model. According to Odah (2017), the Tobit model explains the relationship between a non-negative dependent variable and an independent variable assuming that there is a latent variable that linearly depends on the independent one through a parameter beta that determines the relationship between these variables. The model is expressed in equation 1 below following Akatchva and Miranda (2004), Greene (2008) and Lu (2006) presented as follows:

$Y_i * =_{y_i} * = \beta X_i + U_i + \ldots . \beta X_i + U_i$

Subject to $Y_i = y_i * \; if \; 0 < y_i * < 1$

$= 0 \; if \; y_i * < 0$

$=_i * \; 1 if \; y_i * > 1$ Equation 1

Where Y_i is the actual level of skills and enterprise development variables ratios (FLB ratios), as β_α is a vector of coefficients and X_i is an S x 1 vector of the independent variable, $U_i$are independently and normally distributed with mean zero and $Y_i *$ is the latent variables representing FBL ratios is defined to be equal to the latent variables whenever the latent variable is above zero and zero otherwise.

$Y_i *$= Farmer's impact level ratios defined as

$y_i *$ >0 implies that $y_i *$ is observed

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$y_i * \leq 0$ implies that $y_i *$ is not observed

The farmer's impact level was generated using the index explained in 3.6.3. were used as the dependent variable for the Tobit regression model. Table 3.5 presents the factors that determine the impact of the transformation programme on farmers' enterprise and skills development.

3.5. Description of objective one variables and expected signs

Variable	Description and Measurement	Expected sign
Dependent Variable		
Impact level index	Enterprise and skills development activities generated through PCA	
Independent variables		
$X_{1=}$ Local Municipality	Name of the Municipality (1 Makhado and 2 for Thulamela)	-
$X_{2=}$ Gender	Gender of the farmer (1 female and 2 otherwise)	-
X_3=Age	Age of the farmer (Number of years)	-
X_4=Marital status	Farmer's marital status (1 for single and 0 for others)	-
X_5= Years of schooling	The years a farmer spent schooling (Number of years)	+
X_6 =Source of income	The main source of income (1 for farming and 0 for others)	+
X_7 =Household size	The number of individuals in the household (Number of persons)	-
X_8= Farming qualification	Farmer's formal agricultural qualification (1 for Yes and 0 for No)	+
X_9= Level of education	The grade the farmer completed school (1 for no formal education and 0 for other)	+
X_{10}= Years of farming	The years a farmer has been farming with macadamias (Number of years)	+
X_{11}= Tenure status	Farmer's tenure status (1 for communal land and 0 for other)	
X_{12}= Farm size	The size of land owned by the farmer (Hectares)	+
X_{13}= Number of trees	The number of established macadamia trees (Numbers)	+

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X_{14} =Agricultural extension	Farmer's exposure to agricultural extension (1 for Yes and 0 for No)	+
X_{15} =Membership association	Farmers association to SAMAC (1 for Yes and 0 for No)	+

Source: Author's computation

3.6.5. Thematic Content Analysis

This study wishes to incorporate the beneficiaries' views, experiences, and challenges about statutory levy for a future improved and beneficiary programme. "Thematic analysis is the process of identifying patterns or themes within qualitative data, with the goal to identify themes, i.e. patterns in the data that are important or interesting, and use these themes to address the research or say something about an issue" (Maguire and Delahunt, 2017: 3353). Thematic content analysis is much more than simply summarizing the data; a good thematic analysis interprets, gives an expression of the information and assesses the information into easily understandable key constructs. Terry (2017) describes thematic analysis similarly to Braun and Clauke (2006) as an analytical approach usually used to identify, analyze and report themes or patterns across a qualitative data set mainly for interpreting their meaning of them.

In this study, there has been a thread of information which have been synchronized well in the data collection process that forms a good pattern in the discussion of the concepts in the study. The researcher identified three information sets in which the data were presented: Farmer's and key informants' view of the transformation programme and the challenges faced by the beneficiaries of the transformation programme.

3.7. Ethical considerations

Prior to data collection, the researcher obtained an ethical clearance certificate from the research ethics committee at the University of Venda to ensure this study was ethical. Permission was granted by the Limpopo Department of Agriculture and Rural Development (LDARD) to conduct the study since the emerging farmers that were interviewed forms part of the LDARD.

In adhering to other ethical principles, the researcher ensured the following:
Obtain informed consent: Participants were provided with consent forms before participating in

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the study. Consent forms were written and explained orally to accommodate all affected farmers. Reasons for the inclusion of the participants in the study were also explained to avoid discomfort or inconveniences that they may have.

Anonymity and confidentiality: Confidentiality of the responses was ensured for the usage of this data. The disclosure of respondents was based on their permission.

Provide the right to withdraw: The participants were given an opportunity at any stage of the research study to withdraw from the research process, they were not pressured and forced to respond to questions.

3.8. Summary of the research methods

In this chapter, the study area, sampling procedures and sampling size were clarified. Highlighting that the Vhembe District Municipality is the study area due to its high concentration of emerging macadamia farmers in the country. A total of 152 respondents from a population of 312 emerging farmers in the district were randomly selected to respond to the questionnaires. Data analysis procedures for each specific objective of the study were also discussed, as well as ethical considerations. This next chapter will provide the results and discussions of the findings.

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CHAPTER FOUR

RESULTS AND DISCUSSION

4.1. Introduction

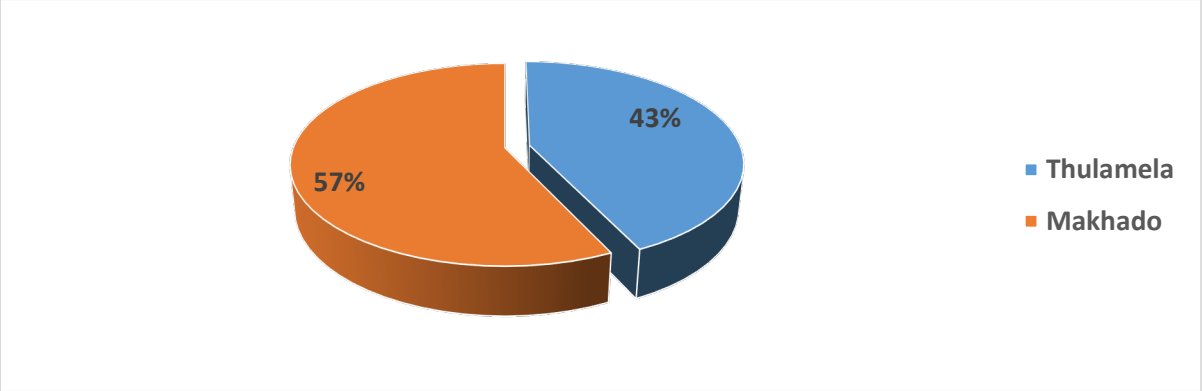
This chapter presents the results and discussions of the study as well as its supporting discussion. This includes an insight into the characteristics of the macadamia farmers (respondents) in Vhembe District Municipality which is derived from the descriptive analysis of the participants' data collected as described in chapter 3. It also includes inferential statistics to indicate the extent to which black macadamia farmers in the VDM are benefiting from the transformation function through statutory levy and factors influencing beneficiation. Furthermore, the data were analysed using SPSS Version 25. The results are provided in tabular forms and charts and interpreted in terms of percentages, minimum, maximum, and means.

4.2. Descriptive statistics results and discussion

4.2.1 Demographics of the farmers

This section presents the demographic results of the black emerging macadamia farmers in the Vhembe District municipality. analyze. The results are summarized using frequencies, means, percentages, and graphs.

4.2.2.1. Local municipality of the farmer



Source: Survey data (2021)

Figure 4.1. The local municipality of the farmers

Figure 4.1 above shows the local municipality of the black emerging macadamia farmers in the Vhembe District Municipality. The results show that the majority (57%) of the farmers that were

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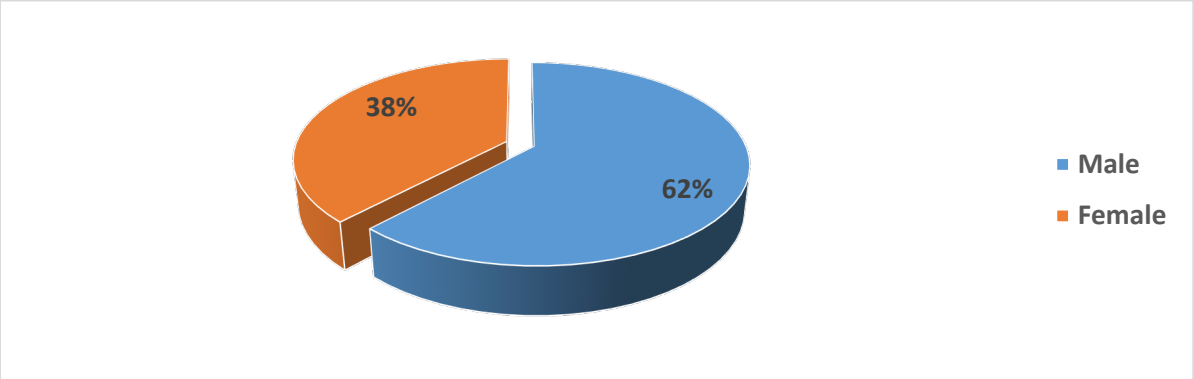
surveyed for this study were from the Makhado Local Municipality and whilst the farmers from the Thulamela Local Municipality constituted 43% of the respondents surveyed.

4.2.2.2 Gender of the farmer



Source: Survey data (2021)

Figure 4.2: Gender of the farmers

Figure 4.2 shows the gender of the black emerging macadamia farmers in the Vhembe District Municipality. According to the findings, male farmers accounted for 62 percent (n=94) and females accounted for 38 percent (n=58). These results concur with the findings by Jaskiewics (2015) that found that most of the farmers that cultivate macadamia in the Vhembe District Municipality were males. This signifies that macadamia farming in the study area is male-dominated. This could be assumingly because females are more occupied in other activities or domestic chore other than participating in the agricultural labour as compared to males.

4.2.2.3. Marital status

Figure 4.3 below illustrates the respondents' proportion of marital statuses types, divided into 6 categories; single, married, widowed, divorced, and other. The study implies that the most dominant civil status category of black emerging macadamia farmers in the Vhembe District Municipality was the married category with 70% of the respondents (n=106). The second most popular category was single with 16% (n=25), followed by widowed with 11.8% (n=18) and divorced respondents constituting 0.7% (n=1) of the sampled respondents. Respondents that specified that they were cohabiting or separated were under the Other category of marital status with 1.3% (n=2).

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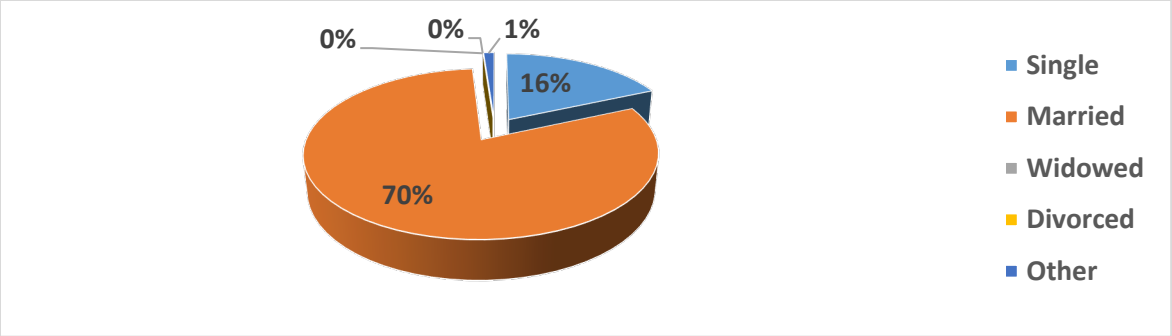
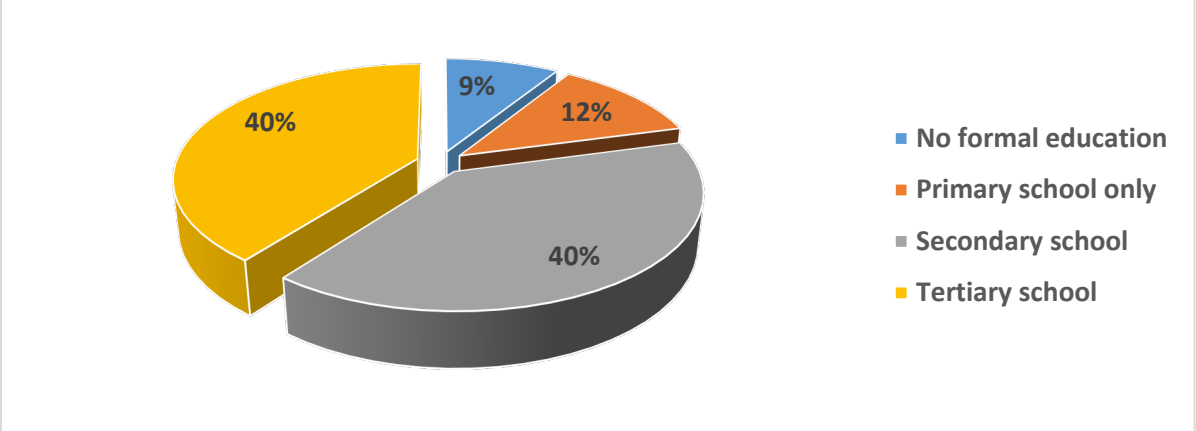


Source: Survey data (2021)

Figure 4.3: Marital status of the farmers

4.2.2.4. Level of education



Source: Survey data (2021)

Figure 4.4: Farmer's level of education

Education plays an important role in improving farmers' personal, economic and social progress. The level of education of respondents was divided into categories namely; no formal education, primary education only, secondary education only, and tertiary school. Figure 4.4 shows the percentage of black emerging macadamia farmers in the Vhembe District Municipality within each category. The results revealed that the proportion of farmers that attended school until the level of secondary school and tertiary school were the most dominant categories at a tie level of 40% respectively. Moreover, these dominant categories were dominated by male respondents as compared to females. Looking at these results and comparing them against the gender of the surveyed farmers, the results coincide with the typical rural household where females abandon

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school to fend for their families while men continue to empower themselves. The results also show that 11.8% of the respondents attended primary level education which was and only 8.6 of the respondents never obtained any formal education which was dominated by females.

4.2.5 Statistics of age, household size, years of schooling, farm size and years of the farmers

Table 4.1: Summary statistics of age, household size, years of schooling, farm size and years of the farmers

Socio-economic characteristic	Mean	Minimum	Maximum	Standard Deviation
Age	56	21	89	15.036
Household size	5	1	12	1.974
Years of schooling	11	0	20	4.849
Farm size	6.0382	1	40	4.47465
Years of farming	12	2	51	9.553

Source: Survey data (2021)

The statistical properties of the continuous socio-economic variables are shown above in Table 4.1. It is indicated that the minimum age of black emerging macadamia farmers was 21 whilst the maximum age was 89 years. The mean age of the black emerging macadamia farmers was found to be 56 years and the standard deviation of the age was found to be 15.036 years. These results imply that on average the age of the black emerging macadamia farmers in the Vhembe District Municipality was between the age of 56 years. This is typically the age where individuals plan to retire from formal jobs and start investing their time in agriculture. An aging population tends to lower labour-force participation which may result in slow economic growth

The number of individuals living together in a household, including non-family members, is referred to as the household size. Kufenko (2018) highlighted how household size has economic implications on economic growth when the author discovered a standard of living when the household size increases. On average the household size of the black emerging macadamia farmers in the Vhembe District Municipality is 5 per household, with a minimum of 1 individual per household and a maximum of 12 individuals per household size with a standard deviation of

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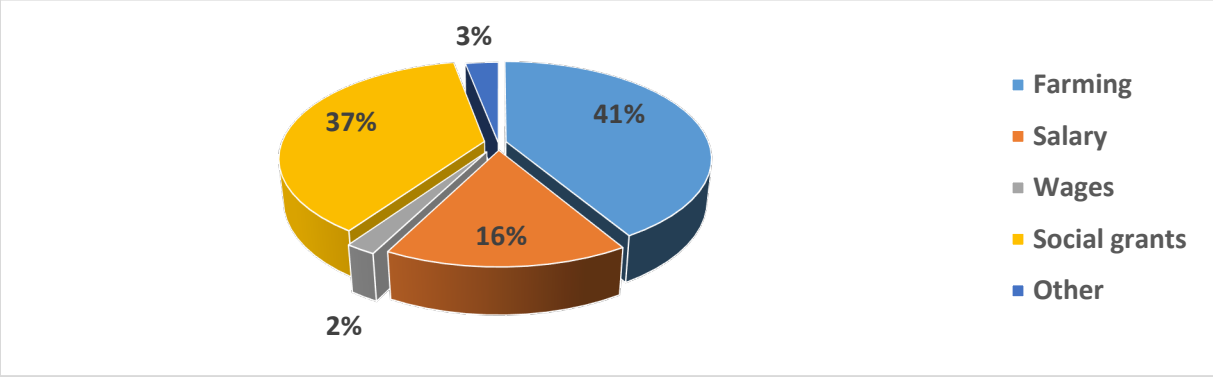
1.974 per household. The minimum years of schooling of black emerging macadamia farmers in the Vhembe District Municipality are 0 with a maximum of 20 years, an average of 11 years and a standard deviation of 4.749 years.

Farm size is presumed to have an inverse relationship to land productivity (Mburu *et al*,2014). The average farm size of black emerging macadamia farmers in the Vhembe District Municipality is 6.0382 hectares with a minimum of 1 hectare and a maximum of 40 hectares of land and a standard deviation of 4.47465 hectares. Furthermore, their average years of farming is 12 years with a standard deviation of 9.553 years. The minimum number of years of farming is 1 year with a maximum of 12 years. The mean of 6.0382 hectares of land coincides with the typical land tenure system of the rural area where most farmers acquire land from village leaders and are allocated a small portion. Those respondents with high numbers of hectares of land indicated that they privately bought the land that was previously used for cultivation

4.2.2.6. Source of Income



Source: Survey data (2021)

Figure 4.5: Farmer's Source of income

Figure 4.5 illustrates the percentages of the main source of income of the black emerging macadamia farmers in the Vhembe District Municipality. It indicates that from a sample size of 152, 41% (n=56) depended on farming as a source of income, followed by 37% (n=35) of the respondents that indicated that they rely on social grants such as child support grants and state old grants and as a source of income. Farmers that still relied on salaries were a sample size were 16.4% (25) of the sample size while farmers that relied on wages were only 2.0% (n=3). Respondents that indicated that they relied on odd jobs, were self-employed and other businesses

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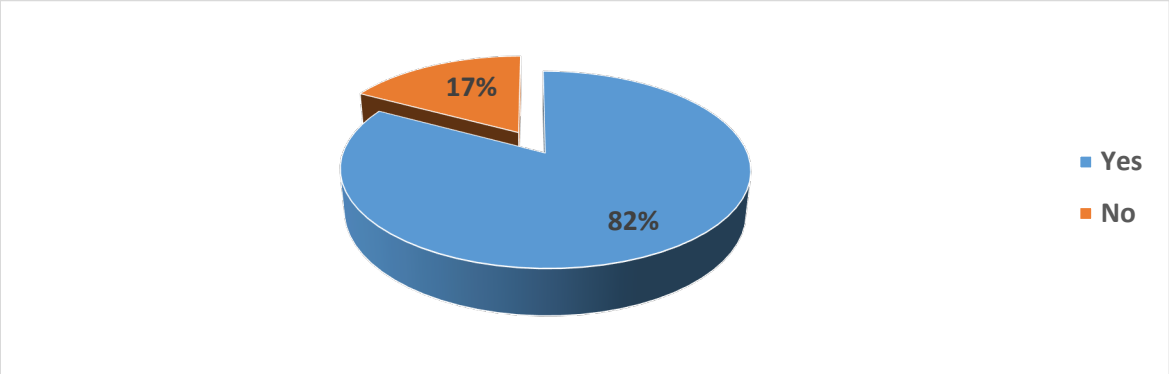
(formal or non-formal) constituted 3.3%(n=5). These results support the descriptive statistics, particularly age where the mean age of farmers in this study is 56 which is the age leading towards retirement. It is also the age where the chances of farmers obtaining non-farm sources of income would be decreasing and they will relatively have time to invest in farming. This leads them to depend on the income from state old age grant as well as the income from farming.

4.2.7. Agricultural qualification



Source: Survey data (2021)

Figure 4.6: Farmer's formal agricultural qualification

Agricultural qualifications can provide farmers with important agricultural-related knowledge. Farmers' formal agricultural qualification was another socio=economic characteristic surveyed in this study. They were asked whether they have any formal agricultural related qualifications and the majority (82%) of the black emerging macadamia farmers in the Vhembe District Municipality as Illustrated above in Figure 4.6 indicated that they had no formal agricultural qualification. Only 17% of the sample size indicated that they possess an agricultural qualification. This clearly shows the disparity between farmers that invest in formal agricultural qualifications. One of the reasons that account for this disparity might be that farming is mostly considered as an alternative job when they retire job or even a hobby while farmers are being employed elsewhere and do not focus much on farming.

4.2.8. Land ownership

Land status is one of the socio-economic characteristics that was surveyed because arable land is one of the scarce and inaccessible factors of production which determines the quantity and quality of macadamia nuts that farmers can produce. Figure 4.7 shows the percentages of tenure statuses of black emerging macadamia farmers in the Vhembe District Municipality.

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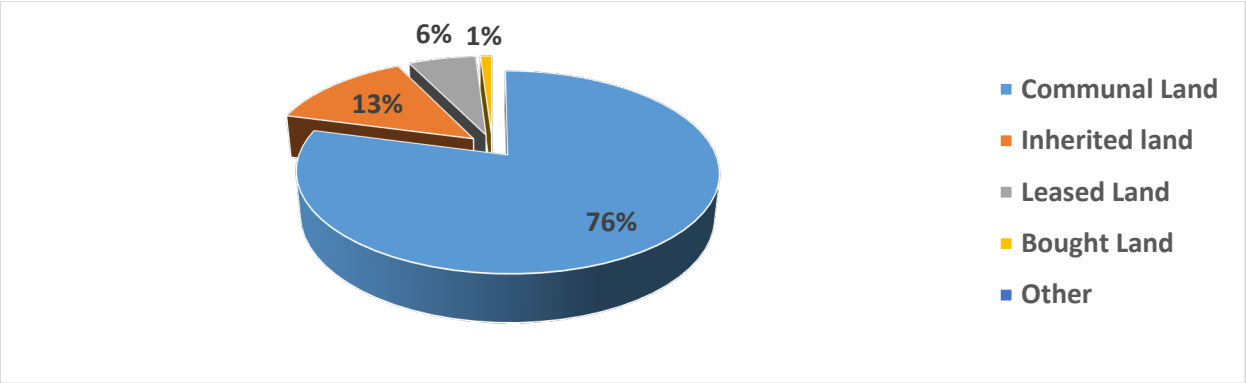
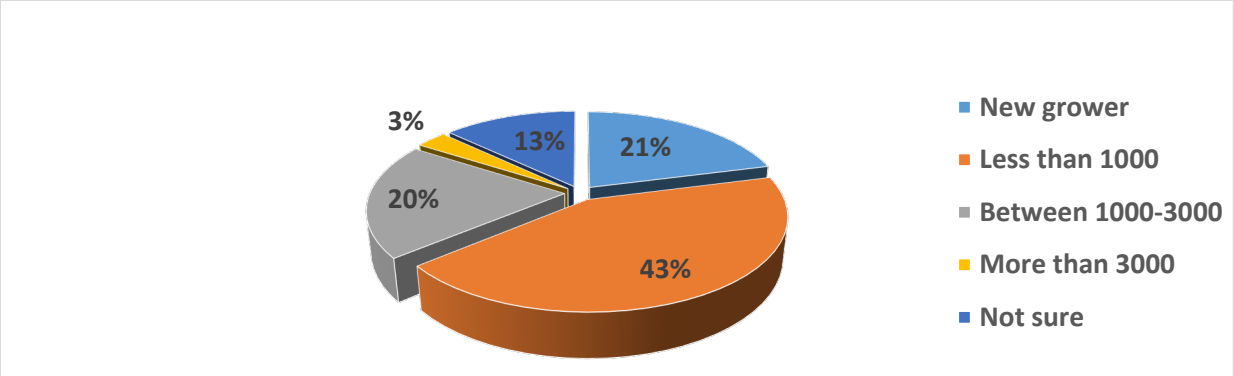


Source: Survey data (2021)

Figure 4.7: Farmer's tenure status

It indicates that out of a sample size of 152, farmers that hold leased land by farmers with PTO's (Permission to Occupy) certificate constituted 76%(n=116) of the sample size followed by those that inherited the land constituting 12.5% (n=18). Farmers in the Vhembe District Municipality that leased the land in which they were farming macadamia constituted 5.9% (n=9) of the sample size and those that bought land were 1.3% (n=3) of the sample size. Only 3.9% (n=6) of the farmers indicated that they either share the land or awaiting land restitution. According to Martey et al., (2015), land ownership and farm size have an impact on productivity. These results concur with the findings on the study's farm size.

4.2.9. Number of established macadamia trees



Source: Survey data (2021)

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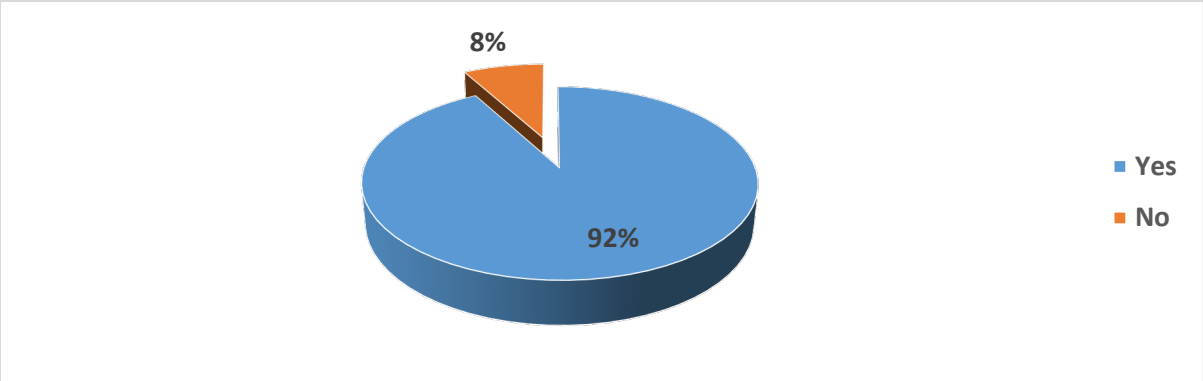
Figure 4.8: Farmer's number of macadamia trees

A number of macadamia trees were another key area that was surveyed. From Figure 4.8 above, the majority (43%) of respondents who participated in this study had less than 1000 established macadamia trees in their orchard, while 20% of them planted between 1000-2000 established that produces nut and 21% of the sample were new growers with small trees that do not produce nuts yet. Farmers that planted more than 3000 trees in their orchards were about 3% of the sample size and those that were not sure about the number of trees planted in their orchards were approximately 13% of the respondents.

4.2.10. Agricultural extension



Source: Survey data (2021)

Figure 4.9: Farmer's exposure to agricultural services

Extension services are a common practice in rural areas where extension agents demonstrate, transferring knowledge, skills, information and technical advice to them (Olofsson, 2020) Figure 4.9 illustrates the percentage of black emerging macadamia farmers exposed to agricultural extension services in the Vhembe District Municipality. It indicates from a sample size of 152 emerging farmers, 92% of the participants had exposure to agricultural extension services, whereas only 8% of the participants were not exposed to agricultural extension services. This shows that most of the black emerging macadamia farmers in the Vhembe District Municipality are exposed to agricultural extension services.

4.2.11. Source of extension services

The source of farmers' agricultural extension services was surveyed in this study. Extension service agents work closely with farmers by providing them with information therefore determining

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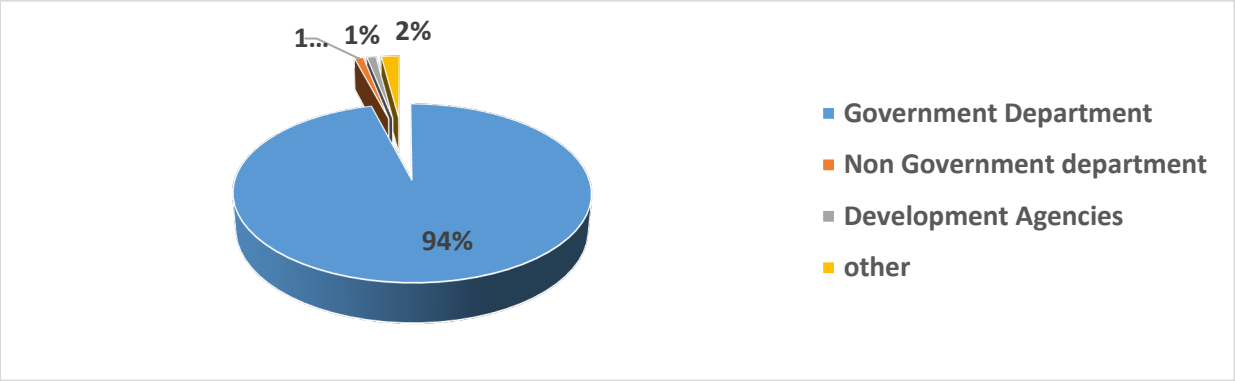
the providers of extension services is important.



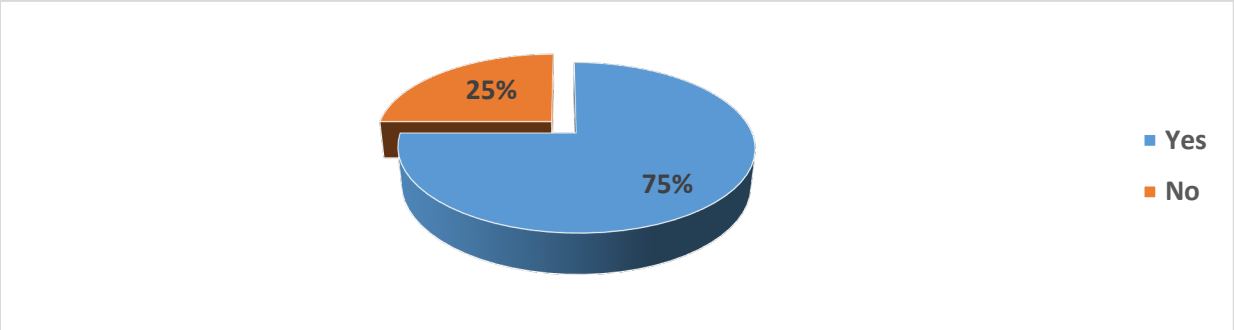
Source: Survey data (2021)

Figure 4.10: Farmer's source of agricultural extension services

Figure 4.10 shows that 94% of the extension services were offered by government officials. The respondents indicated that government departments such as LDARD (Limpopo Department of Agriculture and Rural Development) were the providers of technical services among other things.1% of the respondents were exposed to extension services from non-government sectors and another 1% indicated development agencies as the providers of extension services. Only 2% of the participants in the study were exposed to extension services either than the three above categories.

4.2.12. Membership Association

In Figure 4.11 below, it can be observed that most (75%) participants were found to be members of farmer's associations, whereas 25% of the participants were not part or members of any farmer's associations. This shows that 3/4 (one quarter) of the black emerging macadamia farmers in the Vhembe District are associated with commodity bodies.



Source: Survey data (2021)

Figure 4.11: Farmer's membership association

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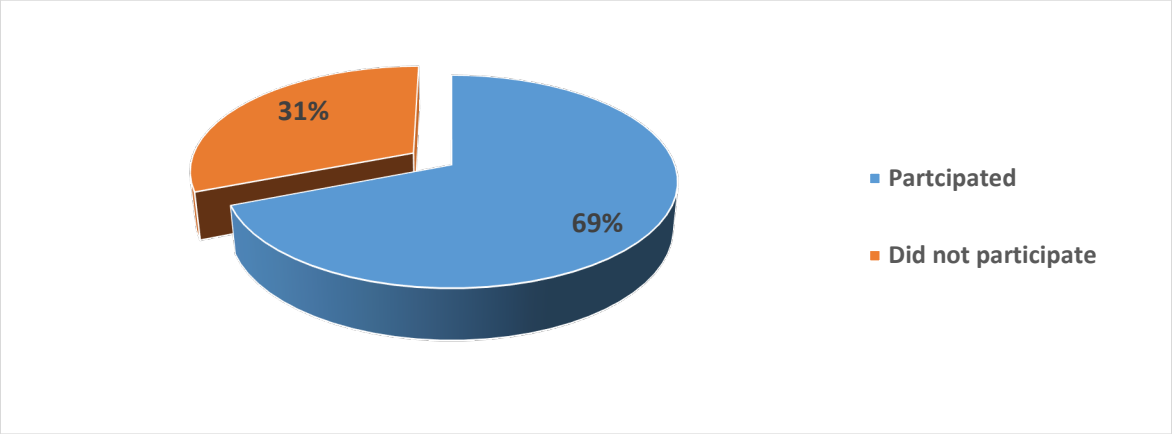
4.2.2. The descriptive results of the transformation programme

This study aims to critically assess the beneficiation of black emerging macadamia farmers from the transformation programme funded through the statutory levy. The study asks the following key questions: What are the enterprise and skills development variables that these farmers are benefiting/exposed to? And to what extent are the black emerging macadamia farmers in the Vhembe district municipality befitting from the statutory levy?. The results of these two questions are revealed and discussed in this section to determine the relevance and efficiency of the programme. This section presents a discussion on enterprise and skills development variables related to the transformation programme.

4.2.2.1. Beneficiaries' participation in the transformation programme



Source: Survey data (2021)

Figure 4.12: Farmer's participation in the transformation programme.

The study found that about 69%(n=105) of the respondents indicated that they participated in the transformation programmes and that they have received some assistance through the programme. About 31%(n=47) of the respondents did not participate in the programme revealing that they have not received assistance from the transformation programme funded by the statutory levy. The proportion of the beneficiaries participating in the development programme funded by the statutory levies is presented in Figure 4.12 above.

4.2.2.3. The results of the type of assistance that farmers benefitted from through the transformation programme

This section presents the descriptive results (frequencies and percentages) of the enterprise and

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skills development activities that the participants benefitted from through the transformation programme. The activities that the farmers benefited from through the transformation programme were based on section B of the questionnaire. A question was asked to respondents about whether the farmers have received skills development assistance from the transformation programme. Table 4.2 shows the results of the skills development activities the farmers received respectively.

Table 4.2. Summary of enterprise and skills development activities that black emerging macadamia farmers were exposed to in the Vhembe District Municipality

Variables	Category	Percent (%)		Frequency	
		Yes	No	Yes	No
Farmer received enterprise development assistance	Yes or No	25	75	38	114
Farmer received skills development assistance	Yes or No	76.3	23.7	116	36
Length of times of assistance per year	Once a year	34.9	53	0	0
	2-5 times a year	36.8	56	0	0
	6-10 times a year	0	0	0	0
	More than 10 times a year	0	0	0	0
	Never assisted	28.3	43	0	0

Source: Survey data (2021)

Table 4.2 above reveals the type of assistance the participants received through the transformation programme funded by the statutory levies. Human capacity development (skills) was the most received transformation pillar by the beneficiaries of the programme. Table 4.2 above indicated that over 76% of the participants were either to some or all of the skills development activities while 23.7% indicated that they have participated in and benefitted from the transformation programme. Funding for farmers' day farm-related activities is another

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transformation pillar that the beneficiaries were expected to have benefitted from through the transformation programme of the applicable agricultural industry (SAMAC, 2018). Table 4.2 above show that out of a sample of one hundred and fifty-two (152), only 38 (25%) emerging macadamia growers in the Vhembe District Municipality indicated that they have received enterprise development assistance through SAMAC. The majority (75%)of the respondents indicated that they have not received any assistance in terms of professional services, marketing opportunities, financial assistance, acquisition of inputs, machinery and infrastructure.

Length of time of assistance per year was also assessed in this study. It was revealed (see, Table 4.3 above) that most (36.8%) of the beneficiaries who received skills and / enterprise development assistance by the transformation programme funded through the statutory levies indicated that they received assistance about 2-3 times a year. Thirty-three (32.9%) respondents that received skills development assistance through the SAMAC transformation programme funded by the statutory levies indicated that they were assisted only once a year. The study also revealed that beneficiaries never participated in the transformation programme and they constituted 28.3% with a total of 48 respondents. This revealed that beneficiaries that received either training, workshops and study groups, on the job training, technical support or /and mentorship and coaching, access to input subsidies as well as market, financial and professional services acquisition opportunities were assisted 2-5 times a year.

4.3.2. Results of the enterprise and skills development activities the farmers benefitted from through the transformation programme

The objective of identifying the use of the transformation programme was also based on section B of the questionnaire. The transformation programme participants were asked to identify the enterprise and skills development activities that the farmers benefited from through the transformation programme funded by the statutory levies. As discussed in chapter 3, the activities that the participants received assistance through the transformation programme were then generated into indices to quantify the level of impact of the programme on farmers' farm-related activities and human capacity since it is relative. Table 4.2 below shows the results of the enterprise and skills development activities the farmers benefited from through the transformation funded by the statutory levies that were used as a dependent variable in section 4.3.3. that follows.

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Table 4.3: The enterprise and skills development activities farmers benefitted from through the transformation programme.

Type of enterprise and skills activities	Frequency		Percentage	
	Yes	No	Yes	No
Input subsidies	25	127	16.4	83.6
Acquiring market opportunities	11	141	9.2	72.8
Acquiring financial opportunities	16	136	10.5	89.5
Acquiring professional services	9	143	5.9	94.1
Equipment and infrastructure	12	140	7.9	92.1
Study groups and workshops	108	46	69.7	30.3
Training	16	136	10.5	89.5
Technical services	14	138	9.2	90.8
Mentorship and coaching	9	143	5.9	94.1

Source: Survey data (2021)

The study sought to understand the type of enterprise and skills development variables that the farmers obtain assistance from the SAMAC transformation programme. Narrowing it down to enterprise development variables, the Table shows that access to input subsidies was the most (16.4%) enterprise development variable that the farmers benefitted from through the transformation programme funded by the statutory levy whilst study groups and workshops were the most (69.7%) skills development activity the participants benefited from.

Acquisition of financial opportunities was the second most enterprise development variable that the beneficiaries of the transformation programme benefitted from. Table 4.3 above shows that 16 (10.5%) of the 152 respondents indicated that they received financial assistance from the SAMAC transformation programme through the statutory levy is also eligible to assist black emerging farmers with equipment such as de-husking machines, dry bins, fencing and all the other related equipment. The study found that only 7.9% of the farmers were assisted with the acquisition of equipment while 92.1 % of the respondents indicated that they have never acquired any equipment. Market acquisition opportunities was another enterprise development variablebles that farmer can access through their commodity body as indicated by NAMC (2018). Most (92.8%) indicated that they have not been assisted with market acquisition opportunities by SAMAC and indicated that the market they deliver to was through their colleagues and referrals.

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Only 9 respondents, with a ratio of 5.9% indicated that they have been assisted with the acquisition of professional services such as business plans and legal activities whilst the majority (94.1%) of the respondents indicated otherwise.

In terms of skills development activities, table 4.3 above found that approximately 14 emerging macadamia growers that constitute about 9.2% of the respondents agreed that they have received technical support from SAMAC. Technical support for macadamia farmers includes soil preparation and soil testing. The study also showed that 143 growers in the Vhembe District Municipality (90.8%) indicated that they have never received mentorship and coaching through the SAMAC transformation programme. Fortunately, only 5.9% (n=9) of the emerging macadamia farmers indicated that they received mentorship, and coaching from macadamia handlers and the relationship was established through SAMAC. This revealed that most of the black emerging macadamia farmers in the Vhembe District Municipality were not benefitting from the technical support variable funded by the statutory levy for farmer development projects. Similar results were found in the on-the-job training activity that farmers are meant to benefit from through the SAMAC transformation programme. Only 16 (10.5%) of the farmers indicated that they benefited from these variables whilst the majority (89.5%) indicated that they have never been trained individually in their orchards to activities such as pest control, de-husking and drying their nuts amongst other activities. Extension officers from the Limpopo Department of Agriculture and Rural Development (LDARD) are the people that have been offering such services.

4.2.2.3. The impact of the programme on farmers' development

The identification of the positive or negative, intended and not intended results caused by a certain development project or programme is the focus of impact assessment(Antwi,2011). There was a need to understand the extent to which the transformation programme reached the magnitude of its effect on the beneficiaries by assessing the impact of the transformation programme on the farmer's skills and enterprise development.

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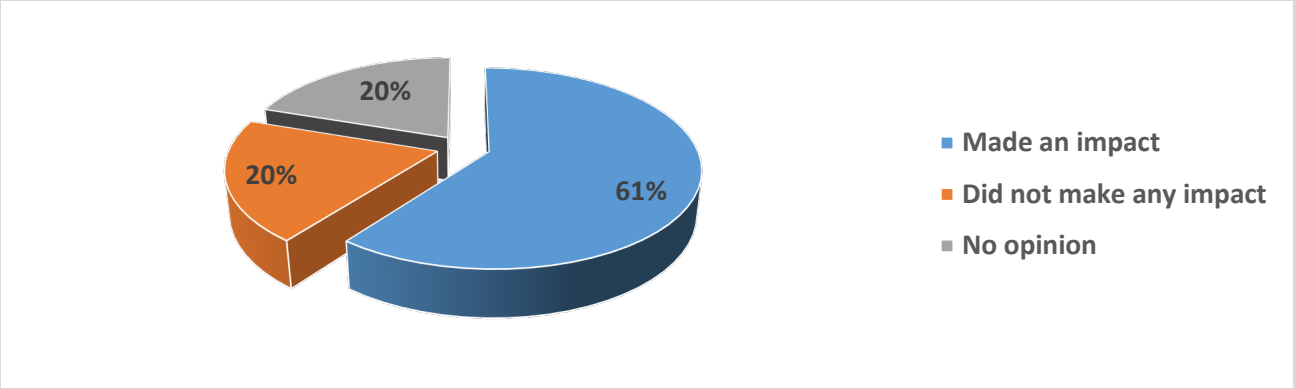

Source: Survey data (2021)

Figure 4.13: The impact of the transformation programme on the farmer

Figure 4.13 above indicates that the majority (61%) of the respondents that benefitted from the enterprise development and /or skills development in the study area could identify that the programme has made an impact while only 20% of the respondents indicated that the transformation programme has no impact on their development and 19% of the respondents had no opinion regarding the programme. This could be because either they have not benefitted from the transformation programme or they have never heard of this programme during the time of the survey. Participants expressed their views that the impact of the transformation programme from SAMAC is satisfactory. The respondents identified that the impact includes improved knowledge, a better understanding of pests, commercialisation, changes in income and acquisition of factors of production.

4.3. Inferential statistics

4.3.1. Binary regression model results of the socio-economic factors that influence beneficiation from the transformation programme

This section presents the results of the binary regression model employed to estimate the relationship between socio-economic characteristics and benefitting from the transformation programme funded by the statutory levies. Factors influencing benefitting from the transformation programme funded by the statutory levies in the Vhembe district municipality were determined using the binary regression model. Table 4.4. below shows socio-economic characteristics that significantly and insignificantly influence beneficiation towards transformation programs through the statutory levy.

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Table 4.4 below represents the results of the binary logistic regression. It summarizes that out of the 16 independent socio-economic variables used in the model, 7 were found to be statistically significant at different levels in explaining the likelihood of beneficiation from the transformation programme funded by the statutory levies. Table 4.4 also summarizes that the remaining variables were found to be insignificant in explaining the influence of socio-economic factors towards beneficiation from the transformation programme funded by the statutory levy. The Hosmer and Lemeshow Test shows the goodness of fit and the p-value is. The results in Table 4.4 also show the two (2) pseudo-R-square values. The p-value of these variables is higher than 0.05 and it is not statistically significant and indicates strong evidence for the null hypothesis.

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Table 4.4: Socio-economic factors that influence beneficiation from the transformation programme

Variables	B	S. E	Wald	df	Sig.	Exp(B)
X_1=Local Municipality	1.816**	0.603	9.071	1	0.003	6.147
X_2= Gender	0.191	0.486	0.155	1	0.694	1.211
X_3= Age	0.016	0.020	0.604	1	0.437	1.016
X_4=Marital status	-1.241**	0.559	4.937	1	0.086	0.289
X_5= Years of schooling	0.249*	0.156	2.561	1	0.011	1.283
X_6= Source of income	0.177	0.141	1.579	1	0.209	1.193
X_7=Household size	0.147	0.131	1.250	1	0.263	0.864
X_8=Farming qualification	1.875**	0.598	9.839	1	0.002	6.523
X_{10}= Years of farming	-0.096***	0.037	6.840	1	0.009	0.908
X_{11}=Tenure status	0.159	0.254	0.389	1	0.533	1.172
X_{12}= Farm size	0.064	0.052	1.529	1	0.216	1.066
X_{12}= Number of macadamia trees	0.158	0.220	0.512	1	0.474	1.171
X_{14}=Agricultural extension	0.855	1.167	0.537	1	0.464	2.353
X_{15}=Membership association	2.905***	0.716	16.473	1	0.000	18.268
Constant	-1.157	2.189	0.280	1	0.597	0.314
-2 Loglikelihood=119.014						
Hosmer and Lemeshow test: 2.617						
df=8,						
X^2=6.488						
p=, Nagelkerke R^2=, 0.514						
Cox and Snell R^2= 0.365						
Number of observations= 152						

Source: Survey data (2021)

Note: *, **, *** represents 10%, 5% and 1% respectively

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4.3.1.1. Statistically significant variables

Name of farmer's local municipality

The coefficient of the farmer's local municipality was found to have a positive influence on the farmer's beneficiation towards the transformation programme of the statutory levy at a 10% level of significance. The study found that 55.3% of the farmers were from Makhado Local Municipality and 44.7% of the farmers were from Thulamela Local Municipality. The results signified that farmers in Makhado local municipality had a higher probability of benefiting from the transformation programme funded by the statutory levies. These results coincide with the observation of the researcher during data collection. As indicated in chapter 3, the majority of the questionnaires were administered during the events such as study groups and farmer's day that were mostly held at Levubu center of excellence in Makhado. Tamsah and Yusriadi, (2022) emphasized that it is in these kinds of events where important farmer related information is shared that would improve their human capacity and farmer productivity.

Marital status

The results of the influence of marital status on farmers benefitting from the transformation programme show a statistically significant likelihood even though the coefficient was negative. This may be because most of the farmers in the study are married and they could be held up by household responsibilities.

Years of schooling

The level of education may not be one of the requirements to participate in farmer development programmes, however, could considerably impact the performance of the smallholders. The results found that years of schooling was statistically significant with a positive coefficient. These findings concur with Etwire, *et al.*, (2013) who found that the number of years of schooling is statistically significant in determining farmers' participation in agricultural projects. These findings can also be supported by a study done in the rural North-West province by Ijatuyi *et al.,* (2022) who discovered that the educational status of women is one of the determinants of the entrepreneurial development of the Award incentives and Competition (AIC) programme. This is due to the fact that the majority (40%) of the farmers in the study area completed the education level at tertiary and another 40% attended school as far as the secondary level. Implying the more years of schooling the farmer is exposed to, the more the likelihood of them benefiting and participating in farmer development projects due to the broader knowledge they acquired while

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schooling. This implies that there is no guarantee that farmers with a high level of education will benefit from the transformation programme.

Farming qualification of the farmer

Education, particularly farm-related education, is associated with benefits such as functional skills improvement, exposure to agribusiness competencies such as farm planning and budgeting as well, understanding of agronomic practices (Etwire *et al*., 2013). As anticipated, formal agricultural qualification was positive and statistically significant with 0.000 at a 5% significant level. The coefficient implies that the more the farmer obtains a formal agricultural qualification, the higher the probability of the farmer benefiting from the statutory levy. This indicates that a unit increase in the black emerging macadamia farmer's formal agricultural qualification will increase their chances of benefiting from the transformation programme through the statutory levy by 4.676. This could be because an educated farmer is more likely to adopt a programme than an uneducated farmer.

Years of farming

Years of farming of a farmer was found to be statistically significant at a 10% level of significance with a negative coefficient. This implies that a unit increase in years of farming, the lesser the probability of the farmer benefitting from the transformation programme funded by the statutory levies.

Membership association

Participation in industry associations enhances your network, enables support and greater access to resources and information (Shiferaw *et al.*,2011). The coefficient of membership association was found to be positive and statistically significant. The study found that 75% of the farmers were associated with the industry body and 35% were not members of the industry body. These results support another criteria selection of the SAMAC (2018), which encourages all beneficiaries to become members of the organisation to benefit from the transformation programme.

4.3.1.2. Insignificant variables.

1. Gender

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The gender of the farmers was found to be statistically insignificant with a positive coefficient for influencing beneficiation from the transformation programme funded by the statutory levies. These results mean a shift in farmer's gender from male to female may increase participating and benefiting from the farmer support programmes. These results are however contrary to some findings of Nwaobiala (2014) while they can also be supported by the other findings of the same author in the same study of socio-economic factors influencing the participation of farmers in two states of Nigeria from a different farmer support programme. The researcher revealed that the gender of the farmers was significant in the Abia and Cross River states but the coefficients were positive and negative respectively. In South Africa, Nxumalo and Oladele, 2017 conducted a study on factors affecting farmers' participation in agricultural programmes and found that the gender of the farmers in the Zululand District was a significant determinant of participation however, the coefficient was negative at -2.93.

2. Age of the farmer

The coefficient estimates of the age of the farmer results reveal a positive influence. The results imply that the older the farmer gets, the greater the probability of benefiting from the transformation programme through the statutory levy. The coefficient value signifies that a one-unit increase in the age of the farmer will increase the probability of the farmer benefiting from the statutory levy. With the mean, age of farmers in the study being 56 years, this could be because of the level of experience and their higher willingness to engage in programmes associated with agriculture. However, this variable was found to be statistically insignificant. These results cannot be supported by Phatudi-Mphahlele (2016) who also found age to be positive but a statistically significant effect on participation in CASP compared to this study, but can however be supported by the findings of Shabangu (2021) who discovered that the age of the farmer was statistically insignificant when determining the factors influencing participation of farmers in farmer support programmes (Recapitalization and Development Programme) on its beneficiaries in KwaZulu - Natal. Still in Kwa-Zulu Natal in the Zululand District Nxumalo and Oladele found a positive and significant relationship with participation in agricultural programmes. Mapholi *et al*., (2014) reported that in the North West, age as a socio-economic factor influences the failure of the farmer empowerment programmes. This implies that age does not consistently influence beneficiation /participation in the farmer support programmes because of variations of age groups participating in the agricultural sector.

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3. Source of income

The negative, statistically source of income coefficient (see, Table 4.4) indicates that as the sources of income increase, the likelihood that farmers will benefit from the transformation programme funded by the statutory levy will decrease by 0.049. With reference to distributive justice, the results are intuitively accepted because farmers that have access to other sources of income indicate that they are not as poor as those who do not have any sources of income. Farmers exposed to various sources of income have the opportunity to mobilize resources since they are high earners and they do not need empowerment /assistance. These results concur with those of Nxumalo (2017) who found that income had a significant yet negative influence on farmers' participation and beneficiation towards the agricultural projects, even though the transformation programme funded by the statutory levy was not one of the programmes reviewed. In Mkhonto municipality, Mpumalanga province of South Africa, Kgosiemang (2017) also found that the income of the farmer was significant unlike Nxumalo (2017), which indicated a positive influence as a factor that influences participation in Agricultural projects.

4. Household size

The household size of the farmer was found to have a positive coefficient but not as statistically significant as expected. These findings were inconsistent with the findings of Bothloko (2013) who reported that in the Ngaka Modiri Molema District Municipality household was found to be statistically significant as a socio-economic factor that could affect participation in agricultural projects.

Tenure status

Tenure status was of the socio-economic factors that were used to investigate its influence on beneficiation from the transformation programme. Table 4.4 above show that tenure status had a positive influence towards beneficiation.

6. Farm size

Khoza *et al.*, (2019) found out that area under production influences the extent to which the farmer participates in the agro-processing industry. Revealing that the bigger the farm (in hectares), the greater the responsibility of ensuring the most likely the farmer will need assistance and development. In addition, a study by Ramashia (2019) about socio-economic factors that influence MAFISA-funded farmer's loan repayment, which inversely determines loan procurement, found land size statistically significant in influencing loan payments, However, farm

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size in this study was found to be statistically insignificant with a negative coefficient. This negative coefficient is acceptable given the fact that the average age of the black emerging farmers in this study is 56 years, these are farmers whose capabilities of handling the farm are limited.

7. Number of trees

Table 4.4. shows that number of established macadamia trees had a significant influence ($p<0.02$) at a 5% significant level. The coefficient indicates that farmers which have a larger number of trees are likely to benefit from the statutory levy. This revealed that a unit increase in the number of established macadamia trees a farmer has, the greater the likelihood of benefiting from the transformation programme through the statutory levy.

8. Agricultural extension

The coefficient of the agricultural extension variable was found to be positive at a 5% level of significance. This implied that if the farmer has access or exposure to extension services the greater the probability of benefitting from the transformation programme through the statutory levy. The value suggests that a unit increase in the exposure to the agricultural extension has a greater probability of benefitting from the transformation programme through the statutory levy. These results concur with those of Njiru *et al.,* (2021). Frequent meeting with extension personnel plays an effect on livelihood outcomes (Gininda *et al.*, 2014). The author who examined the effect of a farmer development project called Micro Agricultural Financial Institutions of South Africa (MAFISA) on livelihood, found frequent exposure to extension services to be statistically significant. Revealing that exposure to extension services has a consistent influence on farmer projects.

4.3.3. Tobit regression model results of the impact of the transformation programme on farmer's enterprise and skills development

The impact of the transformation programme on farmers' enterprise and skills development included the dependent variable that was created through table 4.2 frequency results of the enterprise and skills development activities that farmers received assistance through the programme. The evaluation of the transformation programme on farmer's enterprise and skills development is relative hence the use of principal component analysis (PCA) to quantify the level of impact of the transformation programme by generating indices that were further used as the dependent variable for the Tobit regression model. As indicated in chapter 3, the processes followed in generating the new dependent variable included a total summing of the development

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activities the farmer's benefitting from and dividing them against the total number of the development activities. The independent variables included gender, age, marital status, household size, years of schooling, farming qualification, tenure status, farm size, number of trees, years of farming, agricultural extension and membership association. Literature is intertwined with the challenges faced by emerging farmers as well as the influence of these above-mentioned variables in terms of enterprise and skills development thus, the use of these socioeconomic factors to assess the effectiveness of the transformation programme. Table 4.5 below shows the Tobit regression results of the impact of the transformation programme on beneficiaries' enterprise and skills development.

Table 4.5 below shows the results of the Tobit regression model and show that the model produced a good fit for the data based on the log-likelihood value is -16.76, Likelihood ratio Chi-square parameter (12) of 38.75 is statistically significant (p>0.001) at 1% in explaining the dependent variable. The Tobit regression results revealed that only two variables included in the model (farming qualification and membership association) were statistically significant at p>0.013and p>0.000 respectively. Table 4.5 also revealed that in this study only farming qualification and membership association were statistically significant. The model's predicted significant variables imply that these variables are important to consider when implementing initiatives.

Table 4.5: The impact of the transformation programme on beneficiaries' enterprise and skills development

Variables	*Coefficients*	*Std.Err.*	*T*	*P>|t|*
Gender	-0.040	0.001	-1.02	0.310
Age	-0.001	0.002	-0.89	0.374
Marital status	0.030	0.031	0.97	0.332
Household size	0.000	0.010	0.01	0.989
Years of schooling	0.001	0.004	0.18	0.859
Farming qualification	-0.097**	0.039	-2.51	0.013
Tenure status	0.025	0.020	1.23	0.222
Farm size	0.001	0.005	0.24	0.813
Number of trees	0.019	0.164	1.17	0.246
Years of farming	0.000	0.002	0.24	0.813
Agric. Extension	-0.117	0.081	-1.45	0.149

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Membership association	-0.199***	0.049	-4.06	0.000
_cos	0.138	0.141	0.98	0.330
/sigma	0.215	0.015		

Number observations:

LR chi2 (12) =38.75

Prob>chi2=0.0001

Loglikelihood= -16.76

Note: *, **, *** represents 10%, 5% and 1% respectively *Source: Survey data (2021)*

4.3.2.1. Statistically significant variables

Farming qualification

Farmer's farming qualification was statistically significant at a 5% level indicating that the lesser the farming qualification obtained by the respondents, the better the likelihood of the farmer showing a change in skills and enterprise development. This could be because when farmers obtain formal agricultural qualifications, they could have acquired all the basic and introductory knowledge related to agriculture. Meaning when they participate in the programme that offers human and physical capital empowerment they can be exposed to more knowledge. The coefficient of this variable was however found to be negative (-0.097). This could be because the study found that the majority of the respondents indicated that they do not have any agricultural qualifications and the majority were exposed to agricultural extension services and hence rely on their services for farm related expertise, knowledge and skills.

Membership association

The results of the analysis show that the coefficient for membership association from the industry body in Table 4.5 above is negative (0.199) and statistically significant at a 1% level of significance. This indicates that development increases with non-membership of a farmers 'group by 0.000%. Most of the respondents (94%) indicated that they are affiliated with the industry body of the macadamia (SAMAC, 2014). The findings contrast with expectations as found by Oladele (2017) that found that affiliation to organisations positively impacts the social capital of the beneficiaries under the MAFISA programme.

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4.3.3. Thematic content analysis results of the views and challenges faced by the beneficiaries

In this section, the beneficiaries and key informants view the transformation programme through the statutory levy, the impact of the transformation programme funded through the statutory levy as well as the challenges and needs of the black emerging macadamia farmers in the Vhembe District Municipality.

4.3.3.1. Beneficiaries' views

Farmers general perspective

Table 4.6 below presents the results of the general perspective of the SAMAC transformation programme by black emerging macadamia farmers from the Vhembe District Municipality. Farmers had the following rating categories to choose from: very excellent, good, fair/average, bad, very bad and no opinion.

Table 4.6: Results of the farmer's general perspective of the SAMAC transformation programme

	Likert scale responses						
	Very excellent	Good	Fair/Average	Bad	Very bad	No opinion	Total
Thulamela	19	14	18	6	2	9	68
Makhado	17	26	15	5	3	18	84
Total respondents	36	40	33	11	5	27	152
Total percentage (%)	23.7	26.3	21.7	7.2	3.3	17.8	100

Source: Survey data (2021)

A total of 152 black emerging farmers were interviewed for the study to give their general viewpoint, and it was found (See, Table 4.6 above) that 36 (19 from Thulamela and 17 from Makhado) farmers rated the programme very excellent, with a combined percentage of 23.7 percent. With a combined proportion of 26.3 percent, 40 respondents,14 from the Thulamela Local Municipality and 26 from the Makhado Local Municipality, revealed that their general

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perspective of the transformation is that it is a good programme. With a total percentage of 21,7 % and a total number of 33 respondents with most (18) of them who were from Thulamela Local Municipality and 15 from Makhado Local Municipality, considered the programme a fair/average programme. The transformation programme received a poor rating of bad transformation programme from 6 respondents from Thulamela Local Municipality while 5 respondents from Makhado Local Municipality also gave it a similar rating of bad. The SAMAC transformation programme was assessed as a very bad programme by a total of 5 respondents, 3 from Makhado and 2 from Thulamela Local Municipality.

Farmers' satisfactory level of the SAMAC transformation programme

Table 4.7 shows the results of the black emerging macadamia farmers' satisfaction level with the SAMAC transformation programme in the Vhembe District Municipality.

Table 4.7: Results of the farmer's satisfaction level with the SAMAC transformation programme

	Likert scale responses						
	CS	**MS**	**PS**	**MD**	**CD**	**No opinion**	**Total**
Thulamela	14	14	16	7	8	9	68
Makhado	16	22	14	7	6	19	84
Total Number of respondents	30	36	30	14	14	28	152
Total percentage (%)	19.7	23.7	19.7	9.2	9.2	18.4	100

Source: Survey data (2021)

The above represents CS=Completely satisfied, MS=Mostly satisfied, PS=Partially satisfied, MD=Mostly dissatisfied and CD=Completely dissatisfied

Table 4.7 above reveals the Likert scale responses of farmers' satisfaction level of the SAMAC transformation programme across the two local municipalities that consists of black emerging macadamia farmers. 68 farmers from Thulamela Local Municipality were interviewed whereas 84 were interviewed in Makhado. In comparison to the two local municipalities, it was found that 14

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of the respondents from Thulamela Local Municipality were completely satisfied with the SAMAC transformation programme and 16 respondents from the Makhado Local Municipality were completely satisfied. Only 14 respondents from Thulamela were mostly satisfied with the transformation programme compared to the 22 respondents from Makhado that were also found to be mostly satisfied with the SAMAC transformation programme.16 of the respondents were found to be partially satisfied and 14 respondents from Makhado were partially satisfied. Both local municipalities had the same number of 7 respondents in each local municipality of farmers that were mostly dissatisfied with the transformation programme. Thulamela Local Municipality had the most number of respondents with 8 respondents compared to 6 from the Makhado Local Municipality, they were also completely dissatisfied. Makhado Local Municipality also had more than double (19) the number of respondents that had no opinion about their satisfaction level with the SAMAC transformation programme compared to Thulamela Local Municipality with only 8 respondents. This reveals that most of the farmers from Makhado were mostly satisfied with the SAMAC transformation programme whereas farmers from Thulamela were partially satisfied with the SAMAC transformation programme.

4.3.3.2. Key informants' view of the statutory levy-funded for transformation

This section is directed at outlining how the interviewee (key informants) in their response perceived the transformation programmes through the statutory levy as well their expectations, shortfalls or opportunities of the programme. To identify the gap, this study includes conversations, views and opinions of the eight (8) key informants within the horticultural, particularly the macadamia, industry.

It was found that 50% (n=4) of the extension officers perceived the transformation programmes through the statutory levy as a good programme that assists farmers, whilst 25% (n=2) indicated that it was an excellent programme. One (12.5%) key informant revealed that the programme was a fair/average programme whereas, another key informant with a ratio of 12.5% ranked the programme below average and stated it was a bad programme.

Upon engaging with the questionnaire (See Appendix D), all the key informants positively boasted about the transformation programme through the statutory levy. Eight (100%) of the key informants indicated that they think the transformation programme provided impact and changes to the beneficiaries' enterprises and skills. In an interview when one of the key informants was asked how he viewed the transformation programme, often called SAMAC transformation by extension officers, he responded as follows:

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"It helped farmers with infrastructure and the massive planting of macadamia trees. They are also assisted with farming skills through study groups." Key informant 1

The participant further elaborated that the programme has provided some impact on the beneficiaries' skills and enterprise and said:

Key informant 6*: Our farmers are poor of the poorest, disadvantaged and are not working. Most of them are old aged so they need help from farmers. They are also advised as to what to do after support, these study groups are organised for the farmers.*

The above was also supported by key informants 2,4,5 7, and 6 who emphasised respectively that *transformation programmes assist farmers to receive the latest information and technical knowledge. We know have farmers that have reached a commercial level, farmers have better machinery and farmers are more productive*

Most of the extension officers also agreed that the transformation programme funded through the statutory levies impacts the development of the black emerging macadamia farmers in the Vhembe District Municipality. These results reveal that key informants believe that the transformation programme through the statutory levy is serving its intended purpose of developing farmers.

Key informants' satisfaction level with the SAMAC transformation programme

Table 4.8 below presents a summary of the key informants' satisfaction levels with the SAMAC transformation programme funded by the statutory levy.

Table 4.8: Summary of Results of the key informant's satisfaction level with the SAMAC transformation programme

	Likert scale responses %					
	CS	**MS**	**PS**	**MD**	**CD**	**Total**
Key informant's satisfaction level	25	25	50	0	0	100
Total Number of respondents	2	2	4	0	0	8

Source: Survey data (2021)

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The above represents CS=Completely satisfied, MS=Mostly satisfied, PS=Partially satisfied, MD=Mostly dissatisfied and CD=Completely dissatisfied.

The results in Table 4.8 above show that all the key informants' satisfaction level was equivalent to but not below partial satisfaction. Four key informants, which is approximately 50%, were partially satisfied with the SAMAC statutory levies funded transformation programme, 2 (25%) of the key informant's satisfaction response was that they were mostly satisfied with the programme and another 2 key informants indicated that they were completely satisfied with the programme. This reveals that the key informants are satisfied with the transformation programme funded by the statutory levy.

When the key informants were asked, what do they think the programme could be done to achieve its intended result of improving beneficiaries' skills and enterprises, Key informants 1 A indicated that:

"It may be better to assist a few farmers and mentor them till they show improvement before assisting other farmers".

Key informant 2 requested *more farm visits* while key informant 7 suggested *continuous training focused on business acumen* to help the transformation programme achieve its intended results

Key informant 1 comment about the criteria of beneficiaries' selection such as being a SAMAC member and farmer's willingness to pay a certain percentage (30%) of their input cost and added that:

"*willingness of the farmer to participate in the transformation programme could have been included in the selection criteria."*

Key informant 5 recommended emphasised that: *Our farmers lack equipment, infrastructure, machinery, diseases and pest control. Farmers must have formal training, exposure, and visits to the relevant agricultural practice.*

4.3.3.3. Challenges faced by farmers

This section contains challenges faced by black emerging macadamia farmers in Vhembe District Municipality. These challenges include their general agricultural-related challenges as well as constraints that they face related to the transformation programme through the statutory levy. Lack of machinery and infrastructure such as water and water storage, irrigation systems and fencing were the major challenges they face. The constraints also included high inputs cost, theft

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and mutilation of their macadamia nuts by primates and lack of enough land to expand their production. Challenges they faced with the transformation programme were annual membership registration which they found unnecessary, lack of regular farm visits and lack of SAMAC study groups closer to their villages.

Apart from the challenges, farmers also mentioned their needs from a list of statutory levy-funded transformation pillars their industry body (SAMAC) is permitted to assist with. Table 4.9 below indicates the major farmer's needs, highlighting areas of their enterprises and skills that require consideration. Input subsidies, acquisition of machinery and infrastructure, paying of stuff, funding opportunities and study groups were the top five needs required by farmers. The needs listed below are the farmer's major needs for their enterprise and skills development

Table 4.9: Farmer's major needs for their enterprise and skills development

Needs of the farmers	**Percentages (%)**	
	Yes	**No**
Input subsidies	74.3	25.7
Machinery	73.7	26.3
Paying of staff	61.2	38.8
Funding opportunities	56.6	43.4
Study groups	46.7	53.3
On the job	39.5	60.5
Professional services	36.8	62.5
Technical	35.5	64.5
Mentoring and coaching	34.2	65.8
Market acquisition	32.2	67.5

Source: Survey data (2021)

Most of the respondents (74.3%) indicated that they require input subsidies whereas the majority at 67.5% of the farmers in the Vhembe district municipality also indicated that acquiring market opportunities is the least of their needs. Acquisition of machinery and access to infrastructure was another major need of the farmers. More than half (73.7%) indicated that they need pre/and post-harvest machinery for their macadamia orchards.61.2% of the farmers indicated that paying of staff (farm workers) and acquisition of funding opportunities with a percentage of 56.6 of farmers were among their major need they acquire from SAMAC. Study groups were one of the most offered (69.7%) transformation pillars for skills development to the black emerging

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macadamia farmers in the Vhembe District Municipality. However, farmers indicated that out of 10 transformation variables, it was found to rank in the middle of the farmer's needs at a ratio of 46. 7%.

4.4. Summary of the results

This chapter began by identifying and describing the socio-economic characteristics of the respondents. The findings revealed that the black emerging macadamia farmers in the Vhembe District Municipality are mostly male farmers, who are mostly married, had a maximum of 12 household members. The study also found that the black emerging farmers in the Vhembe District Municipality also revealed that with an average age of 55 years and attended school for an average of 11 years. The farmers in the study area revealed that their tenure status is communal land which they acquire a minimum of 5 hectares and that they have an average of 12 years of farming. This chapter also revealed the findings of the socio-economic characteristics that influence beneficiation towards the transformation programme. The binary results of the study revealed that there are socio-economic factors that positively influence benefitting and participating in the transformation programme. Some of the evidence produced by other authors are in line with the findings of this study while others were not. It can therefore be concluded that socio-economic factors that influences transformation programme are different. The impact and the use of the transformation programme on emerging black macadamia farmers' enterprise and skills developments results were also highlighted in this chapter. The findings of this study indicated that only a few factors had an impact on farmers' enterprise and skills development. The thematic beneficiaries' views, experiences and challenges they face with regard to the transformation informants programme funded by the statutory levies are also included in this chapter. Most of the respondents were satisfied with the transformation programme however, they also highlighted that input subsides, machinery and paying of staff are their major needs.

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CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

This chapter provides a summary and the conclusion obtained from the results of the study and outlines the policy recommendations for the study, together with areas for further study.

5.2 Summary

Since the deregulation of the South African agricultural sector between 1937 and the first democratic elections of 1994, the sector has had major farmer development changes amongst which includes the transformation of farmers funded through the statutory measures made possible by the MAP Act No. 47 of 1996. According to NAMC (2015), the statutory measures refers to “compulsory registration, records and returns, control of exports of agricultural products and payment of levies”. The statutory levies are collected to finance six core functions including a 20% expenditure of the statutory levies on transformation activities. Over 70% of the collect levies for the functions of transformation are to be spent on the beneficiary’s enterprise and skills development whereas the remaining 30% can be allocated for management control, employment equity and socio-economic development ownership (NAMC, 2018). The enterprise and supplier development and skills development funded by the transformation programme of the statutory levies are for input subsidies, acquisition of market, financial and professional services, exposure to study groups, workshops, on-the-job training, technical services, mentorship and coaching (*idib*). The study aimed to assess the beneficiation of black emerging macadamia farmers in the Vhembe District Municipality from the transformation programme funded by the statutory levies. One hundred and fifty-two (152) black emerging macadamia farmers who are the beneficiaries of the transformation programme funded by the statutory levy constitute the data of the study.

The first objective of the study was to analyse and describe the socio-economic characteristics of the study. Percentages, frequencies, pie charts and tables were used to present the results of the descriptive analysis. The study found that the majority (56%) of the macadamia farmers are in the Makhado Local Municipality. With regards to gender distribution, the findings of the study revealed a higher number of male black emerging macadamia farmers compared to female farmers. The average age of the farmers was 56 years with a household size of 5 persons with the most common marital status was revealed to be married. Referring to the farmer’s level of education, the findings of the study discovered that in the Vhembe District Municipality, black emerging

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macadamia farmers attended school as far as secondary level and tertiary level, at a ratio of 39.5% and 40.1% respectively with the average years of schooling revealed to be 11 years. In terms of formal agricultural qualification, the findings of the study indicated that 82% of the farmers do not hold any formal certificate, diploma or even a degree that is related to agriculture. Communal land was the most common tenure system for the black emerging macadamia farmers in the systems in the Vhembe District Municipality with an average farm size of 6.0382 hectares of land. Concerning the number of established macadamia trees, the data surveyed revealed majority (43%) of the farmers in the Vhembe District Municipality had less than 1000 established trees (trees that can produce macadamias) in their orchards. The results also showed that farming (41.4%) and social grants (38%), inclusive of child support and / old age grant were the main sources of farmers' income. The survey said farmers (92%) were exposed to extension services whilst only 8% indicated otherwise. The most common source of extension services for the farmers that received the services such as provisions of information, skills and knowledge were from the government department, LDARD to be specific. Approximately 75% of the farmers indicated that they are associated and affiliated members of their industry body which is Macadamia South Africa NPC (SAMAC) while 25% indicated that they are not members yet.

The second objective of the study was to analyse the socio-economic characteristics that influence beneficiation towards the transformation programme funded by the statutory levy. A binary logistic regression model was used to investigate the socio-economic characteristics within the sample. In this analysis seven out of sixteen socio-economic variables were found statistically significant to influence beneficiation from the transformation programme funded by the statutory levies, indicating that socio-economic factors do not always influence beneficiation from development programmes.

The second objective data was analysed using Principal Component Analysis (PCA) and Tobit regression model. PCA was employed to identify the level of impact of the transformation programme based on the activities farmers received assistance through the transformation programme of SAMAC. In an attempt to address this objective, the respondents were asked if they benefitted from the enterprise and skills development activities and to identify all the activities they obtained assistance from. Stata Version 14 was used as the analytical tool and only two of the coefficient of the explanatory variable had expected parameters and signs indicating their significance out of the eleven (11) independent variables which are farming qualification and membership association. They were both negative at significant at 5% and 1% respectively.

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The beneficiaries' views, constraints they are facing as well as key informants' views of the transformation programme. The respondents indicated the top needs that the transformation programme should cater for which includes input subsidies and machinery acquisition reported by over 70% of the respondents. The main challenges affecting the beneficiaries of the transformation programme funded by the statutory levies in the Vhembe District Municipality were lack of machinery and infrastructure such as water and water storage, irrigation systems and fencing as well as regular farm visits by the SAMAC transformation manager as reposted by the majority of the respondents. Key informants' satisfaction levels with the SAMAC transformation programme, as affectionately known to them were assessed. Over 50% of them indicated that they were partially satisfied whereas about 25% were mostly satisfied and another 25% revealed that they were completely satisfied with the programme. To ensure that the intent of the programme is being released, one of the key informants suggested that the programme should assist a few farmers, mentor them till they show improvement before assisting others. Similarly, the respondent's satisfaction levels of the SAMAC transformation programme were also assessed as well as their general perspective of the transformation programme. About 23.7% (n=36) of the respondents revealed that they believe the programme is very excellent and has provided some impact on their skills and/enterprises whereas about 21.7% of the respondents deemed the programme fair and average. The positive perspective could be because the farmers benefited from some/all the development variables. 18.4%(n=28) had no opinion about the programmes, 9.2% were mostly and completely dissatisfied. This could be because they have never been assisted with skills and enterprise development by the transformation programme.

5.3. Conclusion

Based on the key findings of the study, the following conclusion is drawn:

5.3.1. Hypotheses testing

H1: *Socio-economic characteristics such as gender, age, educational level, household income, do not influence beneficiation towards statutory levy for transformation*.

The results of this study showed that there is a difference in socio-economic characteristics that influences beneficiation from the transformation programme funded by the statutory levy**.** The null hypothesis was therefore rejected since it was observed from the test that household income influences beneficiation from the transformation programme funded by the statutory levies.

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H2: *The use of statutory levy for transformation has an impact on black emerging macadamia farmers' enterprise and skills development.*

The results of the study revealed that only a few (two) of the socio-economic variables out of a total of eleven were statistically significant, indicating that they had a positive and negative impact on the development of farmers' skills and enterprises.

This research was set out to critically determine whether beneficiaries of the transformation activities funded by the statutory levies are benefiting from these enterprise and skills developments activities stipulated by NAMC and SAMAC in the transformation guidelines. The researcher questioned whether the intent of the MAP act 47 of 1997 of ensuring and promoting efficiency in the agricultural sector is being realized. The researcher also examined how other farmer support projects attempted rural development and agricultural transformation and how these programmes, together with the transformation programmes of the statutory levies impact farmer development. It was expected that the transformation programme funded by the statutory levies in the Vhembe District Municipality of the Limpopo province is providing enterprise and skills activities through the transformation programme funded by the statutory levies, implying that the programme is among other activities improving farmers' skills and enterprises. However, from the findings of the analysis, such expectations were only partially achieved. There were both negative and positive aspects to the results. The positive success stories (See, Appendix C) and aspects revealed by the results of the study include exposure to workshops and training where close to 70% of the respondents received assistance with regards to skills, some acquired inputs machinery and irrigation systems, whereas concerning enterprise development activities, over 80% of the respondents indicated that they have not been assisted with physical capital.

The findings in this study concur with those of other researchers who observed the socio-economic characteristics of the farmers in other farmer support programmes across Africa. Moreover, the results of this study collaborate with some of the other researchers and authors about the factors that influence beneficiation and participation towards the farmer transformation programme although the projects were different but they had similar key areas.

5.4. Policy Recommendations

The following recommendations were made from the study:

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Farmers expressed the challenges that they are facings as well as enlisted their most essential needs from the transformation programme. It is recommended to the stakeholder such as SAMAC, NAMC and DARLLD should extend to the transformation needs and fairly provide support skills and enterprises variables that are needed by the beneficiaries.

Regarding enterprise development, it was found that the majority of the farmers were not assisted for activities such as infrastructure, machinery and all the day-to-day farm related activities enlisted in the NAMC guideline whereas study groups were the most common type of assistance reported by the farmers. It is recommended that the transformation programme should prioritize the physical capital (machinery, infrastructure etc.) and direct more efforts towards factors that impact the development of farmers.

It is recommended that extension officers and SAMAC should encourage farmers to continue schooling, acquire agricultural qualifications, even if it is basic farm-related certificates and inspire farmers to continue farming because these socio-economic variables can significantly influence beneficiation from the transformation programme.

Farming qualification and membership association are significant for the development of farmers. This means they both have an impact on the development of beneficiaries to improve their skills and enterprise. There is a need to ensure that farmers acquire farming qualifications and there is an association with the industry bodies. The study further recommends that there should be continuous engagement between SAMAC and LDARD and that they establish effective communication with the beneficiaries to ensure that the farmers are offered the quarterly study groups.

Farmers also expressed their dissatisfaction about the frequency of SAMAC transformation managers as well as extension workers. The study recommends that these stakeholders should improve their engagement with emerging farmers.

Key informants suggested the need to monitor and evaluate the programme on individuals that benefitted and track the progress and the impact of the initiative funded through the levies. The study also recommends that stakeholders should monitor the progress and mentor the beneficiaries before assisting more farmers.

5.5 Areas for further research

During the study, certain areas that require further investigation were identified as follows:

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This study was only concentrating on assessing the beneficiation of black emerging macadamia farmers from the transformation programme funded by the statutory levy. Future studies should consider different commodities around the various provinces in South Africa. Future studies should evaluate the impact of the transformation programme on farmers' food security, livelihood, productivity and total farm income in different parts of South Africa.

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APPENDICES:

Appendix A: Transformation success stories

This section highlights some of the success stories that have been shared by the beneficiaries during the survey, indicating some of the areas of skills and enterprise development that farmers benefitted from.

Observation of the skills development: study groups

The researcher had an opportunity to observe a quarterly study group for emerging farmers about pest and disease control management of macadamia nuts that took place in one of the farmer's orchards and the event was organised by SAMAC. Around 40 individuals joined including farmers, Agricultural Research Council (ARC), First National Bank(FNB) and Limpopo Department of Agriculture and Rural Development (LDARD) extension officers.

Figure: An observation of the study group in Duthuni village, Limpopo province.

The researcher visited an orchard of one of the beneficiaries of the transformation programme and observed some of the tress and infrastructure that they acquired through the transformation programme in 2020.

Figure: Evidence of some of the inputs and machinery the beneficiaries acquired through the transformation programme of SAMAC.

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Appendix B: Respondents 'information sheet

Consent letter

University of Venda

Faculty of Science, Engineering and Agriculture

School of Agriculture

Department of Agricultural Economics and Agribusiness

My name is Basetsana Christine Mokwite. I am a student doing a Master of Science (MScAEN) in the Department of Agricultural Economics and Agribusiness at The University of Venda. I am conducting research on **ASSESSING BENEFICIATION OF BLACK EMERGING MACADAMIA FARMERS FROM STATUTORY LEVY PROGRAMME IN VHEMBE DISTRICT, LIMPOPO PROVINCE, SOUTH AFRICA**

You have been selected to participate in this study because you are a beneficiary of the statutory transformation levy and you have obtained assistance from the levy for transformational purposes. You will unfortunately not benefit from your participation as an individual, however, it is envisioned that your participation and findings of this study will contribute towards ensuring a sustainable and transformed agriculture.

This research is for academic purposes only and by participating in this study, you agree that this information may be used for this research purpose including dissemination through research reports, publications and conference papers. You are asked to complete the survey about this research.

Your participation is voluntary, and you can withdraw at any time without penalty. Your responses will be kept confidential. By completing the survey, you indicate that you voluntarily participate in this research.

For further information, you may contact my Supervisor, Prof I B Oluwatayo on the following numbers:

Cell: +27 78 449 3162

Office: +27 (015) 962 9373

…….. ……

SIGNATURE OF RESPONDENT DATE

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Appendix C-Farmer's consent form

Farmers consent form

University of Venda

Faculty of Science, Engineering and Agriculture

Department of Agricultural Economics and Agribusiness

TOPIC: ASSESSING BENEFICIATION OF BLACK EMERGING MACADAMIA FARMERS FROM STATUTORY LEVY PROGRAMME IN VHEMBE DISTRICT, LIMPOPO PROVINCE, SOUTH AFRICA

The consent form is designed to check that you understand the purpose of the studyand that you are aware of your rights as a participant and to confirm that you are willing to take part.

Please tick as appropriate	YES	NO
1. The nature of the study has been described to me.		
2. I have received sufficient information about the study for me to decidewhether to take part.		
3. I understand that I am free to refuse to take part if I wish.		
4. I understand that I may withdraw from the study at any time withouthaving to provide a reason.		
5. I know that I can ask for further information about the study from theresearch team.		
6. I understand that all information arising from the study will be treatedas confidential.		
7. I know that it will not be possible to identify an individual respondent in the study report, including myself.		
8. I agree to take part in the study.		
Name in block letters		

I confirm that quotations from the interview can be used in the final research reportand publications. I understand that this will be used anonymously and that noindividual respondent will be identified in the report.

Signature:	Date:		

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Appendix D: Research Questionnaire

FARMER'S QUESTIONNAIRE

UNIVERSITY OF VENDA

Faculty of Science, Engineering, and Agriculture

School of Agriculture

Department of Agricultural Economics and Agribusiness.

TITLE: ASSESSING BENEFICIATION OF BLACK EMERGING MACADAMIA FARMERS FROM STATUTORY LEVY PROGRAMME IN VHEMBE DISTRICT, LIMPOPO PROVINCE, SOUTH AFRICA

RESEARCHER: BASETSANA CHRISTINE MOKWITE

Questionnaire no: .....

Name of the local municipality: .....

Date of interview: .....

SECTION A

DEMOGRAPHIC PROFILE

Instructions: Select an option by using X in the correct space provided

1. SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

1.1. Gender:

Male	1	
Female	2	

1.2. Age (years):

……

1.3. Marital status:

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Single	1	
Married	2	
Widowed	3	
Divorced	4	
Other, please specify:	5	

1.4. Level of education:

No formal education	1	
Primary school only	2	
Secondary school	3	
Tertiary	4	
Other, please specify	5	

1.5. Years of schooling: ……

1.6. What is your primary source of household income?

Farming	1	
Pension	2	
Salary	3	
Wage	4	

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Social grants	5	
Other, please specify	6	

1.7. Household size: ……

1.8. Do you have any formal agricultural qualifications?

Yes	1	
No	2	

1.9. How long have you've been farming?.....

1.10. What is your tenure status?

Own land	1	
Inherited	2	
Leased	3	
Bought	4	
Other, please specify	5	

1.11. How many hectares of land is your farm?.....

1.12. How many established macadamias do you have?.....

1.13. Do you receive Agricultural extension services?

Yes	1	
No	2	

1.14. If Yes to question 1.11, who provides the extension services?

Government department	1	
Non-government organizations	2	
Development agents	3	

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Other, please specify	**4**	

1.15. Are you a member of SAMAC?

Yes	1	
No	**2**	

1.16. When did you become a member?

……

……

SECTION B

ENTERPRISE AND SKILLS DEVELOPMENT INFORMATION

Evaluation of the use of statutory levy for the transformation of emerging black macadamia farmer's enterprise and skills

INSTRUCTIONS: *Below are the question regarding the statutory levy for transformation by SAMAC. You are kindly requested to answer the following questions by crossing (X) on the relevant block or writing down your answer in the space provided to assess the impact of the statutory levy for the transformation of your enterprise and skills development.*

2. Skills Development support

2.1. **Have you've ever received assistance from SAMAC?**

Yes	1	
No	2	

2.2. If yes to question 2.2, when last did you receive it?

……

……

2.3. If No to question 2.1, which stakeholder assisted you with skills development

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AGRISETA	1	
LDARD	2	
Private training provider	3	
Other (please specify)	4	

2.4. If yes to question 2.1, Please tick the type of skills you acquired from the SAMAC transformation programme

Study group and workshops (offered knowledge on production, financial management, administrative, marketing)	1	
Acquired Technical services assistance (advisory)	2	
Training (off/ on-farm training)	3	
Coaching and mentorship	4	

2.5. How often do you receive assistance from SAMAC?

Once a year	1	
2-5 times a year	2	
6-10 times a year	3	
More than 10 times a year	4	
Never	5	

3. Enterprise development support

3.1. **Have you've ever received enterprise development assistance from SAMAC?**

Yes	1	
No	2	

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3.2. **Please indicate which type of enterprise development you receive**

Acquired professional services (e.g., Legal services, business plan, etc.)	3	
Explored financial assistance and alternatives	5	
Acquired equipment, infrastructure, and machinery (e.g. Boom sprayer, de-husking machine, slasher, drying bin, water dams/reservoirs, irrigation and water pumping equipment, boreholes, fencing, storage house	6	
Explored market opportunities	7	
Other (please specify)	8	

3.3. What is the name of the place where you buy supplies?

……

……

3.4. Who do you supply your products to?

……

……

3.5. Who assisted with marketing opportunities?

……

……

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4. IMPACT OF THE TRANSFORMATION PROGRAMME

4.1. What are the changes you have seen since receiving assistance from the SAMAC transformation programme?

Changes since benefitting from the transformation programme	Yes	No
Has your farm size increased since receiving assistance from SAMAC?		
Has your number of trees increased since receiving assistance from SAMAC		
Have you've had access to financial support from institutions since receiving assistance from SAMAC		
Have your overall income changed since receiving assistance from SAMAC		
Are you able to access a bigger market?		
Has this programme provided some impact/change in the business? (please specify)		
Has this programme added value to your enterprise and skills (please specify)		
Has your skills and knowledge improved since receiving assistance from SAMAC?		
Has your farming equipment improved since receiving assistance from SAMAC?		
Do you think you have your farming enterprise and skills have improved since receiving assistance from SAMAC?		
Please indicate any other change received from SAMAC		

Section C

Beneficiaries' views, experiences, and challenges with the statutory levy for transformation.

4. Beneficiaries' views and experience

4.1. What is your general perspective of the SAMAC transformation programme?

Very excellent	1	

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Good	2	
Fair/ average	3	
Bad	4	
Very bad	5	

4.2. How satisfied are you with the SAMAC transformation programme?

Completely satisfied	1	
Mostly satisfied	2	
Partially satisfied	3	
Mostly dissatisfied	4	
Completely dissatisfied	5	

4.2. What are your most important needs for your farm?

Funding for inputs	1	
Funding to pay staff	2	
Funding for infrastructure, machinery, and equipment	3	
Funding for professional services	4	
Exploration of market opportunities	5	
Exploration of funding alternatives	6	
Technical services	7	
Professional services	8	
Coaching and mentorship	9	
On the job training	10	
Study groups	11	
Other (Please specify)	12	

4.3. List major problems that are faced by your farming enterprise?

……

……

……

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4.4. How are you addressing the above challenges?

……

4.5. According to you, what are the weaknesses and strengths of the programme?

……..……

……..……

Thank you, your participation is highly appreciated.

Compiled by Mokwite Basetsana Christine from the University of Venda

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Appendix E: Proof reading report

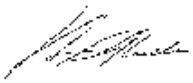
P.O BOX 663
THOLONGWE
0734
13 March 2022

Dear Sir/Madam

This is to certify that the thesis entitled "Assessing beneficiation of black emerging macadamia farmers from the statutory levy for transformation in Vhembe District, Limpopo Province, South Africa" by Mokwite Basetsana Christine, student number 11640879 has been edited and proofread for grammar, spelling, punctuation, overall style and logical flow. The edits were carried out using the "Track changes" feature in MS Word, giving the author final control over whether to accept or reject effected changes prior to submission, provided the changes I recommended are effected to the text, the language is of an acceptable standard.

Please don't hesitate to contact me for any enquiry.

Kind regards



Dr. Hlaviso Motlhaka (BEDSPF-UL, BA Hons-UL, MA-IUP: USA, PhD-WITS, PGDiP-SUN)

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Appendix F: Turnitin Report

Mokwite Dissertation

ORIGINALITY REPORT

19%	18%	6%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	ulspace.ul.ac.za Internet Source	2%
2	researchspace.ukzn.ac.za Internet Source	1%
3	uir.unisa.ac.za Internet Source	1%
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