The Role of Colleges of Agriculture Towards Sustainable Community Development: A Case Study of Tompi Seleka College of Agriculture

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Declaration of Authenticity

I declare that the research project, The Role of Colleges of Agriculture Towards Sustainable Community Development: A Case Study of Tompi Seleka College of Agriculture, is my own work and that each source of information used has been acknowledged by means of a complete Harvard Referencing System. This thesis has not been submitted before for any other research project, degree or examination at any other university.

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Abstract

The study examines the role of agricultural colleges in sustainable agricultural development. The purpose of this study was to examine the relationship between the six identified colleges of agriculture in South Africa Tompi Seleka, Cedara, Grootfontein, Glen, Taung and Elsenburg and how they assist their surrounding rural communities to be sustainable. However the main focus would be in Tompi Seleka College of Agriculture in Limpopo Province where the researcher is the principal. The research paradigm of this study is interpretivism which emphasises social interaction as the basis of knowledge. The study essentially presents qualitative data, but in some instances there are indications of numbers of participants who responded in one way or the other and the quantitative data has been presented to show the level or extent of agreement of the questions asked or the weighting of the opinions of the participants.

A purposive sampling technique was employed in the selection of the 120 participants of the study. The sample consisted of 30 farmers, 10 alumni, 5 stakeholders, 5 local headmen, 10 members of the Bakone Development Forum, and 60 other individuals, comprising of 3 management staff, 3 students, 2 lecturers, and 3 administration staff from each of the six colleges of agriculture and the surrounding communities of the Tompi Seleka College of Agriculture. The qualitative data collection was performed using structured questionnaires, interviews, focus group discussions, and participant observations. The data was analysed using the ATLAS program. The results indicated that the diploma offered in the colleges of agriculture had been validated and endorsed by relevant stakeholders and agricultural industries, thus rendering it highly relevant.

The findings suggest that relevant policies that can direct colleges of agriculture in driving the socio-economic development of their surrounding communities successfully are in place. However, the study found that some of these policies need modifying to suit the intended objectives and contexts. The study also found that although agricultural colleges develop farmers' skills to improve production, the need to acquire equipment and improve college infrastructure is great. The study concludes that to perform an active and constructive role in rural development, colleges need to adjust their programmes to accommodate rural communities. Finally, the study suggested a reputation management framework for small medium enterprises that provides guidelines designed to address the challenges experienced in the services offered by these colleges in South Africa.

Keywords: Socio-Economic Development, Agricultural Development, Entrepreneurship, Service Quality, Organisational Identity, Stakeholder Management.

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List of Abbreviations

AADP	African Agricultural Development Programme
AgriBEE	Agricultural Black Economic Empowerment
AgriSETA	Agricultural Sector Education and Training Authority
ANC	African National Congress
ARC	Agricultural Research Council
ATLAS	Abbreviated Test Language for All Sytems
ATI	Agricultural Training Institutes
AU	African Union
CAADP	Comprehensive Africa Agricultural Development Programme
CHE	Council on Higher Education
DAFF	Department of Agriculture, Forestry and Fisheries
DoE	Department of Education
ECA	Elsenburg College of Agriculture
FAO	Food and Agriculture Organisation
FET	Further Education and Training
HET	Higher Education and Training
HRD	Human Resource Development
HSRC	Human Science Research Council
IISD	International Institute for Sustainable Development
LARP	Land and Agrarian Reform Programme
LRAD	Land Redistribution for Agricultural Development
MEC	Members of the Executive Councils
NDA	National Department of Agriculture
NDP	National Development Plan
NEPAD	New Partnership for Africa’s Development
NERPO	National Emergent Red Meat Producers Organisation
NQF	National Qualification Framework

OBE	Outcome Based Education
PAR	Participatory Action Research
PFMA	Public Finance Management Act
RDP	Reconstruction and Development Programme
RSA	Republic of South Africa
SAPA	South African Poultry Association
SAQA	South African Qualification Authority
SETA	Sector Education and Training Authority
TUT	Tshwane University of Technology
TVET	Technical and Vocational Education and Training
UK	United Kingdom
UL	University of Limpopo
UN	United Nations
UNISA	University of South Africa
USA	United States of America

CHAPTER 1

INTRODUCTION

1.1 Introduction

The study sets out to examine the role of agricultural colleges towards sustainable agricultural development. The chapter outlines the background to the research problem, its purpose, aim and objectives, the assumptions upon which the study is based, the theoretical framework and the approach to the study. The study used a case study approach with the Tompi Seleka College of Agriculture one of 11 agricultural colleges in South Africa as the subject of the case study.

1.1.1 Background to the Tompi Seleka College of Agriculture

In 1958, Kgoshi Shikwane Maserumule Matlala of the Bakone Ba-Matlala offered his farm Arabie for the construction of a college of agriculture. Kgoshi Matlala was one of the cabinet ministers of the former Lebowa government that had been established during the Group Areas Act of the then apartheid regime in South Africa. The Group Areas Act No. 41 of 1950 forced physical separation among races by creating different residential areas for different races. The Lebowa government was set up for the Pedi-speaking people.

The construction of the college on the Arabie farm site started the same year in 1958 and the doors opened for training in March 1960. Mr W Steynberg was the first principal. For years, the college was known as the Arabie College of Agriculture until it was renamed Tompi Seleka College of Agriculture after the first Minister of Agriculture of the former Lebowa government, the honourable Kgoshi ZT Seleka. Since then, the college has grown and developed considerably.

Tompi Seleka College of Agriculture is situated 35 km north-east of the town of Marble Hall next to the Flag Boshielo Dam in the Sekhukhune district of the Ephraim Mogale Local Municipality. The college farm is 1,470 ha in extent. About 100 ha are under irrigation, 70 ha are for field crop production and 30 ha are reserved for artificial pasture for the dairy herd. The rest is apportioned to residential areas and wildlife camps.

In 1988, TSCA was transferred to the Department of Education (DoE) by the cabinet of the then Lebowa government because it was thought that this would result in better management. It was decided that the Department of Agriculture should focus mainly on agriculturally related issues. It was during the same year that Tompi Seleka College of

Agriculture entered into an eight-year training agreement with the Pretoria Technikon now known as Tshwane University of Technology (TUT).

The purpose for this training agreement was that Tompi Seleka College of Agriculture students would be allowed to further their studies at TUT after completing their diploma courses. The programmes offered then included plant production, resource utilisation, animal production and community development. In 1996, Tompi Seleka College of Agriulture terminated its contract with the Pretoria Technikon because the Department of Agriculture wanted to give a new focus to its offerings. In 1999, the college embarked on a programme restructuring process whereby all qualifications were changed in such a way that diploma graduates would be able to run their own farms or holdings and be able to also create job opportunities for their communities.

In 2005, Tompi Seleka College of Agriculture stopped offering national diploma courses because enough graduates were running their own farms by then. In 2006 the college started offering skills development courses to farmers and extension officers. The other reason for changing offerings was mainly because the Limpopo Government wanted the college to support farmers in the Land Redistribution for Agricultural Development (LRAD) programme. The short courses that the college offers are accredited by the Agricultural Sector Education Training Authority (AgriSETA) at National Qualification Framework (NQF) Levels 1 to 4.

In 2015, Tompi Seleka College of Agriculture received re-accreditation from the Council on Higher Education to offer the National Diploma, in accordance with the directives of the Limpopo Department of Agriculture and Rural Development. The college has an established reputation in South Africa for delivering valuable National Diploma courses that have positively impacted surrounding communities. Many high-ranking officials within the Limpopo Province Department of Agriculture, including chief directors and directors of various departments, obtained their National Agricultural Diplomas from Tompi Seleka College of Agriculture between 1983 and 1988.

The purpose of this study was to examine Tompi Seleka College of Agriculture's current efforts and potential opportunities for promoting sustainable agriculture. The researcher held the position of Head of Training at Tompi Seleka College of Agriculture from 2006 to 2010 and acted as the college's principal from 2011 to 2012, before being appointed to the role on a permanent basis until his retirement in 2019. As principal, the researcher was responsible for managing the day-to-day operations of the college, including staff affairs, the curriculum, administrative matters, physical facilities, and community relations. The researcher was also accountable to the college's advisory board for implementing delegated statutory functions.

The researcher was a member of the Association of the Principals of Agricultural Colleges, which represents 11 agricultural colleges in South Africa and promotes the exchange of experiences and best practices between its members. The researcher was interested in exploring the contributions of these colleges towards the socio-economic development of the communities they serve.

1.2 Situational background

The Limpopo Province is one of the nine provinces of the Republic of South Africa (RSA) and was named after the Limpopo River which forms the border between South Africa and Zimbabwe. The Limpopo Province is predominantly rural, with agriculture as the dominant operational sector. It is an agricultural production hub for what is classified as high-value crop commodities. The handbook of the Limpopo Provincial Department of Agriculture, (2015: 13) emphasises that the predominant commodities are citrus and subtropical fruits as well as vegetables, tomatoes, and potatoes, in particular.

The red meat industry, which forms part of high-value commodities, is operational in the Waterberg and Capricorn districts which are outside the Foot and Mouth Disease (FMD) area. The South African Government has proclaimed FMD as one of the diseases that pose a threat to the agricultural sector and that need to be regularly controlled. This disease is usually experienced around Messina which is situated on the border between South Africa and Zimbabwe, and the disease is exacerbated by wild animals, particularly elephants, that randomly cross the border between the two countries.

The total land area of the Limpopo Province is 125 754 km² making it the fifth largest province in South Africa (Limpopo Provincial Department of Agriculture, 2015: 9). Four main types of land tenure occur in the Limpopo Province: commercial land (owned by banks), privately owned land, state land and communal land under the leadership of Traditional Authorities. Figure 1.1 shows the five districts of the Limpopo Province.

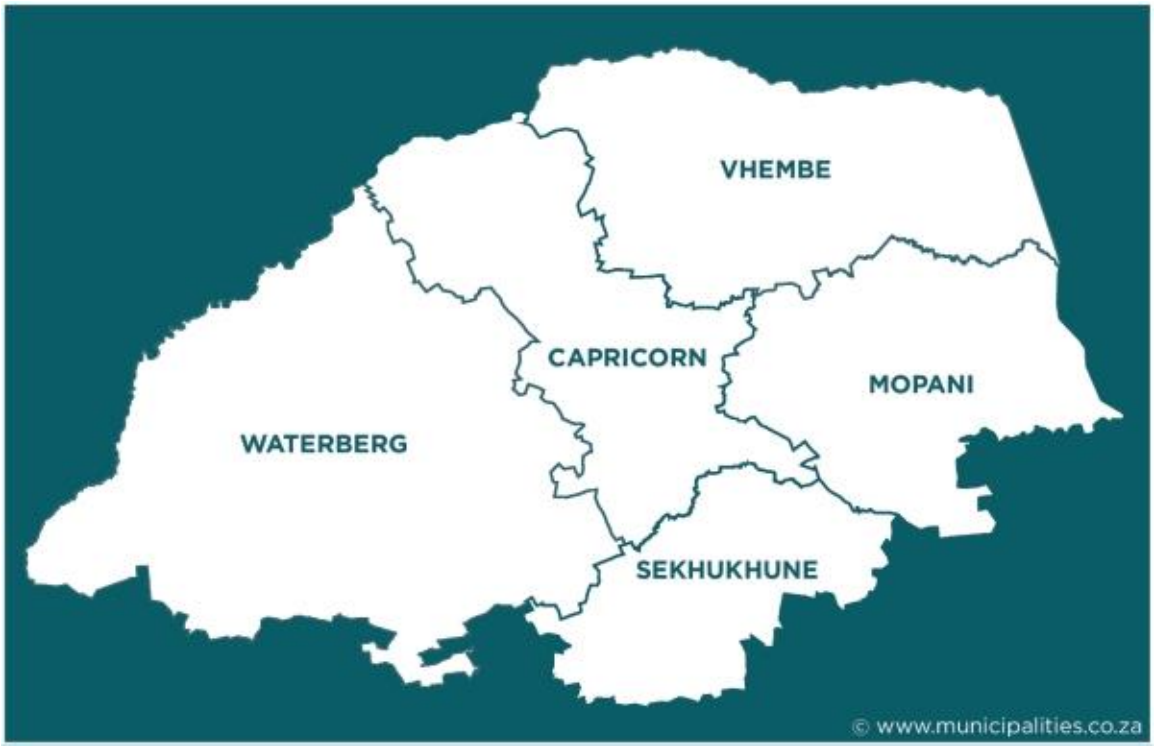

Figure 1.1: Map of Limpopo Province showing five districts (Limpopo Provincial Department of Agriculture, 2015: 9)

The development mandate that guides agriculture in the Limpopo Province is considered from different perspectives: international, regional (African continent), national, provincial and local. From the international perspective, the Sustainable Development Goals (SDGs), specifically Goal 1 (aims to eradicate extreme poverty and hunger) and Goal 7 (aims to ensure environmental sustainability) of the Food and Agriculture Organisation (2002: 2), are considered.

From an African perspective, the Comprehensive Africa Agriculture Development Programme (CAADP) contains a commitment to the allocation of at least 10 per cent of national budgetary resources to agriculture and rural development policy implementation in African states (AU, 2014: 17). From a national perspective, the Limpopo Province is guided by National Outcomes 4, 5 and 7 which stipulate decent employment through inclusive growth, a skilled and capable workforce and comprehensive rural development, respectively (Limpopo Provincial Department of Agriculture, 2015: 18, 20, 21).

The Limpopo Province is also guided by the New Growth Path (NGP) which states that there should be concrete plans for commercial farmers, emerging small-scale farmers (both subsistence and smallholder farmers) and food processing as well as the revitalisation of agricultural colleges for the generation of extension services skills (ANC, 2011: 5). The

purpose of developing these skills is to ensure that aspiring youth and established farmers are trained to become better entrepreneurs and be able to manage their projects well.

More importantly, Abalu, (2001: 7) states that the role of agricultural education is to create a cadre of people who value and understand the vital role of agriculture, communities (rural and urban) and natural resource systems in advancing the agricultural and overall economic development of a country. Students and farmers strive for knowledge because knowledge enables them to connect new information to what they already know (Higgs, 2003: 73). The National Development Plan (NDP) talks about achieving better integration of South Africa's rural areas through successful land reform, job creation and poverty alleviation (RSA, 2011: 196).

The province also gets its mandate from the Medium Term Strategic Framework (MTSF) which aims to strengthen food security and agricultural competitiveness while lifting marginalised rural households out of poverty, especially in former homeland areas (RSA, 2014: 25). The core mandate of the Limpopo Province is from the provisions of schedules 4 and 5 of the Constitution of the RSA and in accordance with Section 104, (1) b of the Constitution (RSA, 1997: 50).

1.3 Context of the study

In reality, the focus of agricultural colleges in South Africa has been to impart knowledge about farming sustainably and teaching the requisite operational skills to their students. However, the contribution of colleges of agriculture to raising the knowledge levels of their students on topics such as socio-economic development and investing in human capital has not been part of the curriculum nor has it been investigated sufficiently as argued by Lebrun and Rebelo, (2006: 14).

To take this argument further, Ojeh, Origho and John, (2012: 2) emphasise that the contribution of colleges of agriculture to socio-economic development lies in providing more food to the rapidly expanding population in the region. Studies have shown that throughout human history, civilisations have depended on agriculture for their survival and that as soon as they neglected their land resources, agriculture collapsed (Nortjie, 2008: 1). Ancient civilisations often cited as the best examples of this decline in agricultural production include the Mesopotamian, Mayan and Roman empires. In Africa, the classical examples include Zimbabwe and Guinea. Both countries were exporters of food to other countries in Africa but when they neglected as in the case of Guinea or disrupted their agriculture as in the case of Zimbabwe at some point, they were no longer able to produce sufficient food for export (Zwane, 2012: 16).

The handbook of the Department of Agriculture, Forestry and Fisheries (DAFF), (2008: iii) suggests that the activities of the colleges of agriculture should be aligned to the current key challenges facing South Africa's food security, rural wealth creation, technology and sustainable development. In its ten-year human resource development (HRD) report on agricultural graduate outputs in the South African Qualification Authority (SAQA) accredited Colleges of Agriculture, some are on provisional accreditation while others got full accreditation. The 2006 DAFF handbook, (DAFF, 2006: 43) agrees with the 2008 DAFF handbook (DAFF, 2008: iii) as both report the importance of identifying what agricultural knowledge is contained in the curriculum to evaluate the relevance thereof to the agricultural industry.

Tompi Seleka College of Agriculture is faced with a severe lack of human capital and is often not able to staff all required training modules. The recent deployment of 12 training staff in August 2015 to municipalities negatively impacted the organisational structure required to conform to the need to offer both Further Education and Training (FET) and Higher Education and Training (HET) qualifications. An adequate supply of human capital in the form of lecturers will enable the college to run effectively and be able to offer training on learnership programmes and farmer training more efficiently.

Tompi Seleks College of Agriculture does not have learner administration and library management systems which are critical for both administration and financial management. The college is not well acquainted either with, for example, the latest technology, such as interactive boards, inter-library book loaning systems and modern computer irrigation systems. The use of the internet is no longer a luxury but a necessity. Asiabaka, (2002: 2) claims that unsustainable agriculture is caused by instability and lack of resource within training organisations, inappropriate planning, political interferences, and environmental degradation.

Agriculture has to meet the demands of the growing population for food and other agricultural commodities by increasing production on land already in use. Having determined the context of the colleges of agriculture in South Africa, the need to improve the situation is imperative. The NDP vision 2030 (RSA, 2011: 261) emphasises Agricultural Education, Training and Innovation (AETI) as a core element in eliminating poverty, reducing inequality and setting up foundations for an equal society. It further states that agricultural education empowers people to define their identity, take control of their lives, raise healthy families and play an effective role in the governance of their communities that will in turn grow the economy (RSA, 2011: 261). The question that this study intends to interrogate is how this can be achieved. Colleges of agriculture all over the world as argued by Mwende, (2004: 5) have the notable

task of imparting knowledge and skills and changing the attitudes of people to create sustainable individual and group futures

Department of Agriculture Forestry and Fisheries, (2006: 20) also says that agricultural education is an important tool that development planners can use to bring about social change and economic empowerment. Agriculture provides the basis of subsistence for the population through the production of food and raw materials and the role of agricultural colleges should be clearly outlined in this regard. Since the first democratic elections involving all the people of South Africa took place on 27 April 1994, many changes affecting every sector of the South African community life have occurred and are still occurring. However, thus far, training in agricultural production has focused on a narrow band of commodities to which only a small section of the population has been exposed.

The Department of Agriculture Forestry and Fisheries, (2005: 9) states that few black South Africans have high-level production skills. As a result, the range of agricultural research has been limited to a narrow band of commodities and geared to large scale commercial farming hence, not addressing the needs of small-scale and subsistence producers and in the process ignoring opportunities presented by niche products.

Tompi Seleka College of Agriculture is also impacted by these changes because several skills are required from the college to cover areas such as agricultural extension, sustainable livelihoods, food security, resource management, agricultural law and policy, land care and environmental management. The Department of Agriculture Forestry and Fisheries is responsible for policy development to create an environment in which the agricultural sector is serviced by the state.

1.4 Assumptions

This study is based on four assumptions. The first assumption is that agricultural colleges are responsible to professionally prepare future professionals of agriculture. These colleges are also providing agricultural-related information to students. According to the handbook of DAFF, (2005: 3), all agricultural colleges are indeed providing agricultural-related information to students. Whether their offerings will produce sustainable agricultural development or not, the colleges will have performed their mandate.

The second assumption is that there is a relationship between the activities performed by the colleges of agriculture and sustainable socio-economic development. The communities surrounding the colleges are directly benefitting from them. In a study by Mwende (2004: 10), relationships between activities performed by the college in his study and socio-economic

development were identified. According to Mwende (2004: 10), this was possible because the college was close to grassroots for education, training and consultancy functions.

The third assumption is that all stakeholders, including the Bakone Development Forum, Traditional Council, Advisory Board, Limpopo Department of Agriculture and Rural Development (LDARD) and DAFF, are performing at maximum capacity and colleges of agriculture are successfully delivering their mandates (Hawkins, 2009: 8).

The final assumption is that colleges of agriculture contribute to people's well-being and improve the quality of their lives because education gives them a basis from which they can use the knowledge acquired to generate wealth. Studies by Hasna, (2007: 1) point out that the contribution of agricultural colleges is in fact a process telling of the development of all aspects of human life affecting sustenance, resolving conflicts, involving competing goals and ensuring economic prosperity and sustainability.

1.5 Rationale for the study

Beyond its traditional role, higher agricultural education has an opportunity, in cooperation with other stakeholders, to enrich and support other levels of education with critical knowledge and information on agriculture and National Resource Management (NRM).

Agriculture as a subject was removed from the curriculum at the primary school level in 1990. However, according to DAFF (2005: 5), the National Education and Training Strategy for Agriculture and Rural Development in South Africa notes that agriculture could still be included indirectly through Outcome Based Education (OBE). Awareness about the importance of agriculture is however at a low level, with few primary school teachers specifically trained to teach agriculture as a topic.

Several challenges need to be addressed in the quest to redress the imbalances in the field of agriculture that existed before the 1994 democratic elections. An additional factor according to DAFF, (2005: 1) is that the challenges vary from inequalities in the provision of agricultural education and training to low levels of awareness about the importance of agriculture nationwide and the lack of the provision of resources and access to curriculum offerings. These challenges limit the opportunities for the majority of South Africans to participate more fully in agricultural development.

This background outlined above prompted this study to investigate the current responsibility of agricultural colleges, such as Tompi Seleka College of Agriculture, to ensure sustainable agricultural development. The study has specifically looked at how Tompi Seleka College of

Agriculture has been able to carry out its core functions, which are training students and presenting learnership programmes and farmer training and whether its model can be replicated elsewhere.

On the question of why the study is important, the handbook of DAFF (2011: 5), states that colleges of agriculture should be brought into a new dispensation and harmonised with the objectives of the National Agricultural Education and Training Strategy (AETS). This strategy was designed to guide the development and provision of coordinated, effective, responsive and quality assured agricultural education and training. Tompi Seleka College of Agriculture and other agricultural colleges will then be assisted to align their programmes and offerings to the aims of the new and emerging agriculture sector that considers socio-economic development a priority in South Africa. The alignment will also pave the way for collective and sustainable agricultural rural community development in the Limpopo Province.

Through the findings and recommendations of this study, a wide range of clients have been assisted and can draw on lessons for consideration in their daily activities. Among those who have been assisted by the study are the students, agricultural practitioners and scientists. Qualified learners, interested in HET for careers on NQF levels 5 to 7, were also availed of opportunities to study further where before many would have stopped at NQF level 6. In a broader context, this study has contributed to the success of the African Agricultural Development Programme (AADP) objectives of promoting agricultural growth, rural development and food security.

In addition, farmers operating at various levels and purposes also comprise a major group of clients who were helped by the study. These farmers mainly produce for their own consumption but also produce a small marketable surplus. These farmers were taught more sustainable and productive farming methods and provided with farm management skills training.

College management was able to develop policies and plans to act as guides for interventions. These interventions assisted in improving the image of agriculture as a career and livelihood choice through the development and implementation of education and training programmes targeting youth. In this regard, this study was used as a model for agricultural development because the communities surrounding the college became closer partners in sustainable agricultural development.

However, the process by which human beings select and use knowledge in particular contexts are very complex. People identify the salient features of a situation from a range of possibilities, decide what knowledge may be relevant to their situation, possibly seek out

further information and ultimately reach a decision (Driver, Leach, Lewis, Radford, Wood and Wood-Robinson, 1996: 5).

Based on personal experience, the researcher, as the Rector of the Tompi Seleka College of Agriculture, holds the belief that an evaluation of the colleges' contributions to the sustainable development of agricultural activities in the surrounding rural communities is necessary. As a result, the study suggests to have realised the maximum return on investment at the end of the study. Return on Investment (ROI) in relation to personal, professional, organisational and social (ROI) will be discussed in section 6.4 of chapter 6 of this study.

Despite previous research on the contributions of colleges of agriculture to communities, Knoblock, Ball and Allen, (2007: 33) highlight that limited attention has been given to the sustainability of these contributions. In the following section, the researcher will aim to establish these connections by outlining their ontological and epistemological positions, the research paradigm, and the research type.

1.5.1 Ontological position

Elliot, Fisher and Rennie, (1999: 215) argue for embracing one's perspective and emphasise the significance of the researcher declaring their theoretical orientations and personal expectations beforehand. Yin, (2011: 13) further states that the researcher does not act as a mere "recorder of events", and that factors such as their personality, thinking, professional experience, intellectual pursuits, and knowledge assumptions will impact the study. Stoltz, (2017: 14) emphasises the importance of positioning the researcher in the context of their research.

In this study, the key focus of the approach is people because one of the research questions endeavoured to establish to what extent the primary stakeholders of colleges of agriculture contribute to the body of knowledge. As a result, this study used action research. Stringer (2014: 1), states that action research is a systematic approach to investigation that enables people to find effective solutions to the problems with which they are confronted in their everyday lives. Stringer (2014: 5), further states that all research is an extension of day-to-day inquiries and involves procedures that require people to move past their day-to-day understandings to engage more precisely and rigorously in forms of description, observation and explanation.

The participatory approach used in this study has the elements of people-centred responsive behaviours and participation at multi-levels and is conducted in partnership with other

relevant stakeholders. The researcher believes that nothing should be done for people without them because development is about them. The researcher believes that social change begins in people's minds as they make choices about which values to espouse and how to live directed by those values. According to McNiff and Whitehead (2002: 11), such choices are not easy but they represent wondrous opportunities for personal and social development.

In agricultural education, learning styles are neither right nor wrong because some people see things and understand, some experiment to learn and others just think and correlate. The researcher spends most of his time endeavouring to understand his students' development levels to change his methods to educate them based on their needs. According to DAFF (2011: 8), agricultural education and training offered by colleges of agriculture must be accessible, responsive to the challenges facing South African agriculture and of the highest quality possible.

The recognition of the researcher's subjectivity is acknowledged and it is believed that this may be advantageous to the study, as the research process becomes a collaborative process of constructing knowledge (Ramalho, Adams, Huggard & Hoare, 2015: 4). The researcher's ontology can thus be characterised as interpretivist, implying that multiple truths exist and that the objective of the study is not to uncover a single objective truth, but rather to co-construct reality through subjective interaction with the research participants, as argued by Refai, Klapper and Thompson, (2015: 316).

As an interpretivist researcher, the researcher enters the field with pre-existing insights about the research context, but acknowledges that these insights are not adequate for developing a fixed research design due to the complex, multi-faceted, and unpredictable nature of reality (Hudson & Ozanne, 1988: 508).

1.5.2 Epistemological position

As the principal of Tompi Seleka College of Agriculture, the researcher is acquainted that some colleges of agriculture in South Africa enjoy high priority on the agendas of their respective provincial departments of agriculture, while others face difficulties in gaining attention. Consequently, the researcher does not aim to uncover absolute truths, but instead seeks to comprehend the manner in which these colleges of agriculture contribute to the sustainable development of agricultural activities in the surrounding rural communities.

In light of this, it appears to be a natural progression that the epistemological position adopted in this study must be interpretivist in nature. This approach entails considering the

subject matter or social phenomenon from a subjective perspective, rather than assuming the existence of a single, absolute reality or truth (Whittaker, 2012: 14). The researcher also posits that the performance of colleges of agriculture in South Africa should be evaluated based on the multiple and relative realities of the colleges, academic staff, support staff, and students (Hudson *et al.*, 1988: 508).

The researcher's subjective lens leads to a qualitative research paradigm as the appropriate choice for this study. This paradigm will be discussed in more detail in the following section.

1.5.3 Research paradigm

According to Taylor, Kermode and Roberts (2007: 5), a paradigm is defined as "a broad view or perspective of something". Connole, Smith, and Wiseman, (1993: 9) assert that each paradigm is rooted in significantly distinct assumptions regarding epistemology, which is the study of the generation and validation of knowledge, and the objectives of research. Easton, (2002) views an explanation of the research paradigm as imperative in guiding the researcher and justifying the choices made in the study's approach.

The research paradigm adopted in this study is the interpretivist paradigm, which places emphasis on social interaction as the basis of knowledge. Within this paradigm, the role of the researcher is to "understand, explain, and demystify social reality through the perspectives of different participants" (Cohen, Manion & Morrison, 2007: 19).

This paradigm aligns with the researcher's ontological and epistemological perspectives and enables the researcher to utilise their skills as a social being to try to understand how others perceive their world, co-constructing knowledge through mutual negotiation (O'Donoghue, 2006: 2).

1.5.4 Research type

The study employs an exploratory research method, which is defined by George (2023: 1), as "research conducted to gain new insights, discover new ideas, and increase knowledge of a phenomenon." Skidmore and Kowalczyk, (2022: 14) also differentiate between exploratory research and descriptive and explanatory research. This method aligns with the researcher's ontology, epistemology, and the aim of the study. This study will use a Mode 2 enquiry method that has its primary aim, the solving of 'real-world' problems, using systems thinking as a conceptual framework.

Mode 2 in essence refers to a research system which is highly interactive and 'socially distributed and the basic argument is that knowledge production is heterogeneous and takes place 'in the context of application' through transdisciplinary collaborations. As such, Mode 2 research lends itself to systems thinking as a conceptual framework as both are in essence arguing for 'heuristic, heterogeneous, non-linear' problem-solving engagements (Hessels & Van Lente, 2008:745). This framework will be explained in the next paragraph and the rationale for selecting it as a relevant framework for this particular study will be explained.

1.6 Theory underpinning the study

The study is underpinned by a theoretical framework, which is a collection of interrelated concepts used as a guide for the research journey. Sinclair, (2007: 39) describes research as a journey toward an endpoint to develop knowledge, and Anfara, and Mertz, (2014: 16) term the theoretical framework as a lens to study a phenomenon. This study adopts a systems thinking approach as the theoretical framework, which is appropriate for the transdisciplinary and integrative nature of the study. According to Koskinen (2013: 1), systems thinking provides a suitable lens that transcends the perspectives of individual disciplines. Saaty and Kearns (2014: 4), argue that a college of agriculture can be seen as a complex system where various elements affect one another, and Mizikaci (2006: 1), describes colleges of agriculture as open systems that rely on external and internal interactions. Claesson and Svanström (2015: 12), define systems thinking as "the ability to identify parts, causalities, flows, and feedback loops", while Adam and De Savigny, (2012: iv) define it as "a way of thinking that appreciates the dynamic, constantly changing nature of complex systems and understands the critical role and context of stakeholders." A further description of systems thinking can be found in Chapter 3, Section 3.3 of this study.

1.7 Theoretical and methodological aims of the research

The objective of this study was to investigate the institutional and national level factors and conditions that either facilitate or hinder sustained contributions to agricultural socio-economic development by colleges of agriculture, such as the Tompi Seleka College of Agriculture (TSCA).

1.7.1 Descriptive level

At the descriptive level, the study employed a combination of participatory action research (PAR) and action enquiry. This approach was chosen to facilitate the emergence of a worldview that enables individuals to understand their own worlds, take ownership of knowledge, and shape their own realities (Holliday, 2007: 23).

The Limpopo Province has seen a significant increase in natural disasters over the past four years, and this trend is expected to continue due to the impact of climate change. The research was conducted as part of the researcher's daily work and professional role, utilising their relevant skills and competencies.

A journal was kept to document daily activities and changes, resulting in a comprehensive description of the activities within agricultural colleges. The researcher believes that building on local knowledge is critical for sustainable development and that involving all individuals in decision-making processes is crucial for promoting ownership and self-reliance, instead of creating a dependency syndrome through external handouts.

1.7.2 Applied level

At the applied level, the study utilised Participatory Rural Appraisal (PRA) to combine action, reflection, theory, and practice in pursuit of practical solutions to pressing issues affecting individuals and communities (Lessem & Schieffer, 2010: 154).

The researcher, who is also the rector of TSCA, focused their ideas on the TSCA initiative, aimed at identifying the factors and conditions that facilitate or inhibit the college's sustained contributions to agricultural and socio-economic development. TSCA students are exposed to practical experiences as a means of promoting integral teaching and learning, fostering innovation, and encouraging the development of new ventures.

1.8 Objectives of the study

The study has four principal objectives;

a. Firstly, the study seeks to investigate the impact of TSCA's contribution on the socio-economic development of the surrounding community, and to examine the relationship between TSCA's activities and sustainable agricultural development.
b. The second objective is to explore the extent to which various entities and organisations within and outside of Tompi Seleka College of Agriculture are committed to promoting sustainable agricultural development, in accordance with the mandate set forth by the Department of Agriculture in the Limpopo Province. Given that no single actor or agency in agriculture is equipped to provide the complete spectrum of necessary advisory services, it is crucial to examine the level of involvement and commitment of different structures and authorities.
c. The third objective is to investigate to what extent do agricultural policies contribute to the performance of colleges of agriculture?

d. The final objective is to suggest a reputation management framework for small medium enterprises that would demonstrate how to approach agricultural education in a way that positively contributes to sustainable agricultural development in the Limpopo Province and South Africa as a whole.

1.9 Statement of research questions

The following questions form the focus of this study:

1. What impact do colleges of agriculture have on the socio-economic development of communities?
2. To what extent do primary stakeholders of colleges of agriculture contribute to the body of knowledge
3. To what extent do agricultural policies contribute to the performance of colleges of agriculture?
4. What may be the best framework or guidelines to govern the South African agricultural colleges?

1.10 Ethical considerations

The researcher was conscious of the moral responsibility to protect the rights of the participants, who were expected to share their knowledge in the conduct of data gathering (Knight, 2022: 3). It was deemed imperative to establish trust between the participants and the researcher to respect their autonomy and enable them to make informed decisions.

The ethical aspects of the study were of paramount importance, as the study was involving participants from different departments, institutions and communities as such, it was imperative for the researcher to respect their autonomy. To minimise the risk to the participants, the researcher continuously evaluated the ethical considerations. These considerations are as crucial in qualitative research as they are in quantitative research and encompass ethical conduct towards participant information and honest reporting of results. The ethical measures implemented in this study include obtaining consent, maintaining confidentiality, protecting privacy, disseminating results appropriately, and respecting participants' right to withdraw from the study.

1.11 The scope of the study

This section would outline the scope and limitations of the study. The study focuses on Tompi Seleka College of Agriculture, and its contributions to the sustainable development of agricultural activities in the surrounding communities. Although it is anticipated that the

findings will be generalisable to include the other five colleges of agriculture that were not part of the study, its applicability may be limited in developed socio-economic contexts where support structures are more sophisticated.

A potential limitation of the study is the fact that the researcher was both employed as the principal of Tompi Seleka College of Agriculture and enrolled as a PhD student during the conduct of the study, which may result in researcher, been bias. To mitigate this risk, several preventative measures were taken, including audio recording, memo writing, and verbatim transcription of interviews. The researcher, as an interpretivist, takes on the role of a participant observer in order not to have any influence on the participation of the participants.

1.12 Research report structure

The present research report is structured as follows:

Chapter 1 Introduction: provides an introduction to the study, outlining its rationale and objectives.

Chapter 2 Literature review: presents an overview of the extensive literature review that was conducted to validate the causes, extent, and consequences of the research problem.

Chapter 3 Research methodology: outlines the research design, methods and techniques, and the theoretical framework of PAR and systems thinking that were employed in the study.

Chapter 4 Presentation, analysis, interpretation and discussion of data: presents a detailed analysis and interpretation of the collected data and the presentation of the results.

Chapter 5 Conceptual framework: to govern colleges of agriculture: proposes a conceptual framework for colleges of agriculture.

Chapter 6 Conclusion and recommendations: summarises the research conclusion and provides recommendations.

1.13 Chapter summary

This chapter serves as an introduction and orientation to the study, explaining the background and context of the study, discussing the research aim and objectives, and providing a brief introduction to the theoretical framework. The next chapter is a comprehensive literature review aimed at exploring the contributions of colleges of agriculture to the sustainable socio-economic development of rural surrounding communities.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter begins with a discussion of the importance of agricultural training in development. This is followed by a review of the role of agricultural training in sustainable agricultural development, followed by a discussion of the link between socio-economic development and agricultural colleges. An overview of agricultural education and training both internationally and in the African context to draw lessons on how best to input to Tompi Seleka College of Agriculture. The history of agricultural colleges in South Africa is explored. Next, the chapter focuses on South African perspectives on agricultural education and training and the contribution of existing policies to sustainable agricultural development in order to assess their impact on agricultural colleges. The chapter concludes by exploring the role of agriculture in socio-economic development.

2.2 Importance of agricultural training in development

Rimando (2004: 1) defines agriculture as the systematic raising of useful plants and livestock under the management of man. Rubenstein, (2003: 496) adds that agriculture is the deliberate effort to modify a portion of the earth's surface through the cultivation of crops and the raising of livestock for sustenance or economic gain. However, agriculture is so much more; it is the sector offering the greatest potential for poverty and inequality reduction because it provides sources of productivity from which the most disadvantaged people working in the sector can benefit (Mayaki, 2013: 5).

From the definitions above, agriculture can therefore be viewed as an enterprise or business, an activity or practice. It is also evident that the practice of agriculture is based on a systematised body of knowledge (science), requires skills (art) and must always be managed by man. Finally, these definitions of agriculture emphasise that agriculture is practised to produce food and for other human needs such as clothing and shelter.

Training as one of the selected concepts in this study is described in the Collins Dictionary (Forsyth, 2014: 48) as the process of bringing a person to an agreed standard of proficiency by practice and instruction. Another important definition of training, according to Franklin (2020: 3), is to prepare students to be able to use the knowledge and the skills gained through training in meaningful ways in their lives. Martin and Petersen (1991: 21), further

argue that agricultural training is based on three critical components: technical agriculture, experiential learning and human development.

Franklin (2020: 3), claim that one of the best ways of ensuring students' understanding is through the use of experiential learning both in and out of school. More importantly, according to Franklin (2020: 3), "the heart and soul of the training is the student". They argue further that agricultural education is committed to the growth of the individual student in all three learning domains. More importantly, from a philosophical point of view, these domains indicate a move away from a strictly empirical philosophy to one which is both humanistic and idealistic.

According to Thomas (2004: 1-2), development has taken on the limited meaning of the practice of agricultural development agencies, especially in reducing poverty and achieving the MDGs that aim to eradicate extreme poverty and hunger. The term 'development' remains almost synonymous with financial aid or even with official development assistance (ODA) and may include market flows, i.e., remittances or foreign direct investment (Alonso & Glennie, 2015: 1). However, Anh (2018: 488), states that development is more than removing obstacles and injecting capital; it is permanently satisfying and ensures a better future by making a country's life as nearly perfect as possible. Cowen and Shenton, (1998: 50) claim that if agricultural development means good change, the question arises about what good change is and what sort of change matters.

To take this argument further, Emil (2004: 1) states that agricultural training and development arise from the actions of man seeking to improve his living conditions. On the other hand, Anh, (2018: 488) sees agricultural training and development as intentional, scientific, coordinated and purposeful actions to unlock and optimise the utilisation of the agricultural potential of an area or region for the greater spiritual and material prosperity of the farming communities involved.

A common theme in most definitions of agricultural training and development is that agricultural training and development encompasses 'change' in a variety of aspects of the human condition. Although the theme of 'change' may be overriding, Kanbur (2006: 5), states that what constitutes good change is bound to be contested because no uniform or unique answer exists.

Agricultural training and development can be seen as a process of expanding the freedoms of agricultural wealth creation that people enjoy as they lead the kind of lives they value and have reason to value (Sen, 1999: xii, 1, 18). Sen (1999: xii), argues further that a set of

conditions including being fed, healthy, clothed and educated needs to be considered. Sen, (1999: 38) identifies five basic freedoms that people should have:

1. political/participative freedoms e.g., freedom of speech and free elections
2. economic facilities e.g., opportunities to participate in trade and production
3. social opportunities e.g., adequate education and health facilities
4. transparency guarantees e.g., openness in government and business and social trust
5. protective security e.g., law and order and social safety nets for unemployment.

These five basic freedoms that people should have, according to Sen (1999: 38), are in line with the Bill of Rights in Chapter 2 of the Constitution (RSA, 1997: 9). This Bill of Rights is a cornerstone of democracy in South Africa. It enshrines the rights of all people in South Africa and affirms the democratic values of human dignity, equality and freedom. Everyone is equal before the law and has the right to equal protection, education, economic opportunities to participate in trade and social safety nets for unemployment (RSA, 1997: 9). These rights are enshrined in the Bill of Rights are closely linked to the need and importance of agricultural training in development.

2.3 Role of agricultural training in sustainable agricultural development

As training has been discussed in general, this section focuses more on training for sustainable agricultural development. Agricultural training in sustainable agricultural development is an approach to agriculture that focuses on producing food in a way that does not degrade the environment but contributes to the livelihood of communities (Keating, 2012: 1). According to the Brundtland Report (Brundtland Commission, 1987: 15) sustainable agricultural development is development that meets the needs of the present without compromising the ability of future generations to meet their needs. To take the definition of sustainable agricultural development further, Hickey and Mohan, (2003: 38) describe development as a set of ideas that actually shapes and frames reality and power relations.

However, while in agreement with the Brundtland Report, Keating, (2012: 1) highlights that agricultural training in sustainable agricultural development will not take place unless an appropriate social, economic and political environment is created. Creating favourable conditions will require changing many existing agricultural, forestry and other land use policies throughout the world (Rose, 1989: 5).

Sustainable agricultural training and development, according to the United Nations (UN) (2012: 6), must be inclusive and people-centred, benefitting and involving all people,

including youth and children. Gender equality and women's empowerment are just as important for sustainable development and the common future.

Other important factors in sustainable development that Mwende (2004: 4), highlights are the components of agricultural sustainable development, environmental, economic and social well-being for today and tomorrow. According to him, the world should be seen as a system. Furthermore, Mwende (2004: 4), states that these components are interrelated, working together for the common goal of optimisation that will be reached if and only if the subsystem's goals are in phase with the system (Mwende, 2004: 4).

Alongside the perspectives above, the International Institute for Sustainable Development Raitimi and Kabiti (2019: 120), further states that sustainable development means adopting business strategies and activities that must meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future. More importantly, according to IISD (1992: 1), the concept of sustainable development must be incorporated into the policies and processes of any venture if it is to follow sustainable principles.

2.4 Link between socio-economic development and colleges of agriculture

Socio-economic development is defined by Fritz (2015: 1), as a process of raising the level of prosperity through the increased production, distribution and consumption of goods and services. To take this definition further, Fritz (2015: 1), defines social development as the complexity of social dynamics the interplay of social structures, processes and relationships and also focuses on people as the objects of the development and the people-centred, participatory approaches to development. Furthermore, Fritz, (2015: 1) defines economic development as a process of improving the economic material well-being of all individuals and social institutions to achieve the highest possible level of human development.

To take the socio-economic development definition further, Mmbengwa *et al.* (2011: 1), define socio-economic development as guiding communities, particularly rural and peri-urban poor people, to have jobs, to be free from poverty and to have food security for combatting malnutrition. Socio-economic development, as the process of social and economic development in any society, can be measured by indicators, such as the gross domestic product (GDP), life expectancy, literacy levels and levels of employment (Gupta, 2015: 221).

Burchi (2006: 1), states that being exposed to agricultural education improves rural people's capacity to diversify assets and activities, access information on health and sanitation and increase productivity in the agricultural sector. Access to agricultural land, extension services

and capital are some of the socio-economic factors that contribute to agriculture and cannot be underestimated as they are the pillars of development and go a long way to improving people's livelihoods (Salau & Attah, 2012: 27). Agricultural education also plays an important role in expanding and diversifying employment opportunities in rural areas, thus, increasing socio-economic development (Ojeh, Origho & John, 2012: 3).

Among the most important institutions in the revolutionary development of agriculture over the last 50 years are colleges of agriculture (College of Agriculture Lafia, 2019: 3). According to College of Agriculture Lafia, (2019: 3) colleges of agriculture are the brain centres of agricultural progress because they provide, with their research efforts, the scientific knowledge base required. Their training increases the quality of the human agent in production and allows them to share new knowledge with farmworkers.

Colleges of agriculture, according to Lebrun and Rebelo (2006: 6), are institutions that raise the knowledge level of the general population and have a direct influence on revenue generation and job creation. Mwende, (2004: 6) refers to colleges of agriculture as having the noble task of imparting knowledge and skills and changing the attitudes of people to create sustainable individual and group futures. In addition, Bakhtadze and Talikadze, (2020: 107) define a college of agriculture as a main engine of producing agricultural knowledge and contributing towards agricultural produce.

Agriculture remains a critical tool for sustainable development and poverty reduction, as demonstrated by advancements in Agricultural Technology Institutes (ATIs) (Mucavele, 2009: 7). The training of individuals in agricultural-related fields has been shown to result in job creation, entrepreneurship development, employment, and income generation, particularly in rural areas, according to Edusah and Antoh, (2014: 1).

Salau and Attah (2012: 2), highlight that in Nigeria, agricultural socio-economic development occurs in a variety of settings, including private, leased or rented land in peri-urban areas, backyard gardens, and even on rooftops, vacant public lands, and institutions. Meanwhile, in Malawi, smallholder farmers provide the main contribution to agricultural socio-economic development through their cultivation of crops such as tea, sugar, cassava, and coffee (Mucavele, 2009: 8). It has been demonstrated that the Gross Domestic Product (GDP) originating from agriculture has a greater impact on reducing poverty compared to GDP from other sectors (Mucavele, 2009: 8).

According to Kumar, Chauhan, Patel and Patel (2019: 1), over 53% of the rural households depend on agriculture as their chief means of livelihood with a 52% share in employment.

In remote areas of Australia, agricultural socio-economic development serves as an important social welfare infrastructure, enabling isolated communities to provide for their basic human needs of food, clothing, and shelter (Stringer, 2001: 11). Stringer, (2001: 13) notes that even in highly populated countries like China and Indonesia, rapid agricultural growth has reduced rural poverty and improved food security in both rural and urban sectors.

Education has been identified as crucial in promoting agency, the ability of the rural poor to escape poverty and hunger, by Burchi, (2006: 197). Educated individuals are more likely to secure employment and make more effective use of their resources (Burchi, 2006: 197). Mukudi, (2003: 246) expands upon this argument, pointing out that children from less-educated or uneducated families tend to have lower nutritional status indices.

Therefore, education has both theoretical and empirical evidence supporting its relevance in fighting food insecurity and promoting development, with its benefits extending beyond just economic growth in a country. Education positively impacts individuals, especially those from disadvantaged backgrounds.

2.5 Overview of international perspectives on agricultural education and training

This section provides an overview of the perspectives on international agricultural education and training. The focus is on agriculture as the main contributor to the economy of most countries, especially as it relates to food security and growing populations. The impact of community colleges of agriculture in countries such as the United States of America (USA) will also be examined as they will serve as the benchmark for the kind of work being conducted in South Africa. According to Njuki (2021: 1), the substantial increase in total agricultural production in USA can be attributed to the advent of new technologies, innovations, and process improvements in the farm sector.

Given the argument on agriculture as the contributor to the economies of most countries, United Nations (2022: 1), suggest that the world population will continue to increase from the present figure of nearly six billion people to 8.6 billion in 2030. Given the growing population, Van Crowder *et al.* (1999: 7), point out that agricultural colleges in developing countries should address not only the immediate production needs of the population but also long-term food security, sustainable agriculture and rural development needs.

According to Gartlan (Economist Intelligence Unit, 2010: 3) long-term food security and sustainable agriculture are realised in Brazil the world's fifth largest country by geographical area and the largest in terms of arable land. Although only a fraction of its land is utilised for agricultural purposes, the country produces a highly diverse array of agricultural goods. This

puts Brazil in a unique position to lead the global agricultural sector in the medium to long term. With an abundant supply of natural resources, such as water, land and a favourable climate, Brazil has the opportunity to be the largest agribusiness superpower supplying the world market while also providing affordable food for its own population (Economist Intelligence Unit, 2010: 3).

Food security and its relationship with sustainable agricultural and rural development have increasingly become matters of concern for developing countries and the international community. According to Rogers (1996: 86), this is because of the poor training of agricultural extension officers and other agricultural professionals in both colleges of agriculture and universities. Skinner, Blum and Bourn (2013: 2), emphasise that the theory underpinning development education evolved through direct contact with social movements and solidarity groups around the world as well as engagement with the work of critical educationalists such as Cronkhite, (2000: 152).

A major challenge in developing agricultural education, according to Van Crowder *et al.* (1999: 11), is the transformation of agricultural education institutions into dynamic promoters of change within their environments. Teaching with practical, reality-based cases is a good example of how teachers can change methods to meet student needs and those of society at large (Boehrer & Linsky, 1990: 15). Consequently, according to Boehrer and Linsky (1990: 15), agricultural institutions will be required to abandon their long-established traditions of academic isolation and become active contributors to sustainable agricultural and rural development through innovative teaching, research and extension.

Education in agriculture plays an important role in preparing farmers, educators, extension staff and others to be productive contributors to the agricultural sector. Burchi, (2006: 2000) argues that agricultural education is both theoretically and empirically proven to be relevant in fighting food insecurity and promoting development. According to Van Crowder *et al.* (1999: 1), a critical issue in the 21st century will be the changes and adaptations required in agricultural education for it to contribute more effectively to improved food security, sustainable agricultural production and rural development.

Education is not only expected to enhance employability or livelihoods at an individual level and economic development at a national level but also to develop democratic values and responsible citizenship behaviour that contributes to stable and peaceful communities and nations (Barrett, 2009: 9).

In the USA, the National Science Foundation has identified agricultural public community colleges as the main source of post-secondary education for students (Boggs, 2010: 3). The

reason for the National Foundation's Advanced Technological Education (NFATE) programme is to utilise agricultural community college educators to lead programmes that involve universities, secondary schools and businesses to prepare and strengthen the skills of the nation's technological workforce to encompass values and responsible citizenship behaviour.

According to Boggs (2010: 3), agricultural community colleges in the USA provide access to higher education to the most diverse student body in history. It is diverse in every respect age, ethnicity, nationality, socio-economic status and degree of disability. The UN, (2013: 1) asserts that schooling has actually failed to ensure meaningful education, resulting in a need to recapture the broad understanding of education and its purpose in future goals and frameworks. Ali (2010: 1), states that building a well-developed community is a formidable task but necessary because an ideal community should fulfil all economic, social, material and spiritual needs of each one of its members. To meet this end requires educated, skilled and competent people. From this angle, it is clear that education is an essential instrument in any community's development strategy.

According to Boggs (2010: 3), international efforts have focused far too narrowly on increasing access to formal education without attending to the quality of learning actually taking place in schools. However, Alexander, (2008: 3) says that quality has tended to be conceived not as what it actually is but as how it can be measured.

Despite the challenges that might be identified, agricultural education is increasingly being complemented by the acknowledgement of the pivotal social role of education in equipping students with the knowledge, skills and values to play an active part in transforming the world around them for the better (Van Crowder *et al.*, 1999: 14). More importantly, Van Crowder *et al.,* (1991: 14) emphasise that agriculture will remain for many years a major contributor to the economies of most developing countries.

2.6 Overview of African perspectives on agricultural education and training

In this section, the focus will be on how agricultural training and education in Africa are contributing to the reduction of poverty and food insecurity. The notions of the relationship between higher education and national development are also reviewed.

The Comprehensive Africa Agriculture Development Programme (CAADP) was endorsed at the African Union (AU) Heads of States Summit in July 2013 in Maputo as a New Partnership for Africa's Development (NEPAD) programme (AU, 2013). According to the AU (2013: 1), the overall goal of CAADP is to help African countries reach a higher path of economic

growth through agricultural education and training led development that should eliminate hunger, reduce poverty and food insecurity and enable the expansion of exports. The African leaders met again from 26 to 27 June, 2014 in Malabo, Equatorial Guinea and made a special commitment to Mutual Accountability, Action and Result (MAAR) as a follow-up to the Maputo declaration in 2013. It was at this summit, according to the AU's report, that they agreed to promote and enhance agricultural skills, knowledge and education in Africa (AU, 2014: 5).

According to the AU report, several factors have conspired to reduce the critical mass of quality human capacity in African agriculture significantly (AU, 2014: 15). These factors have resulted in a spiral of cause-and-effect, including the low requirement of young professionals and high attrition rates occasioned by attractive options in other fields. These factors, according to the AU report, present a major challenge to the realisation of agricultural transformation on the continent (AU, 2014: 15).

Malik and Jespersen (2014: 8), say that meeting today's challenges requires people to collectively marshal their individual capabilities and choices to overcome threats so that their combined resilience will deepen development progress and make it more sustainable. In Liberia, traditional agricultural education in the post-civil war period has focused on all countries catching up and providing basic training in the science and selected skills of crop and animal production (Cuttington University, 2012: 7).

Unlike in Liberia, in Rwanda, food crop production is predominantly dependent on productivity in small and fragmented farms (Kathiresan, 2012: 3). Raising productivity levels in smallholder farms, therefore, represents a vital means of economic growth and poverty reduction. According to Kathiresan (2012: 3), the Ministry of Agriculture and Animal Resources (MINAGRI) in Rwanda has embarked on a simplified land use consolidation model. More importantly, with this model, farmers in a given area grow the priority food crops, such as maize, rice, wheat, Irish potato, cassava, soybean and beans, in a synchronised fashion while keeping their land right intact as per the guidance and skills obtained from agricultural colleges. In Ghana, the core activities of teaching and research in colleges of agriculture are aligned with national development priorities and thereby contribute to development in society (Bailey, Hill, Meacham, Young & Hawkins, 2011: 59). Bailey *et al.* (2011: 95), also argue that colleges of agriculture in Ghana increasingly emphasise the need to engage with relevant external stakeholders. According to Bailey *et al.* (2011: 95), much of what might be termed the development-related activities of the agricultural colleges usually fall within community outreach programmes.

Teaching and learning are the core business of colleges of agriculture, while innovation, research and development (R&D) and knowledge are the keys to development and are described as issues that colleges must address (Baile *et al.*, 2011: 95). Given this argument, Bailey *et al.* (2011: 95), further identify four notions of the relationship between higher education and national development. These four notions emerge in the interaction between the following two scenarios: whether or not a role is foreseen for new knowledge in the national development strategy and whether or not a college of agriculture, as an institution, has a role in the national development strategy.

These four notions are based on ideas developed by Maassen and Cloete, (2006) and Maassen and Olsen, (2007). The two sets of scenarios and the concomitant four notions of the role of agricultural colleges are depicted in Figure 2.1.

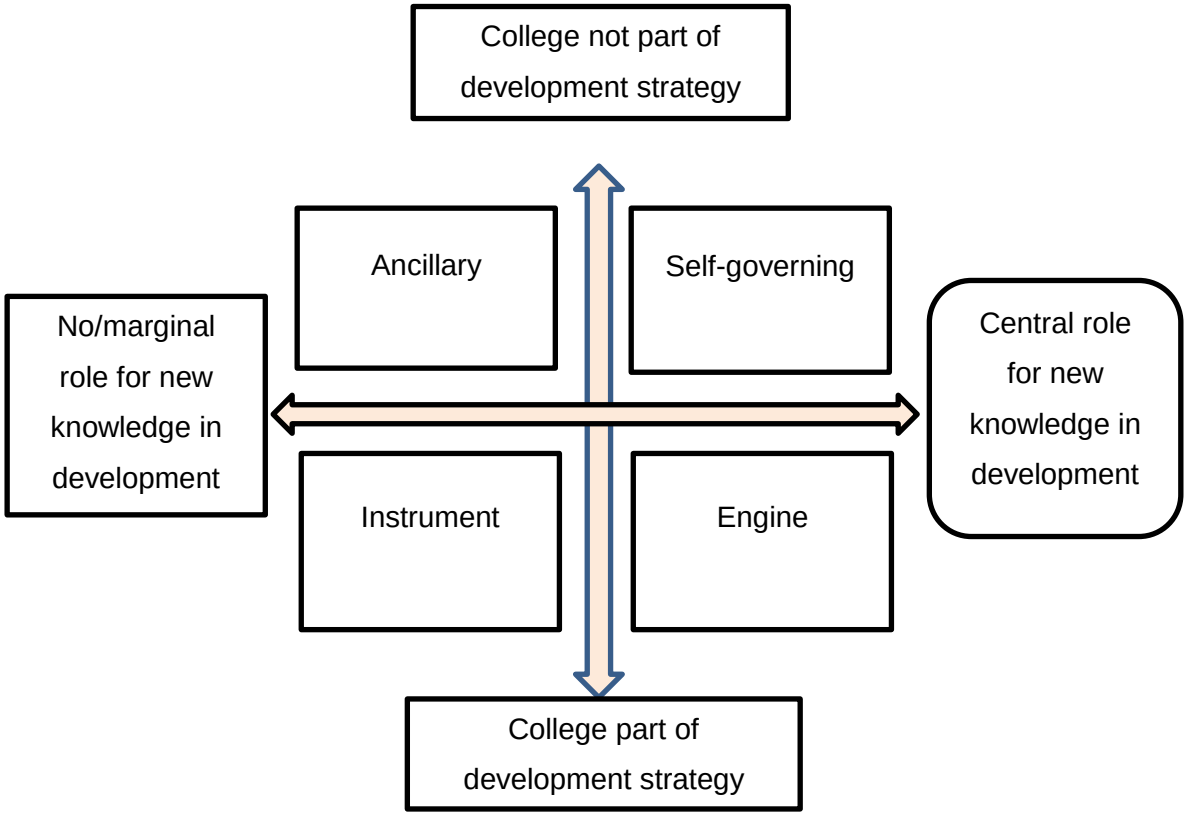

Figure 2.1: Four notions of the role of knowledge and colleges of agriculture in development (Cloete & Maassen, 2015: 15).

The four notions are elaborated as follows:

The college as an ancillary: In the political and ideological sphere, the thinking within government is that a strong scientific knowledge is the basis for developing strategies and policies. The role of colleges of agriculture is to produce educated civil servants, students and farmers to transmit established knowledge rather than engage in research and different forms of community service.

The college as a self-governing institution: Knowledge produced in the college is considered important for national development, especially for the improvement of healthcare and the strengthening of agricultural production. However, this notion assumes that the most relevant knowledge is produced when academics cooperate in externally funded projects, rather than those being steered by the state. This notion portrays colleges of agriculture as playing an important role in developing national identity and in producing high-level bureaucrats and scientific knowledge but not as directly related to national development; the college is committed to servicing society as a whole rather than specific stakeholders.

The college as an instrument for development agendas: In this notion, the college has an important role to play in national development, not through the production of scientific knowledge but through expertise exchange and capacity building. The focus of the development in the colleges of agriculture should aim at contributing to reducing poverty, improving agricultural production and supporting small business development.

The college as the engine of development. This notion assumes that knowledge plays a central role in national development to improve agricultural production but also in innovations in the private sector. Within this notion, the college is seen as one of the core institutions in the national development model. The underlying assumption is that the college is the only institution in society that can provide an adequate foundation for the complexity of emerging agricultural knowledge. According to Cloete and Bunting (2011: 5), the importance of knowledge and higher education for sustainable development is global, even though there are contextual and regional differences in the way the relationship between the two evolves.

The significance of the notions discussed above is that colleges of agriculture play diverse roles. In some cases, they produce educated civil servants, students and farmers to transmit established knowledge rather than research. On the other hand, some colleges are self-governing institutions committed to servicing society as a whole rather than specific stakeholders. Finally, the focus of some colleges of agriculture is to contribute to reducing poverty by improving agricultural production.

2.7 Overview of South African perspectives on agricultural education and training

This section presents a brief overview of agricultural education and training in South Africa before and after the 1994 democratic elections. It also focuses briefly on the comprehensive investigation study that was undertaken by DAFF on the status of the 11 colleges of agriculture in South Africa. Lastly, this section outlines how the Reconstruction and Development Programme (RDP) informed the formation of AETS in South Africa.

South Africa's colonial and apartheid educational history has left its imprint on rural people, the majority of whom are black (Paterson & Arends, 2004: 2). Paterson and Arends, (2004: 2) also argue that territorial segregation and racially discriminatory access to schooling have created racial disparities in the quality of agricultural education and training in South Africa.

More importantly, according to Paterson and Arends (2004: 2), inequality is also a function of discriminatory access to knowledge about agriculture, whether it takes the form of information, agricultural extension programmes, ordinary school education or training. Pretorius (2007: 31), argues that a sophisticated education system for whites was in place but millions of adult South Africans, mainly black persons, were functionally illiterate. Moreover, millions of South African children endured school conditions resembling those of the most impoverished states in Africa (Pretorius, 2007: 31).

The assumption of power by the African National Congress (ANC) in 1994 resulted in the political transformation of South Africa. This transformation encompassed all areas of society, including education (De Wet & Wolhuter, 2009: 3). Transformation in education was then singled out for specific attention. According to Duvenhage (2006: 125), education has not only had to be transformed but it has also had to play a key role in the transformation of the South African communities and societies.

Policy changes in the South African education system after 1994 made it possible for the basic structure of the NQF consisting of General Education and Training (GET), FET and HET bands to run smoothly (Paterson & Arends, 2004: 3). The DoE report (DoE, 2003: 5), says that FET is designed to provide intermediate to higher level skills and competencies and to enhance learner mobility and progression at the critical point between GET and entry to HET and the workplace.

The 1995 White Paper for Education and Training (DoE, 1995: 4) was a policy to enable a democratic, free, equal, just and peaceful society to take root and prosper in South Africa, on the basis that all South Africans without exception share the same inalienable rights equal citizenship and a common national destiny and that all forms of bias (especially racial, ethnic and gender) are dehumanising. Parliamentary Monitoring Group, (2022: 4) says that a White Paper is a broad statement of government policy drafted by the relevant department. Duvenhage, (2006: 133) and the DoE (2001: 1-49), emphasise that since 1994, far-reaching reforms have taken place and were intended to break down the structures of apartheid and address educational inequalities and handicaps, as well as provide equal opportunities and rights for everyone.

Eleven colleges of agriculture and six universities of technology offering various tertiary agricultural and training programmes are nationally accredited. Secondary AET is provided by approximately 1500 secondary schools (DAFF, 2005: 5). The programmes offered in these institutions differ markedly in quality, standards, outcomes and curriculum and, therefore, limit the opportunities for students to move from institution to institution in order to further their studies, creating further barriers to higher education levels (DAFF, 2005: 7). In 2011, the National Department of Agriculture (NDA) conducted a comprehensive investigation into the status of the 11 colleges of agriculture in South Africa, TSCA included.

The study aimed to determine the way forward for colleges of agriculture in the light of the aims and objectives of the study, with particular reference to the transformation of agriculture (DAFF, 2011: 5). This 2011 study recommended that colleges of agriculture in South Africa should be restructured and renovated by the private sector to be able to offer a well-informed curriculum. To this end, the sector education unit in DAFF was established to fast-track the process.

As a result, the Department of Agriculture in South Africa started developing an AETS. This was informed by the RDP, HRD and Skills Development Strategy (SDS). According to the DAFF report (DAFF, 2005: 1), the AETS signals the government's determination to give effect to improving the skills profile in the agricultural sector and supporting the objectives of Agricultural Black Economic Empowerment (AgriBEE).

2.7.1 History of agricultural colleges beyond the Republic of South Africa

Archaeological evidence indicates that about 10,000 years ago human cultures began the practice of agriculture in several areas of the world. According to McMahon and Levetin (2008: 181), excavations have documented many sites of early agriculture in both the Old and New World and evidence indicates that some of the oldest sites of agriculture are in south-western Asia, in the foothills around the area known as the Fertile Crescent, which today includes parts of Iran, Iraq, Turkey, Syria, Lebanon and Israel. From this background, people saw the need to establish colleges of agriculture throughout the world.

In the USA, Congress passed legislation to establish a national network of colleges devoted to agriculture and community colleges of agriculture that offer an open door to opportunity to all who come and are innovative and agile in meeting economic and workplace needs and providing value and service to individuals and communities (Boggs, 2010: 2). As a result, in the USA, the College of Agriculture and Life Sciences (CALS) in Madison was established in 1889 (College of Agriculture and Life Science, 2016: 2). Consequently, the CALS began

offering a winter course for farmers, a programme that continues today as the Farm and Industry Short Course.

Furthermore, on 22 February 1885, also in the USA, Penn State College of Agricultural Sciences (PSCAS) was formed (PSCAS, 2016: 1). It was during this year that Governor James Pollock signed the charter that would become the birth of agricultural schools. However, to establish the college of agriculture, the board of trustees needed to find a location for the college. Consequently, land that became the home of PSCAS was purchased near the confluence of the Nittany and Penn valleys (PSCAS, 2016: 1).

The Royal Agricultural College (RAC), now the Royal Agricultural University (RAU), in Cirencester, UK, was the first agricultural college in the English-speaking world (RAC, 2016: 1). The RAC was established in 1842 with the Earl of Bathurst as dean of the college. As a result, the first 25 students were admitted in September 1845 and the following year student numbers increased to 108. According to RAC (2016: 1), many of those early students went on to careers in Colonial Agricultural Administrations (CAAs) and the Diplomatic and Foreign Service (DFS). The researcher, together with four colleagues from Elsenburg and the former Lowveld colleges of agriculture, was fortunate to attend a five-day course on curriculum development at this historic agricultural college in 2009.

In 1953, in the south-western corner of Western Australia, a hospital and the surrounding land and buildings that serviced a Second World War Italian internment camp became the focus for housing students who wished to pursue an education centred on farming styles common in the area (Western Australia College of Agriculture, 2016: 2). Having no farmland of its own, students were ferried out to local farms for the practical side of their courses. According to the Western Australia College of Agriculture (WACA) Bulletin, small parcels of land surrounding the boarding facilities were gradually acquired and developed for the students' use. The campus was initially built for 48 male students but this changed in 1998 when the first two female students attended; they boarded in a nearby town.

2.8 An overview of the colleges of agriculture that serve as part of the research in the Republic of South Africa

The purpose of this section is to discuss the common characteristics as well as points of departure for the selected colleges of agriculture in South Africa. Furthermore, this section briefly outlines the mandate and governance of the colleges of agriculture in South Africa

First, Republic of South Africa (RSA), (1997: 16) highlights that everyone has the right to a basic education, including adult basic education and to further education which the state,

through reasonable measures, must make progressively available and accessible. Secondly, the presidency's vision for 2030 (RSA, 2011: 261) states that education training and innovation are central to South Africa's long-term development and have as core elements, the elimination of poverty, the reduction of inequality and the foundations of an equal society. Thirdly, DAFF in its norms and standards for agricultural training institutes (ATIs) in South Africa, (2011: 6) outlines the importance of colleges of agriculture to provide equity and parity in terms of quality educational offerings, budget and financial management. Table 2.1 below details the colleges of agriculture in South Africa.

Table 2.1: Colleges of agriculture that serves as the part of the research in different provinces in South Africa (DAFF, 2011: 5)

Name of the Province	**District**	**Name of the College**	**Number of students**
Limpopo	Sekhukhune	Tompi Seleka	60
North-West	Dr RM Mompati	Taung	40
Free State	Motheo	Glen	45
KwaZulu-Natal	uMgungundlovu	Cedara	70
Eastern Cape	Chris Hani	Grootfontein	75
Western Cape	Cape Winelands	Elsenburg	80
Total			370

As discussed in section 2.7 of this chapter, South Africa has nine provinces and 11 colleges of agriculture. This study only sampled six colleges of agriculture Tompi Seleka, Taung, Glen, Cedara, Grootfontein and Elsenburg. It should however be noted that Gauteng, Mpumalanga and the Northern Cape do not have any colleges of agriculture. It is worth noting that apartheid policies pushed millions of black South Africans into overcrowded and impoverished reserved homelands and townships (Department of Land Affairs, 2006: 6). Consequently, according to the Department of Land Affairs (DLA) report, this is where most of South Africa's colleges of agriculture are situated.

As a point of departure, colleges of agriculture in South Africa are charged with the responsibility of being part of the implementation of the national AETS (DAFF, 2011: 5). Furthermore, the DAFF report outlines some of the mandates of the colleges of agriculture as:

1. Offering a range of agricultural qualifications on NQF levels 1–7.
2. Actively participating in the HRD programme of the relevant provincial departments of agriculture.
3. Providing training, retraining and upskilling and in-service training of agricultural extension and advisory personnel.
4. Developing strategic partnerships with relevant stakeholders and service providers to strengthen the capacity of colleges of agriculture to deliver on their mandates.

5. Functioning as centres of rural wealth creation (DAFF, 2011: 6).

The DAFF report DAFF, (2011: 7) defines extension personnel as the front-liner employees of the Department of Agriculture in South Africa who are stationed within communities. Colleges of agriculture in South Africa, apart from the college principal and the staff, are governed by their councils which report directly to the provincial members of the executive councils (MECs) (DAFF, 2012: 11).

However, vast differences exist between colleges of agriculture in terms of the support received from provincial departments of agriculture. Colleges such as Cedara, Grootfontein, and Elsenberg are well-endowed with human, physical and financial resources, while others such as Tompi Seleka and Madzivhandila colleges of agriculture are vastly under-resourced (DAFF, 2011: 5). DAFF, (2011: 5) further states that some of the colleges of agriculture in South Africa such as Owen Sithole are placed high on the agendas of their provincial departments of agriculture, while others such as Glen College of Agriculture battle for a hearing. South African Colleges of Agriculture programmes also differ markedly in quality, standards, outcomes, and curriculum; thus, barriers to higher levels of education and training are created (DAFF, 2011: 6).

An additional factor is that all colleges of agriculture in South Africa are accredited by the Council on Higher Education (CHE) (Department of Education, 2003: 6). Registration, with CHE, as required by the Higher Education Act, 1997 (Act No. 101 of 1997), means that an institution is granted the legal authority to offer accredited higher education programmes and qualifications (Department of Agriculture, 2003: 6).

Given the facts above, the colleges of agriculture in South Africa, also have much in common. They all have the common mandate of providing training, retraining and upskilling and in-service training of agricultural extension and advisory personnel and reducing poverty in their respective provinces. They are all administered by councils which report to their respective MECs and they are all accredited by CHE and SAQA.

The point of departure of this study is to establish whether these colleges of agriculture in South Africa are maintaining their mandates to the fullest and, if they are, to what extent they are contributing to sustainable agricultural development.

2.9 Contribution of existing policies to sustainable agricultural development

In this section, the contributions of policies to sustainable agricultural development are outlined. Much has been written about the contribution of policies to agricultural development. A study by Dollar and Kraay, (2004) instigated a lively debate. They, not surprisingly, found a clear link between national income and poverty incidence (Meijerink and Roza, 2007: 11). More surprising, however, is that policies usually considered important in reducing poverty, such as public spending on health and education and improvements in labour productivity in agriculture, had only a marginal effect on the average income of the poorest (Meijerink & Roza, 2007: 11).

In Ethiopia, the government, in attempting to reduce poverty, recognised the need to increase rural students' enrolment in agricultural education and training and implemented a positive discrimination policy for students from 'relatively' underserved regions (Montanini, 2013: 10). Furthermore, their Food and Agricultural Organisation, (2002: 1) points out that institutional factor such as inadequate agricultural policy frameworks are rendering agriculture or agricultural education and training non-profitable. FAO further argues that non-profitable agriculture will lead to land abandonment which will contribute to the degradation of the ecological and economic value of an area.

More importantly, Kuhnen (1978: 78), points out that many people from rural areas will migrate to cities and fill the ranks of workers. If agricultural land is abandoned, the adequate provision of food for the population will not be achieved. While agreeing with Montanini and Kuhnen, Van Crowder *et al.* (1999: 7), point out that the agricultural curriculum in rural colleges of agriculture is mostly not guided by policies.

Van Crowder *et al.* (1999: 7), argue that environmental and sustainable agricultural development problems require an inter-disciplinary approach to curricula since sustainable development relates not only to technological concerns but also to economic, social, cultural and ecological matters which also need policy guidance. The significance of the inclusion of policies in agricultural curricula will make students understand the economic justification for collective action in allocating, managing and protecting the environment and developing analytical skills that will enable them to actively participate in agriculture (Cuttington University, 2012: 49).

Of interest is that agricultural policies often exclude the participation of women in most agricultural activities; women could become extension agents, agricultural researchers, teachers and policymakers (Van Crowder *et al.*, 1999: 8). The IISD, (1992: 4) agrees with Van Crowder that incorporating gender objectives in agricultural policies will yield better results in changing the attitudes and practices in agriculture and agricultural education and training.

Agriculture in South Africa has a central role to play in building a strong economy and, in the process, reducing inequalities by increasing incomes and employment opportunities for the poor (Ministry for Agriculture and Land Affairs, 1998: 1). According to the Ministry for Agriculture and Land Affairs, one of its goals is to conserve agricultural natural resources and put in place policies and institutions for sustainable resource use. In addition to this broad policy, DAFF developed the National ATIs Bill (NATIB) in 2012. This Bill aims to:

1. Provide for the regulation of agricultural education and training at ATIs.
2. Provide for the establishment, governance and funding of ATIs.
3. Provide for the employment of staff at ATIs.
4. Provide for the registration of ATIs.
5. Provide for the promotion of education and training quality in ATIs.
6. Provide for transitional arrangements and the repeal or amendment of laws and to provide for matters connected therewith (DAFF, 2012: 1).

According to DAFF's National Agricultural Bill (DAFF, 2012: 38) ATIs should operate as Schedule 3 entities (semi-autonomous and enjoy lesser degrees of autonomy) as described in Chapter 6, Section 48 of the Public Finance Management Act (PFMA) 1999, (Act No 1 of 1999).

Colleges of agriculture in South Africa are using approved norms and standards for the ATIs while still waiting for the official ATI Bill to be approved. The purpose of the norms and standards is to provide a platform for positioning the ATIs and creating a framework for ensuring the consistent quality of AET (DAFF, 2011: 6).

Thus, AET is concerned with the provision and maintenance of sound education and training to support environmentally and economically sustainable agriculture (DAFF, 2005: 5). Taking this argument further, DAFF (2005: 8), states that the lack of proper policies for ATIs makes an agricultural career be seen as the work of the poor and the elderly and not as something that could be profitable. It is seen as narrow in context and equated solely with primary production.

More importantly, according to Boggs (2010: 4), policymakers must provide the needed support to colleges of agriculture and universities so that education at all levels is seen as an important state and federal investment and put in place policies that will ensure maximum return on investment. Return on Investment (ROI) will be discussed in section 6.4 of chapter 6 of this study.

2.10 Conclusion

This chapter affirms that agricultural development is a concept which is contested both theoretically and politically and is inherently both complex and ambiguous. Furthermore, agricultural training in sustainable agricultural development will not take place unless an appropriate social, economic and political environment is created. The literature review noted that agricultural education also plays an important role in expanding and diversifying employment opportunities in rural areas, thus increasing socio-economic development.

Colleges of agriculture, according to the literature review, have been described as the brain centres of agricultural progress because they provide the scientific knowledge base through their research efforts. Their training increases the quality of the human agent of production and brings new knowledge to agricultural workers.

Education is not only expected to enhance employability or livelihoods at the individual level and foster economic development at the national level but also to develop democratic values and responsible citizenry that contribute to stable and peaceful communities and nations. However, SACA programmes differ markedly in quality, standards, outcomes and curriculum and, therefore, limit the opportunities for students to change from institution to institution and create further barriers to higher levels of education and training. The relationship that must exist between the colleges and the surrounding areas also depend on the interests of the stakeholders.

CHAPTER 3

RESEARCH METHODOLOGY

3. Introduction

The methodology of this study is crucial, as it constitutes a systematic and logical approach to address the research problem. The aim of the methodology was to identify and comprehend the methods applied in the research. This study focuses on six colleges of agriculture, with Tompi Seleka College of Agriculture serving as a case study. This chapter provides an overview of the methodology used in the study. The discussion in the chapter is organised around the following themes: research design, research paradigm, theoretical framework, research methodology, college programmes, research population and sampling, data analysis, reliability and validity. Additionally, the chapter also covers triangulation, ethical considerations, and limitations of the study.

3.1 Research design

Several researchers have offered definitions and explanations of what research design is. Akhtar, (2016: 68) define research design as the “glue that holds all of the elements in a research project together, in short it is a plan of the proposed research work”. Terre Blanche, Durrheim and Painter (2006: 34), offer another explanation by describing research design as a strategic framework for action that serves as a bridge between the stated research questions and the execution or implementation of the research. Research designs, according to Boru, (2018: 19) research design is the procedures for collecting, analysing, interpreting and reporting data in research studies’.

The design of the study is therefore intended to provide a guideline to address the factors and conditions that may facilitate or inhibit colleges of agriculture, such as the Tompi Seleka College of Agriculture, in making sustained contributions to agricultural socio-economic development in South Africa. A good research design is also necessary for promoting the legitimacy of the results (Akhtar, 2016: 68).

Figure 3.1 presents a schematic review of the research design that was followed in this study.

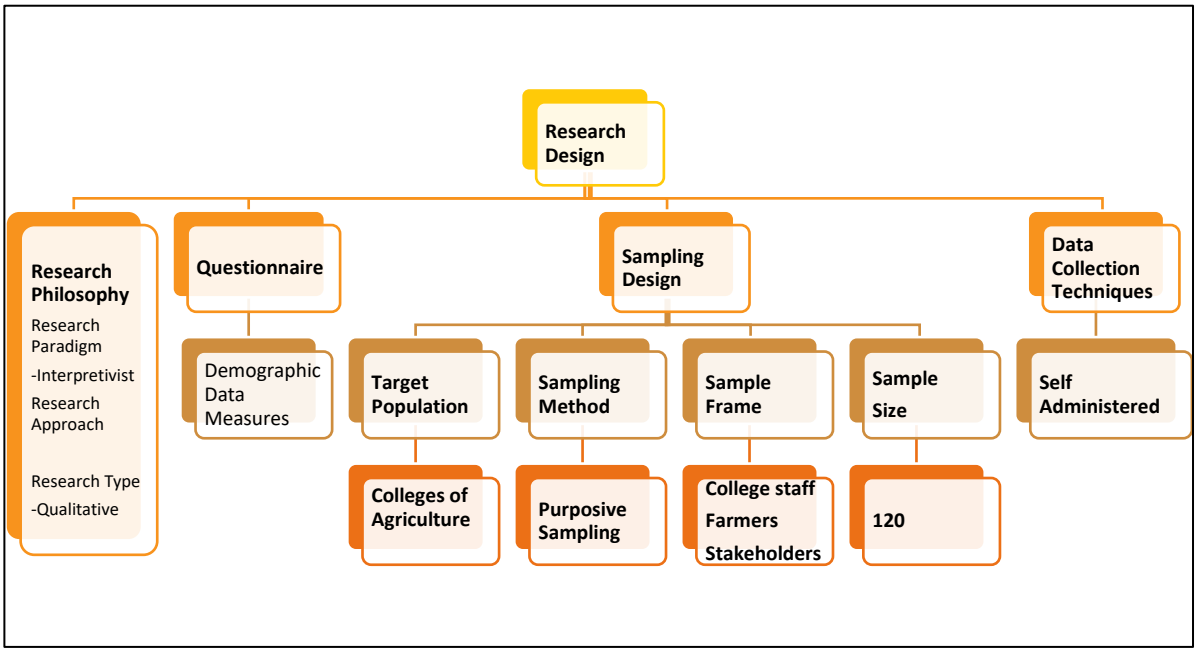

Figure 3.1: Schematic review of the research design developed by the researcher.

In this study, the qualitative data collection techniques used includes a questionnaire, focus group discussions, personal interviews, and personal observations. To provide a more complete and multidimensional understanding of the colleges of agriculture, the researcher used qualitative data collection techniques and tools as outlined by Taylor, Kermode and Roberts, (2007: 41). The reason for using the qualitative data collection techniques was that the qualitative approach allows room for the researcher to be innovative and to work more within the selected research-design framework. The use of the qualitative methodology was necessary to accomplish different aspects, including a variety of ethical issues for consideration such as when the researcher informed the participants about how the interviews would be conducted beforehand. It also allows for the subjects of the research to work more closely with the researcher. The research deign of this study is descriptive research design

3.2 Research paradigm

The concept of a research paradigm is defined by Taylor, Kermode and Roberts (2007: 5) as “a broad view or perspective of something.” According to Weaver and Olson (2006: 460), a paradigm is a pattern of beliefs and practices that guide inquiry within a discipline by providing the necessary lenses, frames, and processes. Ponterotto, (2005: 5) adds that a

research paradigm comprises of a set of interrelated assumptions about the social world that serve as a framework for organised study.

O'Donoghue, (2006: 2) classifies four distinct research paradigms, namely Positivism, Critical, Postmodernism, and Interpretivism. Connole, Smith, and Wiseman, (1993: 9) note that each paradigm is based on significantly different assumptions about epistemology and the purpose of research. O'Donoghue, (2006: 2) explains that researchers who embrace the Positivist paradigm are pursuing technical control as one of three cognitive interests. Smith and Lovatt (1991: 57), focus on the practices associated with both behaviourist psychology and functionalist sociology in their elaboration of what is involved in pursuing technical knowledge.

Connole *et al.* (1993: 10), maintain that the Critical paradigm operates on the assumption that knowledge is problematic and prone to systematic distortion and can never be value-free, but rather represents the interests of some group within society. O'Donoghue (2006: 2), asserts that Postmodernism is an intellectual stance that denies the possibility of reliable knowledge and the existence of a universal stable reality. Connole *et al.* (1993: 12), argue that the position underpinning the Postmodernism paradigm is that knowledge claims are governed by privileged sets of rules and social relations. The Interpretivist paradigm, on the other hand, emphasises social interaction as the basis of knowledge. According to Cohen, Manion, and Morrison (2007: 19), the researcher, in this paradigm, uses their skills as a social being to understand how others perceive their world.

This study adopts the Interpretivist paradigm, which, as Cohen *et al.* (2007: 19), explain, is the process of comprehending, clarifying, and demystifying social reality through the perspectives of different participants. This is in contrast to the Positivist paradigm, which relies on empirical analytical knowledge to provide facts and figures, and the Critical paradigm, which operates on the assumption that knowledge is problematic and prone to systematic distortion. The Interpretivist paradigm also differs from the Postmodernism paradigm, which seeks to challenge the notion of knowledge being based on truth.

The interpretivist paradigm is congruent with the researcher's own ontological and epistemological views as a member of a College of Agriculture. This approach allows the researcher to employ his skills as a social being and to comprehend the perspectives of others in their world, thus co-constructing knowledge through mutual negotiation (O'Donoghue, 2006: 2). The researcher's ontological perspective is that there is not a single reality or truth (as outlined in section 1.5.2 of the study), rather, reality is created by individuals within a specific setting or institution, in this case, Tompi Seleka College of

Agriculture. It is the individuals within the institution who have the best understanding of the workings within the institution and can provide input on how things can be improved or approached differently than an external observer (Cohen *et al.*, 2007: 19).

Additionally, the researcher adopted an inter-subjective stance towards the reality being investigated; incorporating related experiences in relation to the research subject to assist other Colleges of Agriculture. The role of the researcher in the Interpretivist paradigm is to "understand and explain social reality through the eyes of different participants" (Cohen *et al.*, 2007: 19). Before discussing the specific methodologies utilised in the study, the researcher's general structure of inquiry and methodological choices within the adopted paradigm will be discussed.

Finally, the researcher chose the interpretivist paradigm due to its alignment with the philosophical foundations of qualitative methodology. Both the interpretivist paradigm and qualitative methodology support the idea that there are multiple truths and realities. The philosophical assumptions of this study are predominantly drawn from interpretivism, which provides a wider scope for addressing issues of influence and impact, and for asking questions such as "why" and "how", ultimately shaping particular technological trajectories (Deetz, 1996: 191).

The interpretivist paradigm emphasises a holistic perspective of individuals and their environment and is considered to be more aligned with the education and training discipline (Weaver & Olson, 2006: 459). This paradigm is also associated with methodological approaches that prioritise giving voice to the concerns and experiences of research participants (Cole, 2006: 26). According to Cole (2006: 26), qualitative researchers in this paradigm are focused on gaining insight into how individuals feel and think in their specific circumstances, rather than evaluating the validity of those thoughts and feelings. This study adopts this approach as the objective is to understand the perceptions of rural communities surrounding Tompi Seleka College of Agriculture about the college's socio-economic impact.

In contrast to the positivist paradigm, which assumes the existence of one objective truth, the interpretivist paradigm is based on the philosophical idea that observation and reason are the best means of comprehending human behaviour and that knowledge is derived from sensory experience (Fedi, 2003: 111). The interpretivist approach also acknowledges that social reality should be understood through the perspectives of different participants (Walsham, 2006: 320).

Nickerson, (2023: 23) emphasises the importance of considering context in the interpretivist paradigm. The focus is on understanding the subjective experiences of individuals within the

world and the researcher, as an interpretivist, takes on the role of a participant observer, engaging in the activities and deciphering the meanings expressed within specific social contexts (Fink, 2000: 2). This study employs this approach, as the researcher is involved in a collaborative process of knowledge creation with the research participants, leading to new insights for both parties.

Epistemology

In this study, the epistemology according to the researcher, and as guided by Cohen *et al.* (2007: 19), is that reality needs to be interpreted to discover how colleges of agriculture are contributing to the socio-economic development of their neighbouring communities. As the study seeks to look at the nature of knowledge and how knowledge relates to concepts such as truth, belief and justification, the researcher chose to use epistemology to understand how colleges of agriculture operate within surrounding communities.

In addition, the researcher used a hermeneutic approach for a better understanding of the phenomenon under study. According to Lessem and Schieffer (2010: 182), hermeneutics is the art of avoiding misunderstandings that may arise from both the verbal and non-verbal cues of the researcher and participants when communicating. The hermeneutics approach could be further explained as the theory and methodology of the interpretation of philosophical texts. The hermeneutics approach is suited for this study because the researcher explains each comment and interprets what was observe in the study for the clear understanding of the reader.

The realist and objectivist views of knowledge were also used to examine the data. Furthermore, principles such as human behaviour, lend themselves more to scientific education and training aspects such as the exploration of scientific knowledge and logic which are exercised at Tompi Seleka College of Agriculture. An example of the scientific knowledge gained by the college students is the process of planting different varieties of sweet potatoes on the small plots given to the third-year students in groups of five to experiment on their own and then rank their sweetness after harvesting and cooking them. Sweet potatoes were planted because the college wanted communities to take part in the project and sweet potatoes are one of the preferred foods in the rural communities surrounding Tompi Seleka College of Agriculture.

As discussed in chapter 1 section 1.5 of the study, this study will use a Mode 2 enquiry method that has its primary aim, the solving of ‘real-world’ problems, using systems thinking as a conceptual framework. This framework will be explained in the next paragraph and

the rationale for selecting it as a relevant framework for this particular study will be explained.

3.3 Theoretical framework adopted in this research study

A theoretical framework is a collection of interrelated concepts, similar to a theory but not necessarily so well worked out (Borgatti & Everett, 1999: 1). A theoretical framework relates to the philosophical basis on which a research study takes place and forms the link between the theoretical aspects and practical components of the investigation undertaken. The theoretical framework, therefore "has implications for every decision made in the research process" (Mertens, 1998: 3).

Having understood the context of a theoretical framework, the researcher decided to use a systems thinking approach in this study. According to Claesson and Svanström (2015: 12), systems' thinking is defined as "the ability to identify parts, causalities, flows and feedback loops". More importantly, Adam and De Savigny, (2012: iv) define systems thinking as "a way of thinking that appreciates the dynamic, constantly changing nature of complex systems and understands that the context and role of stakeholders are critical". A complex system is also regarded as "numerous components and interconnections, interactions or interdependences that are difficult to describe, understand, predict, manage and/or change" (Magee & De Weck, 2004: 2). These definitions make it clear that systems thinking as a "cohesive approach to management" (Furst-Bowe, 2011: 2) takes all key processes into account as part of a bigger system, rather than looking at individual parts in isolation. Furst-Bowe, (2011: 2) further contends that systems thinking is based on the concept that all key processes in an organisation are dynamically interrelated.

As the whole is more than the sum of its parts and its parts cannot be understood in isolation from the whole (Ziegenfuss, 1992: 5) understanding the relationship between the different parts is critical to organisational effectiveness and achievement (Furst-Bowe, 2011: 2). Arnold and Wade, (2015: 675) also state that the systems thinking approach, involves "a set of synergistic analytic skills used to improve the capability of identifying and understanding systems, predicting their behaviours and devising modifications to them to produce desired effects".

Consequently, according to Koskinen (2013: 1), systems' thinking provides a suitable theoretical framework for this study. It therefore provides an appropriate transdisciplinary and integrative lens which transcends the perspectives of individual disciplines.

Given the above analysis, the researcher believes that a college of agriculture can be seen as a complex system where various interdependent and interactive elements affect one another as argued by Saaty and Kearns, (2014: 4). According to Mizikaci (2006: 1), colleges of agriculture are described as open systems which are exposed and, in fact, reliant on the constant interaction between external influences including external quality accreditation systems, the labour market and society at large, as well as the internal interaction between subsystems such as the different sections within the college. Systems thinking approach, therefore, is appropriate for this study as the study focuses on the arrangement of and relationships among the various parts that connect them into a whole.

The researcher did consider other theoretical frameworks such as Pedagogical Content Knowledge and Education Reconstruction for a Teacher Education model. These two were however not used, as pedagogical content knowledge, according to Guerriro (2017: 5), is a complex issue. Thrupp, (2001: 443) contends that the Education Reconstruction on school effectiveness research has not been rooted in theoretical rationale with a common understanding and clear definition of effectiveness or how it should be measured; hence, it was also not considered in this research. The Adaptive Structuration Theory, which is based on Anthony Giddens' structuration theory (Desanctis & Poole, 1994: 121), was a close second. This theory, according to Desanctis and Poole (1994: 121), is a viable approach for studying the role of advanced technologies in organisational change. However, many researchers argue that the Adaptive Structuration Theory does not have the impact needed when compared to the Systems Thinking Theory, hence the researcher's decision to use the Systems Thinking Theory as a basis for their research.

3.4 Research methodology

The methodology of a research study is informed by the researcher's sociological understanding of the natural and social world (Lopes, 2015: 9). As noted by Grix (2004: 83), the differences in researchers' ontological and epistemological positions may result in varying research approaches to the same phenomenon. Scotland, (2012: 9) highlights the responsibility of the researcher in making their ontological and epistemological positions explicit. It is crucial to articulate the relationship between the researcher's ontological stance, their epistemological stance, and the methodology they adopt.

This study employed a case study methodology, taking Tompi Seleka College of Agriculture as the baseline of the study. A case study is defined by National University (2023: 4), as "a phenomenon of some sort occurring in a bounded context and that is in effect the researcher's unit of analysis". Merriam (1998: viii), defines the characteristics of a case study

as “intensive, offering a holistic description and an analysis of a bounded phenomenon such as a programme, an institution, or a person”. Merriam (1998: xiii), further stresses the unique distinctive attributes of a case study as *particularistic* as it focuses on a particular situation, event, programme or phenomenon. Such a method yields a rich, thick description of the phenomenon under study and it illuminates more fully the reader’s understanding of the phenomenon under study. In addition, a case study is an in-depth study of a particular research problem rather than a sweeping statistical survey.

The case study approach also suited this study because it allowed the researcher to explore the identified colleges of agriculture by interviewing their personnel and students. This is in line with Yin (2003: 12), who states that a case study allows the researcher to explore individuals or institutions through complex interventions, relationships, communities or programmes. The case study design is therefore justified for this study, as it sought to investigate how colleges of agriculture operate in and within surrounding communities.

The researcher adopted the case study approach due to several reasons. First, it provides more in-depth information compared to other methods, such as experimental research, as it enables the researcher to observe and examine processes and activities over time in their context. Secondly, the case study approach allows the researcher to combine multiple data collection methods, such as surveys, focus group discussion’s, interviews, and observation, which may result in both qualitative and quantitative analysis. Thirdly, case studies generate rich qualitative data that can describe real-life environments and explain their complexities, which may not be captured through experimental or survey research alone (Zainal, 2007: 1). The researcher therefore had to formulate questions that were general enough to suit the wider population (Sincero, 2012: 2).

Baxter and Jack, (2012: 544) argued that the presentation of data collected through the case study approach ensures that the issue is explored through multiple perspectives, revealing and enhancing understanding of the multifaceted aspects of the phenomena. In this research study, the case study method was chosen as it is appropriate for exploring the impact of colleges of agriculture on rural communities in South Africa, where little is known about the functioning of these institutions. The method also involves all parties affected by the research topic and allowed for the researcher to gain valuable insight into the topic through the responses of surrounding communities, who were eager and willing to share information.

By using the case study method in this research study, the researcher wanted to extend the experiences or add strength to what is already known through previous research on the contributions of existing agricultural colleges to the socio-economic development of the

surrounding rural communities (Gerring, 2004: 341). For example, agricultural education and training in South Africa is “slow to adapt to new patterns of demand” and “lacks proper mechanisms for identifying emerging needs as well as for reforming curricula” to meet current demands, as cited by (Kidane and Worth, 2012: 2743). Wallace, (1997: 15) also argues that teaching methods and curricula must be kept relevant and should be needs-based and market oriented to achieve success.

Furthermore, the use of a case study in this research helped the researcher to better explain the complexity of real-life situations in a college of agriculture which may not be captured through experimental or survey research (Zainal, 2007: 4). Another argument for using the case study method is that the researcher should be able to inform other people about the results of this study as a case study method brings more interesting insights through knowledge sharing than a purely statistical survey (Zucker, 2009: 13). To justify case study method over the other methodologies is that, case study emphasize more strongly than most other qualitative approaches, the temporal aspect (a case study could involve data stretching back over a number of years) as well as the location aspect (data could involve a number of settings or places) (Cropley, 2023: 65). To emphasise the justification of the use of a case study method, Cropley, (2023: 65) contends that a clearly formulated research question can develop during the investigation especially in the course of the analysis of the data, rather than being worked out in detail prior to the research commencing, as is the case with quantitative studies. Finally, in the words of Charmaz (2014: 1), unlike with quantitative methods, qualitative research involves “iterative strategies of going back and forth between data and analysis,” so that there is a constant interaction between data and evolving theory.

3.4.1 Research phases and techniques used to collect data

Research Phases

The study was carried out in three phases. The first phase was initiated through a questionnaire administered in six colleges of agriculture with the aim of evaluating the impact of a college of agriculture on a community’s socio-economic development, which was the primary objective of the study. The second phase focused on determining the extent to which the primary stakeholders of the colleges of agriculture contribute to the knowledge base and agricultural skills of the surrounding communities. The information obtained from this phase was used to validate the data from the first phase and determine if the objectives of the study were met. Finally, the third phase measured the extent to which government agricultural policies support the ability of agricultural colleges to drive the socio-economic development of their surrounding communities.

Questionnaires are often used as the first method because they allow for quick data collection and enable researchers to identify patterns and trends in the research area (Jaykaran, 2011: 93). The researcher chose to use a questionnaire first because it allowed the participants the greatest latitude in pace and sequence of response (O'Leary, 2004: 155). The questionnaire method followed by Fox, (2009: 5) was employed at Tompi Seleka College of Agriculture and then cascaded to the other five colleges of agriculture to check for consistency in data obtained from communities surrounding these institutions.

As per the suggestion by Fox (2009: 9), focus group discussions were then conducted with 30 farmers from around the Tompi Seleka College of Agriculture and another focus group discussion was set up with ten members of the Bakone Development Forum to verify the information received from the colleges with that from the community. A tabulated summary of the activities at each site is presented in Table 3.1.

The study was carried out in 3 phases, starting with the use of a structured questionnaire technique. The researcher aimed to gain an insight into the functioning of six colleges of agriculture. In the second phase, five headmen from rural communities around the college and other stakeholders were interviewed to confirm the results of the structured questionnaire. In the third phase, Focus Group Discussions were conducted to further validate the findings from the structured interviews. The final phase involved personal observations with five headmen selected for their connection to communities that have members working at Tompi Seleka College of Agriculture.

The choice of personal observations was made to ensure the independence of respondents, as pointed out by Dewalt and Dewalt, (2002: vii). These observations were conducted to verify the initial findings from the interviews and to retrospectively identify areas of commonality.

Table 3.1: Summary of the type of technique used, number of days, rationale and the number of participants at each research site

Type of technique used	Time in days	Rationale	Participants	Number of participants
Questionnaire (The structured technique was first used to get an insider view of the six colleges)	280 days	To get the inside views from the six colleges of agriculture about their daily activities	Management Lecturers Admin staff Students	18 18 12 12
Interviews 1 (The semi-structured technique was then used to confirm the results of the structured interviews)	83 days	To confirm the information obtained from the structured interviews	Headmen	5
Interviews 2 (The semi-structured technique was then used to confirm the results of the structured interviews)	93 days	To confirm the information obtained from the structured interviews	- Agri-SETA - DAFF - LDARD - Farmers Union - BBI	5
Focus Group Discussion 1 (The focus group technique was used next to confirm the results of the structured interviews)	81 days	To affirm and confirm the findings from the structured interviews	Farmers	30
Focus Group Discussion 2 (The focus group technique was used next to confirm the results of the structured interviews)	13 days	To affirm and confirm the findings from the structured interviews	Bakone Development Forum	15
Personal observation (Personal observation technique was finally used to confirm the results of the structured interviews)	5 days	To test the initial findings from interviews and to identify introspectively areas of commonalities	Headmen	5
Total	555 days			120

According to Muhammad (2023: 5), research techniques refer to practical skills applied to specific tasks identified as part of the research. The use of various research techniques, as described in Table 3.1, is a practical approach applied to a particular task to achieve the desired objective. Nkatini, (2005: 30) highlights the importance of the researcher being skilful and flexible in their use of the chosen technique. Data collection, on the other hand, refers to the systematic gathering of relevant information for the research, using methods such as questionnaires, focus group discussions focus group discussions, interviews, and participant observation (Burns & Grove, 2003: 373).

In this study, a questionnaire was used to collect information from 60 participants, comprising of ten participants from each of the six identified colleges of agriculture: three managers, three students, two lecturers, and two administration staff. The aim of gathering information from different individuals within a college of agriculture was to ensure that the analysis of data reflected a broad perspective of the participants in that setting. This was important as each interviewee in the various settings added something to the researcher's understanding of the setting. As Roshani (2020: 56), emphasise, the objective of data collection as to uncover the broadest range of meanings held by the participants in the setting. Additionally, the researcher employed focus group discussions, interviews, and personal observations to further affirm and confirm the findings obtained from the structured interviews.

Research techniques explained

3.4.1.1 Questionnaire development

In this study, a structured questionnaire that included both open-ended and closed-ended questions was utilised to collect data from colleges. The questionnaire aimed to capture information on the framework or guidelines that should be used to promote positive, sustainable agricultural development in agricultural colleges and contribute to the socio-economic development of local communities.

As stated by Nkatini (2005: 30), questionnaires should be simple, short, unambiguous and avoid double-barrelled questions. However, as no previously tested questionnaire was available for this study, the researcher was obliged to develop and validate the questionnaire after consultation with the principals of other colleges of agriculture involved in the study. The questionnaire consisted of biometrics and dichotomous and open-ended questions.

According to Van Averbeke (2005: 28), multiple-choice questions require participants to select an answer from a pre-formulated list of answers. In this study, the pre-formulated list of questions was related to the participants' gender, age, level of education and the names of the colleges of agriculture. The collected information was used in some instances to place relevance on the responses, in the case that variables such as gender, age, or level of education might have influenced the response. However, the researcher did not identify any significant discrepancies, as the community members were of similar age and educational level.

Young (2016: 4) posits that open-ended questions require participants to formulate their own answers, allowing for the free expression of thoughts and ideas. Polit and Hungler (2004: 349), elaborate further that open-ended questions allow participants to respond in their own

words. In this study, open-ended questions did not allow for one-word answers and provided interviewees with the opportunity to express their thoughts and feelings (De Vos, 2002: 293).

The study also included dichotomous questions, as described by Fife-Schaw (2006: 1), which are multiple-choice questions that offer only two possible responses, such as yes or no, agree or disagree, and good or bad. The study focused on three types of questions that utilised a pre-formulated list of answers and were used to understand the value of the diploma according to the students and relevant stakeholders. An example of such a question was Does the diploma in agriculture that your institution offers meet the requirements of the agricultural industry? Motivate your answer.

A questionnaire was employed between the dates of 13/01/2016 and 10/10/2016. Subsequently, semi-structured interviews were conducted from 02/05/2016 to 01/08/2016 to gather the perspectives of the designated stakeholders, as this method enables informants to articulate their views in their own words. According to Van Zyl (1999: 178), semi-structured interviews provide trustworthy and comparable qualitative data. Establishing trustworthiness of the research is required for qualitative analysis. Moser and Korstjiens, (2017:271) emphasise that determination of quality of qualitative data is rooted within trustworthiness, which is achieved through the criteria of confirmability, transferability, credibility and dependability. Furthermore, the researcher utilised the focus group discussions technique among a homogeneous group of 30 farmers near Tompi Seleka College of Agriculture and ten members of BDF, which took place between 03/05/2018 and 25/07/2018. This method was utilised in order to clarify the research findings obtained through interviews with 60 participants from the six colleges of agriculture. An example of a question in this section is *What are the factors and conditions at both institutional and national levels that facilitate or inhibit colleges of agriculture to make sustained contributions to agricultural socio-economic development*? These questions are explained in Appendix A of this research study.

Unstructured interviews

The unstructured interview is a flexible interview approach that lacks a specific set of predefined questions (Preece *et al.*, 2002: 12). This type of interview allows the interviewer to ask open-ended questions and allows the interviewee to express their views freely. Personal interviews, on the other hand, are described by Kabir (2016: 23), as interviews that utilise a structured schedule containing both open and closed questions. The researcher conducted two sets of personal interviews: the first between 02 May 2016 and 01 August 2016, and the second between 03 May 2018 and 25 July 2018. The participants were headmen and stakeholders from organisations such as AgriSETA, the Department of Agriculture, Forestry

and Fisheries, farmers, and the Limpopo Department of Agriculture and Rural Development. During an unstructured interview, open-ended questions are posed, creating a conversational and collaborative atmosphere between the interviewer and interviewee. This type of interview allows both the interviewer and interviewee to determine the direction of the discussion, and it is therefore not predetermined (Preece *et al.*, 2002: 12). However, the lack of a standardised format for unstructured interviews makes it difficult to ensure consistency across different participants.

An example of an unstructured question asked is What do you think the college should do differently to contribute to the community's socio-economic development? This was the follow-up question after the interviewee had been asked What is the college doing to help the rural community near it?

The advantages and disadvantages of unstructured interviews are noted by Preece *et al.,* (2002: 12). While the unstructured nature of this type of interview allows for a more flexible discussion, it also poses challenges in terms of time consumption and data analysis. However, the opportunity for rich data, information and ideas can be generated through the ability to vary the level of questioning and delve more deeply into specific issues as they arise.

In this study, the researcher utilised the unstructured interview method in all three formats, including voice recording, to ensure comprehensive data collection from all participants, including the five headmen who lacked the literacy skills necessary to complete a questionnaire. Despite the difficulty in coding unstructured interview data, the researcher was able to do so successfully by using the voice recorder.

3.4.1.2 Focus group discussion

In this study, focus group interviews were employed to gather data on the participants' understanding and experiences relating to the research topic and to determine the reasons behind their respective patterns of thinking. According to Parahoo (1997: 296), a focus group discussion is a dialogue between the researcher and more than one participant, aimed at collecting comprehensive data. Holloway and Wheeler, (2002: 110) indicate that in focus group discussions, researchers interview participants who possess common characteristics or experiences, in order to elicit their ideas, perceptions and thoughts regarding specific topics or issues that are relevant to the area of study.

According to Burns and Grove (2003), focus group discussions interviews have several advantages. Firstly, focus group discussions interviewing is a versatile technique that enables the researcher to delve deeper into the meaning of the data than is possible with other methods, such as interviews. Secondly, focus group discussions interviews have a higher response rate compared to questionnaires, leading to a more comprehensive description of the phenomenon under study by the participants, who are able to share their ideas and experiences (Johns Hopkins University, 2023: 2). Furthermore, as noted by Chipunza (2007: 112), focus group discussions interviews provide a platform for sharing and contrasting common experiences through discussion.

In this study, focus group interviews were conducted with 10 members of the Bakone Development Forum and 30 farmers. These interviews took place in an informal and relaxed atmosphere, which encouraged the participants to willingly share their experiences. The information obtained was recorded on a flip chart, and the interviews were conducted after the participants had completed a questionnaire. According (Johns Hopkins University 2023: 2), the ideal size of a focus group should range from six to eight participants. In this study, ten participants were included in each group due to the researcher's ability to manage the group effectively, as per Johns Hopkins University 2023: 3), recommendation.

3.4.1.3 Personal observation

In their definition of personal observation, (Choudhury (2016: 4), describe it as a "systematic description of events, behaviours and artefacts in the social setting chosen for study". Demunck and Sobo (1998: 15), further reinforce this view by stating that personal observation is a primary method utilised by most anthropologists in their fieldwork. The process of fieldwork is characterised by "active looking, informal interviewing, writing of detailed field notes and, most importantly, patience" (Kayode-Sanni, 2020: 1).

Kabir (2016: 240), goes on to explain that personal observation is characterised by open-mindedness, non-judgemental attitude, attentiveness, and a willingness to embrace the unexpected outcomes of the learning process. According to Choudhury (2016: 4), the personal observation technique is utilised to gain a nuanced understanding of non-verbal expressions of feelings.

The observation tool was employed by the researcher during the time periods of 02 May 2016 to 01 August 2016 and from 03 May 2018 to 25 July 2018, at the Alumni and Bakone Development Forum respectively. The aim of the observation was to study participants and the phenomena in their natural settings, as opposed to structured environments such as laboratories or focus groups. This allowed the researcher to gain unique insights that would

not have been obtainable through other methods. During the observation process, the researcher acted as an impartial observer, introducing himself and explaining his role to the participants, despite being well known in the area.

The researcher noted that the participants were well-informed about their situation and were available for further information. It was also observed that within institutions, particularly at the BDF, a power struggle existed in the absence of the chairperson as everyone wanted to speak to him during his visit. Finally, it was clear that the researcher's success in obtaining the required information and understanding of the culture and activities of the people should be taken into account.

The researcher aimed to observe and record events, such as the participants' reactions and level of involvement, as well as the information shared during interviews, in order to gain a deeper understanding of the context and phenomena under investigation and test the research hypotheses. A video recorder was utilised during personal observations with the participants' consent. The use of personal observation allowed for an in-depth exploration of the backstage culture and a detailed description of events as perceived by the participants. Furthermore, it provided a flexible method for the researcher compared to other techniques that may have limited depth.

However, it should be noted that the use of personal observation may result in participants altering their behaviour due to the awareness of being observed. During a meeting with five headmen, which lasted three hours, the researcher observed the willingness of the participants to assist with further information and their emphasis on making Tompi Seleka College of Agriculture comparable to its status in the early eighties. The contribution of the sole female in the group was notable throughout the meeting. The results of the observation method are analysed in Section 3.7 of the chapter.

3.5 College context

3.5.1 Tompi Seleka College of Agriculture

The Tompi Seleka College of Agriculture has a long-standing history of providing quality agricultural training, spanning over 60 years. As one of the most reputable agricultural institutions in South Africa, the college has established a strong relationship with the Tshwane University of Technology, which provides students with access to a comprehensive range of agricultural offerings.

At present, the college has admitted 242 students, with 128 pursuing Plant Production studies and 114 pursuing Animal Production. Of these students, 127 are male and 115 are female. The college has a diverse student body, with 220 students from the Limpopo Province, 12 from the Mpumalanga Province, 7 from the Gauteng Province, 2 from Namibia, and 1 from the Eastern Cape Province (DAFF, 2011: 11).

Tompi Seleka College of Agriculture offers both Higher Education and Training (HET) and agricultural skills development programmes, with the aim of training junior farm managers, production managers, technicians, value-chain role players, and advisors in a wide range of technical and practical skills. The college places a strong emphasis on balancing theory and practice and adopts a “Training by doing” approach in its practical sessions. The training focuses on the agricultural commodities of the Limpopo Province and is based on the demands of farming enterprises. The college has a non-discriminatory admission policy and accepts applications from prospective candidates from all over the world. However, admission is competitive and not guaranteed, with a minimum admission points score of 20 and certain minimum level 4 requirements in English, Mathematics, and several other subjects.

The learnerships offered at Tompi Seleka College of Agriculture are registered by AgriSETA and accredited by the South African Qualification Authority (SAQA). These programmes provide students with an occupational qualification and include a combination of classroom theory, practical experience, and workplace experience. The college also offers short courses for emerging farmers and those involved in land reform and land restitution, with the aim of contributing to the socio-economic development of the community. These short courses are available throughout the year and are offered on an ad hoc and demand basis.

3.5.2 Overview of the communities surrounding Tompi Seleka College

Most communities surrounding Tompi Seleka College of Agriculture are actively involved in agriculture-related activities daily. The majority (150) of the residential sites in the communities surrounding Tompi Seleka College of Agriculture have home gardens and enclosures (kraals) for livestock. In the home gardens, people grow vegetables and fruit and also keep several types of livestock, including chickens, doves and pigs though on a small scale. The arable lands are used for rain-fed cropping, mostly maize and cotton. The spring rains in October typically mark the beginning of the cropping season which starts with the preparation of the soil for planting. Planting of rain-fed crops is completed by early January and harvesting occurs from April onwards when the grain or cotton balls are picked, collected and transported to the homesteads. The rangeland is used to rear cattle, goats and sheep.

A good relationship exists between the college and the community because Tompi Seleka College of Agriculture students are exposed to the daily activities of the farmers and their challenges and the rural farmers feed off the expertise of the college lecturers and third-year students who work as mentors. The college takes part in the National School's Nutrition Programme by helping some of the high school pupils in the neighbouring communities to plant vegetable gardens; third-year student's act as consultants which then serves as part of the practical component of their programmes.

Grade 10, 11 and 12 students from the neighbouring schools visit the college every quarter to be taught and exposed to practical agricultural activities such as artificial insemination, the different types of cattle breeds, the different types of crops planted in the college and nursery management. The college also hosts the extramural activities of the community and school, such as athletics, soccer and netball, as part of their outreach programme to the rural communities to contribute more fully to the socio-economic development of the surrounding communities.

3.6 Research population and sampling

3.6.1 Sampling method and population

This section defines the important concept of sampling. A sample is the part of the population that has been selected for study and it provides the database for analysis and interpretation (Nkatini, 2005: 38). In addition, a sample population covered by a survey refers to the full collection of elements on which information is to be collected (Kabir, 2016: 250). Vasileiou, Barnett, Thorpe, and Young, (2018: 1) explains that a sample is a selection of a sub-set of elements drawn from the study population.

Vasileiou, *et al*, (2018: 1) define a sample as elements selected to find out something about the total population from which they are taken. A population, according to Team, (2020: 9) is defined as all elements (individuals, objects and events) that meet the sample criteria for inclusion in a study. For instance, instead of collecting data from each college of agriculture in South Africa, the researcher chose to work with only six colleges as his sample.

The researcher employed purposive sampling to recruit participants for this study. The choice of purposive sampling was informed by the intention to sample from a specific population with a particular purpose in mind (Palys, 2008: 697). This approach is distinct from random sampling, where subjects are selected at random, and from convenience sampling, where subjects are chosen based on convenience factors. The benefits of purposive sampling include proper representation of the universe and prevention of irrelevant

items entering the sample by chance. This method also provides insights that can be generalised to similar cases.

In this study, the purposive sampling method was deemed appropriate and beneficial as the researcher required specific experts in agricultural education and training, relevant stakeholders in colleges of agriculture, and farmers practising in specific agricultural fields and possessing knowledge in agriculture. It was not feasible or cost-effective to include all 11 colleges of agriculture and the farming population throughout South Africa (Burns & Grove, 2007: 70)

A sample size of 120 participants was selected based on the requirement for inclusion of colleges of agriculture in South Africa, which met the sample criteria. The sample fraction of this study was 10% of a population of 500, in accordance with the requirements of the purposive sampling method Vasileiou, (2018: 1). A sampling fraction, as defined by Taherdoost (2016: 18), is the proportion of elements to be included in the sample. Team (2020: 9), recommends maintaining a sample fraction of 10% for populations ranging between 500 and 5000 elements, as this sample fraction reflects the qualities of the population.

The researcher managed to get the depth and thick descriptions when interviewing 120 participants. According to Mason (2010: 2), within any research area, different participants can have diverse opinions; therefore, qualitative samples must be large enough to assure that most or all of the perceptions that might be important are uncovered. In addition, Marshal, Cardon, Podda, and Fontenot, (2013: 11) contends that sample size of a case study can ranged from 5 to 350 with an average of 31. According to Marshal *et al* (2013: 12), once a researcher believes saturation has occurred; he/she should conduct several additional interviews to test whether existing themes and categories are sufficient.

Bowen, (2008: 137) feels that saturation is claimed in any number of qualitative research reports without any overt description of what it means or how it was achieved. According to Morse, (1995: 147) in qualitative research, there are no published guidelines or tests of adequacy for estimating the sample size required to reach saturation equivalent to those formulas used in quantitative research. Lastly, to validate the 120 participants in this study, Patton, (2002: 248) recommends that qualitative research sample sizes should reasonably cover the studied occurrence, depending on the purpose of the study and the points of interest for stakeholders.

The sampling frame of this study consists of a list of all the third-year students because they were actively involved in the outreach programme that sort to help farmers. A total of 41 students were selected from Tompi Seleka College of Agriculture (see attachment in

Appendix B). The selection of these third-year students was based on their performance and their involvement in doing the farm work in various farming activities around Tompi Seleka College of Agriculture. The list of alumni of Tompi Seleka College of Agriculture who were selected from the three nearby districts that the college services in the Limpopo Province also form part of the sampling frame of the study. The selection was based on their active involvement with various farming communities and the names were also suggested by the headmen of the five villages near Tompi Seleka College of Agriculture. According to Kabir (2016: 263), the sampling frame specifies how all the elements of the population will be identified.

In this study, the farmers who formed part of the sample were selected based on the degree of their continuous production and active involvement in farming. The administrative staff who form part of the ten participants from each college of agriculture, all have more than five years of experience. The headmen and the Bakone Development Forum members were selected based on their daily activities as community development proponents. The Bakone Development Forum members, who the researcher helped to initiate, are the ten representatives of the five rural communities surrounding Tompi Seleka College of Agriculture.

In addition, data were also collected from Cedara, Grootfontein, Elsenburg, Taung and Glen colleges of agriculture which formed part of Phase 1 of this study. These six colleges were chosen because they have similar characteristics, such as offering programmes similar to those that are offered at Tompi Seleka College of Agriculture. In addition, they all conduct similar activities. Furthermore, they all have similar programmes except for Taung College which offers irrigation programmes, Elsenburg College which produces wine and Grootfontein College which specialises in wool production as additional subjects.

More importantly, these colleges have long been offering Agricultural Education and Training which will help the study to acquire information about their roles concerning activities performed by students. These Agricultural Education and Training colleges have had an impact on their surrounding rural communities; for example, vegetable projects which have enabled some small-scale farmers to become self-employed.

Finally, these colleges are accredited by the Council on Higher Education which means that the quality of offerings in these colleges is more or less of the same standard. Since these colleges are situated in different provinces, the researcher believes that sampling participants that are as representative as possible for this study is a great opportunity to be able to generalise the findings. The purposive sampling technique was therefore chosen to

provide the researcher with comprehensive data to evaluate and interpret the results of the study.

Table 3.2 depicts the overview of the two phases which include the names of the colleges and provinces, the numbers of participants interviewed, as well as the type of technique used to collect the data in both Phase 1 and Phase 2 of the study. The researcher aimed to understand the contribution of the college management to the socio-economic development of nearby communities and the impact of students and lecturers on college outreach programmes. The inclusion of the college management was crucial as it helped to assess their role in managing and updating academic programmes to meet curriculum goals. Moreover, the researcher wanted to investigate the support provided by the administration staff to management, lecturers, and students in fulfilling their daily responsibilities.

According to Channele (2021: 1), a classroom environment that fosters learning is a fundamental right of students. In this regard, students and lecturers form a community of learners, where trust and mutual respect are integral to creating an effective learning environment. Hence, the researcher included students and lecturers in the study to gain a deeper understanding of their impact on the college's outreach programmes, which aim to connect the college with rural communities.

Table 3.2: Overview of the two phases

COLLEGE	PROVINCE	POPULATION		TECHNIQUES USED	PARTICIPANTS	PROVINCE	POPULATION	TECHNIQUES USED
Cedara College of Agriculture	KwaZulu-Natal	Management Students Lecturers Admin staff	3 3 2 2	Structured questionnaire	➢ AgriSETA ➢ DAFF ➢ LDARD ➢ Farmers Union ➢ BBI	Gauteng Gauteng Limpopo Limpopo Limpopo	1 1 1 1 1	Semi-structured interviews (interviewed first)
Grootfontein College of Agriculture	Eastern Cape	Management Students Lecturers Admin staff	3 3 2 2	Structured questionnaire	Tompi College of Agriculture alumni	Limpopo	10	Personal observation (interviewed second)
Elsenburg College of Agriculture	Western Cape	Management Students Lecturers Admin staff	3 3 2 2	Structured questionnaire	Bakone Development Forum	Limpopo	10	Focus group interviews (interviewed third)
Glen College of Agriculture	Free State	Management Students Lecturers Admin staff	3 3 2 2	Structured questionnaire	Farmers next to the college that Tompi Seleka College of Agriculture is servicing	Sekhukhune District (Limpopo)	10	Focus group interview (interviewed fourth)
Taung College of Agriculture	North West	Management Students Lecturers Admin staff	3 3 2 2	Structured questionnaire	Farmers next to the college that Tompi Seleka College of Agriculture is servicing	Capricorn District (Limpopo)	10	Focus group interview (interviewed fourth)
Tompi Seleka College of Agriculture	Limpopo	Management Students Lecturers Admin staff	3 3 2 2	Structured questionnaire	Farmers next to the college that Tompi Seleka College of Agriculture is servicing	Waterburg District (Limpopo)	10	Focus group interview (interviewed fourth)
		Management Students Lectures Admin staff	18 18 12 12	Structured questionnaire	Headmen of the five nearby communities around Tompi College of Agriculture	Limpopo	5	Unstructured interview (interviewed fifth)
Total		**60**					**60**	

The inclusion of the college stakeholders was for the researcher to understand how they help colleges of agriculture to meet their strategic objectives by contributing their experiences, perspectives, and/or materials and resources. The researcher started with Phase 1 because, in Phase 1 of the study, the researcher hoped to find out to what extent a college of agriculture has an impact on a community's socio-economic development the major aim of this study. The information obtained from Phase 2 of the study helped the researcher to confirm, or not, the data analysed from Phase 1. The information emanating from the two phases determines whether the objectives of the study have been met or not.

3.7 Data analysis

The comprehensive examination of data collection methods is crucial in any study. According to Nkatini (2005: 41), data analysis encompasses the categorisation of identified data, examination of relationships between categories, and the development and testing of theories against the collected data. The use of Abbreviated Test Language for All Systems (ATLAS) software was employed for efficient data storage and retrieval as recommended by Streubert and Carpenter, (2003: 70). Nkatini (2005: 41), further highlights that the integration of pre-existing knowledge and newly acquired information takes place once all data have been collected and organised. According to Sugiyono (2014: 247), data analysis involves three concurrent activities, including *data reduction, data display, and conclusion drawing.* Data reduction, as defined by Weke (2022: 15), is a technique used to store data, is the process of simplifying, transforming, and selecting data from the original documents.

Verdinell and Scagnolii (2013: 360), emphasise that data display facilitates the comprehension of the meaning of the data, while conclusion drawing and verification form the third and final step in data analysis. Corporate Finance Institute, (2020: 3) emphasises that in qualitative research, data analysis commences from the initiation of data collection, and the researcher must be adaptable, responsive, and a good listener throughout the process. Warren, (2020: 4) stresses the importance of conducting qualitative data analysis with rigour and care.

The preliminary data analysis of the Tompi Seleka College of Agriculture and the five targeted institutions was conducted after the researcher received the first questionnaire responses. Five research assistants aided the researcher in conducting the analysis. During the analysis, the researcher extracted and identified significant themes such as wealth creation, socio-economic development, sustainable development, and rural communities. Streubert and Carpenter (2003: 70), stress that a comprehensive and exhaustive final

description requires the identification of how statements and central themes connect and emerge.

During the thematic analysis, the researcher thoroughly reviewed the transcript from the focus group discussions and identified various themes that emerged from the discussions and were recorded on the flipchart. According to Firican (2020: 2), once data saturation has been collected to support the categories, the researcher may choose to categorise this data into two or more categories. In this study, categories such as the educational level of farmers, socio-economic development in the rural communities surrounding Tompi Seleka College of Agriculture, and the relationship between activities, development and wealth creation, as informed by this study, were identified.

To interpret the findings of the study, the researcher referred back to the research questions that were formulated in connection to the problem. The analysis and interpretation of the results, as well as the implications of the findings for the significance of Tompi Seleka College of Agriculture, are discussed in Chapter 4 of this study. During the analysis, the researcher extracted and identified significant themes such as wealth creation, socio-economic development, sustainable development, and rural communities

3.8 Reliability and validity

3.8.1 Reliability

Objectivity is an indispensable aspect of a rigorous inquiry, and it is crucial that researchers evaluate their methods and conclusions for potential biases. In qualitative research, standards of validity and reliability are critical. Mcleod, (2023: 2), defines reliability as the consistency of a qualitative research study or measuring test, while Chiang, Jhangiani and Price, (2020: 3) states that reliability refers to the consistency of the measuring tool in providing the same result over repeated trials. According to O'Leary (2004: 58), reliability is concerned with internal consistency, ensuring that data collected, measured, or generated are identical under repeated trials.

There is a distinction between external and internal reliability, as described by Ritchie and Lewis, (2003: 271). External reliability refers to the extent to which similar studies can be replicated, while internal reliability relates to the consistency of assessments, judgements, and ratings internal to the research conducted, and the degree to which they are agreed upon or replicated among researchers.

To ensure the reliability of the structured questionnaire used in this study, Dörnyei (2006: 117), recommends that a trial of the instrument be conducted on a smaller but similar population. The researcher was concerned with the representativeness and comprehensiveness of the questionnaire in yielding meaningful results on the impact of the Tompi Seleka College of Agriculture on the surrounding community's socio-economic development. To ensure clarity of responses, the researcher avoided combining two questions in a single statement. An example of such a question would be (1) *Does the* Diploma in Agriculture that your institution offers meet the requirements of the agricultural industry? (2) Please motivate your answer.

The reliability of the research was ensured by the researcher by reducing the sources of measurement error, such as data collector bias. This was achieved by having trained researchers administer the questionnaires and standardising conditions, such as exhibiting similar personal attributes to all respondents, such as friendliness and support. The physical and psychological environment where data was collected was made comfortable by ensuring privacy, confidentiality, and general physical comfort. Participants were instructed not to include their names on the questionnaires to preserve confidentiality.

Polit and Hungler (1993: 445), stress that reliability can be enhanced by minimising sources of measurement error, such as data collector bias in this case. Participants who preferred to complete the questionnaire themselves were encouraged to write legibly, so that their responses could be accurately recorded.

Information regarding the reliability of the instrument used in data collection in research is a crucial aspect of the survey method. Chiang *et al,* (2020: 3) assert that the criteria for measuring the reliability of quantitative research instruments are not appropriate for qualitative approaches. To preserve confidentiality, all questionnaires were anonymous and did not include names. As the reliability in qualitative research is the stability of responses to multiple coders of data sets. In this study it was enhanced by detailed field notes by using recording devices and by transcribing the digital files.

3.8.2 Validity

The content validity of the instrument used in this study was of utmost importance and refers to the extent to which it accurately measures what it aims to measure (Young, 2016: 5). Kumar (2005: 153), defines validity as the degree to which an instrument measures what it was designed to measure, which is concurred by Polit and Hungler, (1993: 448). Middleton,

(2019: 6) further explains that validity is founded on the assumption that the phenomenon being studied can be captured, seeks to verify the truth and accuracy of the results, and indicates the credibility of the conclusions and methods. To establish content validity, a pilot study was conducted. Content validity is defined as a subjective assessment of the suitability of the items in the instrument as perceived by a set of experts who possess knowledge of the subject matter (Middleton, 2019: 6). To establish content validity, the researcher sent copies of the questionnaire to a field supervisor for feedback. The responses were evaluated and any clarifications or modifications were made to ensure the items were relevant to the objectives of the study. Minor modifications to the layout and wording were also implemented based on the feedback received, such as the suggestion to include the phrase “Please mark with an x”. In this study, the validity of the findings was related to the careful recording and continual verification of the data that the researcher undertook during the investigative practice.

The questions in the questionnaire were based on the findings from the literature review to ensure they were representative of what employees in colleges of agriculture should know about the role and responsibilities of such institutions in community development.

To address the issue of validity in the instrument used in the study, participants from a sister college of agriculture, Madzivhandila in the Vhembe district of the Limpopo Province, were interviewed as part of the pilot study. This college offers the same programmes as Tompi Seleka College of Agriculture. The only correction made to the questionnaire was the change of the sentence “Please identify all stakeholders that work directly with the college” to “Please list the relevant stakeholders working directly with the college*”*. Anderson, (2004: 112) states that it is impossible for any research project to produce 100% reliable and valid findings. However, the researcher deemed it necessary to address these issues to determine an approach to data collection that reflects an open-minded attitude and to minimise the limitations and maximise the credibility of the study.

The approach to data collection was systematic and well planned. The reliability and validity of the study were enhanced through the pilot testing of the research instrument, thereby justifying the decisions made. The questionnaire was reviewed by the field supervisor and necessary changes were incorporated based on their input. This included clarifying and modifying items in response to the reviewer’s comments, as well as making minor modifications to the layout and wording of the questionnaire before its use in the study. Moser and Korstjens (2017: 271), argue that determination of quality of qualitative data is

rooted within trustworthiness, which is achieved through the criteria of confirmability, transferability, credibility and dependability.

3.9 Triangulation

Triangulation is a widely used approach in research and is defined by Arslan, (2019: 12) as the experimental method that uses multiple sources to address one research question. According to Noble (2019: 19), triangulation is used to evaluate data and determine its relevance in order to validate the findings of a study. Methodological triangulation, as outlined by Taylor, Kermode and Roberts (2007: 46), refers to the application of two or more research methods within a single study during the data collection or design stage.

Arslan, (2019: 12) provides an alternative definition of triangulation as the deliberate combination of quantitative and qualitative methodologies, with the reasoning behind this approach being that a single method is insufficient in addressing the challenge of competing causal factors. The researcher in this study adopted triangulation as a means of combining multiple sources of data, such as questionnaires, interviews, focus group discussions (FGDs), and observations, with the aim of overcoming the limitations and biases inherent in using a single research technique (Yin, 2003: xvi).

The researcher utilised the qualitative triangulation method in this study due to its ability to combine multiple research methods, thereby reducing the weaknesses and limitations of relying on a single technique. Across-method triangulation typically involves the integration of two methods (Patton, 1990: 6). Data triangulation also implies collecting data from various categories of individuals, as outlined by Roberts and Taylor, (2002: 4).

In addition to the use of multiple methods, triangulation also involves the utilisation of multiple measures of an empirical phenomenon to counteract biases and improve rationality (Blaikie, 2000: 144). In this study, data was collected from multiple sources, including the six colleges of agriculture, farmers, the community, the Bakone Development Forum (BDF), and local headmen, to validate the information gathered. Triangulation was achieved through the comparison of data received from questionnaires, interviews, focus group discussions, and observations. The questionnaire was used to gather information from the six colleges of agriculture, while semi-structured interviews were conducted with stakeholders and headmen. focus group discussions were conducted with farmers, and the observation technique was used during interactions with the BDF and alumni.

Triangulation is an approach that incorporates multiple informants and research methods, such as participant observation and focus group discussions, to gain a comprehensive understanding of a phenomenon. In this study, data from stakeholder interviews, questionnaires, and observations was utilised to reinforce and complement data gathered from the management, students, administration staff, and lecturers of the colleges of agriculture.

The concept of data triangulation is often categorised as time and persons triangulation (Noble, 2019: 19). Time triangulation involves the collection of data at different points in time to analyse the impact of these differences on responses. For instance, researchers can collect data at varying times of the day, different days of the week or in various months of the year (Rinaldi, 2006: 1). In the present study, however, the objective was not to compare participants' knowledge across different shifts or months. Rather, the researcher aimed to understand the contribution of colleges of agriculture to sustainable agricultural development.

The inclusion of different stakeholders was crucial to the study's objective of gaining in-depth insight into the benefits of colleges of agriculture for communities. Tompi Seleka College of Agriculture was selected as the case study subject. Through interactions with rural communities, the researcher acquired a deeper understanding of how best to link them with colleges of agriculture. The study found that investment in human capital was essential to ensure sustained economic growth and poverty reduction in the rural communities surrounding the colleges of agriculture.

The researcher handled data management by documenting the method used to gather information. The researcher acknowledges that this dual approach does not result in a single consistent picture but rather presents a challenge to improve the comprehension of the various reasons for the consistency between the two sets of data. In conclusion, the researcher views triangulation not only as a tool but also as a solution to providing valid and reliable data in a complex world. By implementing triangulation, the qualitative research approach is not only strengthened but also empowered.

3.10 Ethics

In research, ethics are concerned with determining what is considered right, proper, and good, as opposed to what is wrong, improper, and bad (Arifin, 2018: 30). A crucial aspect of research is the protection of participants from harm, and there are some differences in the ethical considerations between qualitative and quantitative research (Arifin, 2018: 30). In this

study, the code of research ethics set forth by the Human Science Research Council (HSRC) (1997) was followed. The study was first introduced to the management of Tompi Seleka College of Agriculture and the Agricultural Advisory Services Branch of the Limpopo Provincial Department of Agriculture and Rural Development in 2014. The Department of Agricultural Advisory Services Branch then wrote a letter to the Da Vinci Institute to confirm that the study would be conducted under the knowledge of the Limpopo Provincial Department of Agriculture and Rural Development, as evidenced by Appendix E.

During the interviews, informed consent was obtained from all potential participants, as outlined in Appendix F. It is crucial that participants are provided with accurate information about the study to allow them to make an informed decision about their participation (Moser *et al*, 2017: 271). This was achieved by informing participants at the start of each interview that their participation was voluntary, that the information they provided would be kept confidential, and that it would only be used for the purpose of this study. Participants were also informed that they had the right to end their participation at any time without providing a reason. To maintain anonymity, participants were assigned fictitious names during the data capturing process.

The relationship between risk and ethics in research is well established. According to Peters (2022: 7), risk refers to the potential for harm to participants, including physical injury, emotional distress, loss of self-esteem, or embarrassment and that researchers need to build rapport to have people trust us enough to give us what can personal details.. To mitigate risk, it is crucial to ensure that the potential harm to participants never exceeds the benefits of the knowledge that may be gained from the research (Polit, Beck and Hungler, 2001: 21). In this study, the researcher observed no instances of harm to participants.

Data collection for this study was carried out through individual interviews using a questionnaire. The participants, who were lecturers, college management, and administrative staff, were not required to provide their real names, ensuring anonymity and minimising the risk of harm to participants. Furthermore, Polit, Beck and Hungler (2007: 123), have noted that data collected in this manner is believed to pose minimal risk.

During the data collection phase of this study, there was a potential risk posed by the relationship between the researcher, who was the rector of Tompi Seleka College of Agriculture, and the participants. To mitigate this risk, the researcher took steps to ensure that participants felt comfortable discussing the research topics and provided support and reassurance through the provision of a 24-hour contact phone number.

Finally, the risk associated with reporting the results was also considered. The researcher took precautions to avoid linking participants to the findings, and to minimise the potential harm that may occur as a result. In conclusion, the researcher is confident that all risks posed to participants during this study were addressed and posed minimal threat throughout all stages of the research. The researcher took care to avoid breaches of the confidentiality in which the information of the participants divulged to anyone else. He did so not only to protect against psychological, social, and legal harm to the participants, but was also essential to the conduct of research itself.

3.11 Limitations of the study

Although this research was carefully thought out and prepared, the researcher is aware of some of its limitations and shortcomings. First of all, the research was conducted in the period between January 2016 and October 2016 on a part time basis as the researcher is employed by the Department of Agriculture in the Limpopo Province as the rector of Tompi Seleka College of Agriculture. A ten-month period to gather data is generally not enough.

A shortage of funds for extensive travel meant that the researcher was not able to personally interview the interviewees of the other five colleges of agriculture hence the assistant researchers were used to collect data from other colleges of agriculture which are in different provinces and far apart from each other. This is a limitation because the researcher was not able to witness some of the experiences and lessons that he might have gathered while engaging with research participants from other colleges not included in this research had he conducted the research personally. This means that the researcher missed the opportunity to interact directly with the interviewees when answering questions and to observe any non-verbal communication nuances expressed through their facial expressions which might have helped him to understand their realities better.

McMillan and Schumacher, (2014: 23) point out that an institution such as a college is a public enterprise and is influenced by the external environment which cannot be controlled. When interviewing older people in Setswana, which is a language used by local people in the surrounding communities, the language barrier slowed down the communication process as many interviewees needed time to clearly understand each translated question the researcher was asking before they could answer. The participants used deep Sepedi while some were speaking the Ndebele language. The slowness of the communication did not, however, prohibit the researcher from achieving the expected results through interaction with the targeted communities.

Another limitation was that some of the participants in the community were unable to read or write. In these cases, the researcher was able to capture sufficient information during the discussion when filling their questionnaire through probing. An interpreter was not needed because the researcher is local and understood what the participants were saying. This meant that no information escaped capture by the researcher.

Finally, although the researcher explained the purpose of the interviews, the training staff in Tompi Seleka College of Agriculture were suspicious during the interaction because they thought the information might be used against them.

3.12 Conclusion

This chapter outlined the research design which is intended to provide guidelines to address the factors and conditions that facilitate or inhibit colleges of agriculture, such as the Tompi Seleka College of Agriculture, from making sustained contributions to agricultural socio-economic development in South Africa and promoting the legitimacy of the results. The research design for this study was descriptive design method and interpretive case study that was analysed largely through qualitative research methods. Further, the several stages involved in the design and development processes of the research in this study were briefly described. The researcher chose the case study method because it provides much more detailed information than what is available through other methods, such as the experimental research method. After all, the researcher explores a process and activity in depth over time.

The research paradigm of this study is the interpretivist paradigm which emphasises social interaction as the basis for knowledge. To understand how colleges of agriculture are operating within the surrounding communities, the researcher used the hermeneutics approach because he wanted to avoid misunderstanding in both verbal and non-verbal communication with the interviewees. The researcher used the systems thinking approach as the theoretical approach in this study because systems thinking is a cohesive approach to management that considers all the key processes as part of a bigger system, rather than looking at the individual parts in isolation.

The important concept of sampling and the research techniques, such as focus group discussions, interviews, and participant observation used were also explained in this chapter. The reliability as the degree of error that exists when obtaining a variable and the validity as the degree to which an instrument measures what it is intended to measure were discussed. ATLAS computer software was utilised for efficient data storage and retrieval in this study.

To interpret the results of this study, the researcher reverted to the research questions that led to the initiation of this research and were formulated in relation to the problem. The slowness of the communication between the researcher and the members of the rural community surrounding Tompi Seleka College of Agriculture did not prohibit the researcher from achieving the desired results during the interactions. The use of the triangulation method in this study meant the combination of multiple methods to ensure that the researcher overcame any weaknesses, intrinsic biases or problems that might have occurred from using a single method. An explanation of how ethical concerns were handled. The limitations of the study concluded the chapter.

CHAPTER 4

PRESENTATION, ANALYSIS, INTERPRETATION AND DISCUSSION OF DATA

4.1 Introduction

This chapter presents, analyses, interprets and discusses the data collected for this research and in so doing provides answers to the core questions raised in this study:

1. What impact do colleges of agriculture have on the socio-economic development of communities?
2. To what extent do the primary stakeholders of the colleges of agriculture contribute to the body of knowledge of the agricultural skills of the surrounding communities?
3. To what extent do the agricultural policies of the government and colleges of agriculture contribute to colleges of agriculture driving the socio-economic development of the surrounding communities?

The chapter begins with a brief introduction to the analysis of the data. The analysis itself was divided into three phases. The first phase analysed the role and impact of colleges of agriculture with special reference to how they addressed the needs of the surrounding communities and how those communities perceived the involvement of colleges of agriculture in the socio-economic development of their communities. In the second phase, the analysis looked at the involvement of the relevant primary stakeholders in colleges of agriculture to examine how they contributed to helping colleges of agriculture improve their role in the socio-economic development of their communities.

The third phase of the analysis looked at the extent to which the agricultural policies of the government contributed to the ability of the colleges to drive the socio-economic development of the surrounding communities successfully. The reason for having three phases in the analysis of the data in this study was to corroborate more clearly, through comparison, the information coming from the colleges of agriculture and that from the rural communities and the stakeholders. The information obtained from Phase 2 and Phase 3 of the study will help the researcher to endorse or not the results from the data that would have been analysed in Phase 1. As already highlighted in this study, the study essentially presents qualitative data, however in some instances there are indications of numbers of participants who responded in one way or the other and the quantitative data has been presented to show the level or extent of agreement of the questions asked or the weighting of the opinions of the participants.

The finding presents an overview of the impact that colleges of agriculture have on the socio-economic development of communities. Then follows an overview of the opinions from the community surrounding TSCA who are the beneficiaries of TSCA's outreach programme. This is the community with whom the researcher had stakeholder meetings to find out if the community was benefitting from the college's programmes. These meetings were follow-ups to the structured set of interview questions sent out earlier. The interview questions were designed to assess the relationship between the colleges of agriculture and the surrounding communities and to analyse and assess the extent to which the colleges of agriculture are viewed as helping rural communities to become sustainable.

The chapter also looks into that which colleges of agriculture and primary stakeholders DAFF, AgriSETA, the farmers' unions, the Department of Agriculture Limpopo Province and the Sekhukhune and Waterberg TVET colleges that are working directly with colleges of agriculture are doing to help the rural communities to achieve sustainable agricultural development. This is followed by an overview of how the activities performed by the colleges of agriculture are directed by agricultural policies and how these policies help to ensure the sustainable development of the surrounding communities.

In addition, the chapter offers a discussion of the farming trends as observed in the rural communities and attempts to explain the findings based largely on the interpretations from the focus group discussions and the researcher's personal observations. The narrated and described experiences from the individual interviews and focus group discussions, together with a wide range of ethnographic data, were collected by the researcher using a tape recorder, flipchart and participant observation sheets as recommended by Stewart and Shamdasani, (2017: 49).

The information obtained from the individual interviews and focus group discussions will serve as an important explanatory and discussion framework for the perceived role and contribution of the colleges of agriculture in the sustainable development of agricultural activities in the surrounding rural communities. For ease of reference, this chapter will follow the sequence as outlined in Table 4.1.

Table 4.1: Three phases representing the objectives of the study

Research	Focus of Phase
Phase 1 focuses on six colleges of agriculture: TSCA, Cedara, Grootfontein, Elsenburg, Taung and Glen	The focus of Phase 1 is to Assess the impact of the activities of the colleges of agriculture on the socio-economic development of the surrounding communities.
Phase 2 focuses on the contributions from stakeholders such as: AgriSETA, Waterberg and Sekhukhune TVET colleges, TUT, University of Limpopo, Provincial Department of Agriculture, DAFF, farmers' unions	The focus of Phase 2 is to Determine to what extent the primary stakeholders of the colleges of agriculture contribute to the body of knowledge and agricultural skills of the surrounding communities. Examine the relationship between the activities performed by the colleges of agriculture and how this leads to the sustainable development of the surrounding communities. Decide what may be the best framework to govern South African agricultural colleges so that they meet the national objectives of making them the hub of the socio-economic development of the surrounding communities.
Phase 3 focuses on the impact of policies on education and agricultural training	The focus of Phase 3 is to Measure to what extent the agricultural policies of the government contribute to the ability of the agricultural colleges to drive the socio-economic development of the surrounding communities successfully.

4.2 Introduction to the analysis

This section aims to conduct a close analysis of the primary data obtained from the expressed opinions of both farmers and relevant college stakeholders. The participants' ideas and opinions about the contribution of colleges of agriculture to the community's socio-economic development as expressed by the participants in the meetings held with members of the community to gather data on whether the activities of the college have an impact on the community's sustainable development are also examined.

ATLAS computer software was utilised for efficient data storage and retrieval as recommended by Streubert and Carpenter, (2003: 70). Nkatini (2005: 41), argues that data analysis "involves the concretisation of identified categories; the exploration of relationships that may be existing between those categories and the development and testing of theories against the data". In this study, data analysis started after the first set of responses to the structured interview questions were received from TSCA and were captured between January 2016 and October 2016. To interpret the results of this study, the researcher reverted to the research questions that were formulated in relation to the problem.

According to Partington, (2009: 11), there is little standardisation with no absolutes where a specific type of qualitative data relates to a specific type of analysis. Neuman (2011: 518), further claims that no single qualitative data analysis approach is widely accepted, while Schurink, Fouché and De Vos (2011: 403), suggest that there are always variations in the number and description of steps for the same process of data analysis by different authors. From the preceding views, it can be inferred that qualitative data emerges to some extent from uniquely designed events.

To ensure that the researcher became acquainted with the data for analysis and interpretation, the original interview of the completed verbatim transcription was listened to several times and notes were made. All interviews were carefully checked during the evening of the day on which the interview occurred. Whenever missing information or ambiguities were identified, the participant was revisited to clarify the information. This was necessary for five instances.

The entire transcribed text and field notes were critically considered to obtain an overall and comprehensive impression of the content meaning before the abstraction process of coding, where units of meaning were identified and labelling began. The transcribed text was then arranged into meaningful themes and categories as described by Neuman, (2011: 510). All textual data contained in a theme tells a story about that theme and is somehow related, representing different dimensions of a phenomenon and, according to Neuman (2011), should be arranged as such. The coding process for the field notes and transcripts consisted of the open coding as outlined below (Neuman, 2011: 510).

Open coding involved the identification and naming of segments of meaning from the field notes and transcripts concerning the research topic. The focus of open coding was on wording, phrasing, context, consistency, frequency, extensiveness and specificity of comment. Consequently, the segments of meaning from the field notes and transcripts were clearly highlighted and labelled descriptively. After breaking the data down into distinct parts, the researcher examined these parts closely and compared them for similarities and differences. During this process, the researcher became aware of emerging categories and coded them.

The identified themes that emerged were the importance of socio-economic development, the need to develop capacity for rural wealth creation, the role of the college in promoting community engagement, the importance of promoting sustainable community development

and the need to ensure consistent and impartial application of relevant policies in a college of agriculture. These themes are individually explained in section 4.6.

4.3 Phase 1 analysis

As discussed above, Phase 1 of the analysis set out to establish the role of a college of agriculture with special reference to how it addresses the needs of the surrounding communities and how those communities perceive the college's involvement. Two main questions were asked in this phase as outlined below. These questions were aimed at seeking confirmation for the first three objectives of the study (see section 1.5).

As briefly outlined in Table 4.1, Phase 1 of the study covers the information obtained from the surrounding community of the primary area of study, the six identified colleges of agriculture as indicated in Table 3.2 and the policies that inform the work of the colleges. In order to obtain information for Phase 1, the researcher used a questionnaire and Focus Group Discussion techniques.

The Phase 1 analysis offers a synopsis of the responses received from the three sets of interviews held per area of investigation and provides a brief analysis of the views of the interviewees.

Question 1:

What the perceptions of the surrounding communities regarding the role of a college of agriculture in the socio-economic development of the community are?

Figure 4.1 outlines the responses received from the community members interviewed, particularly the headmen, regarding the role of a college of agriculture in the community's socio-economic development. The headmen were selected as participants in the study because they have a good understanding of the activities taking place in the college, given that their community members are employed there. Their knowledge and insight into the college of agriculture is considered valuable to the research, and thus, they were interviewed.

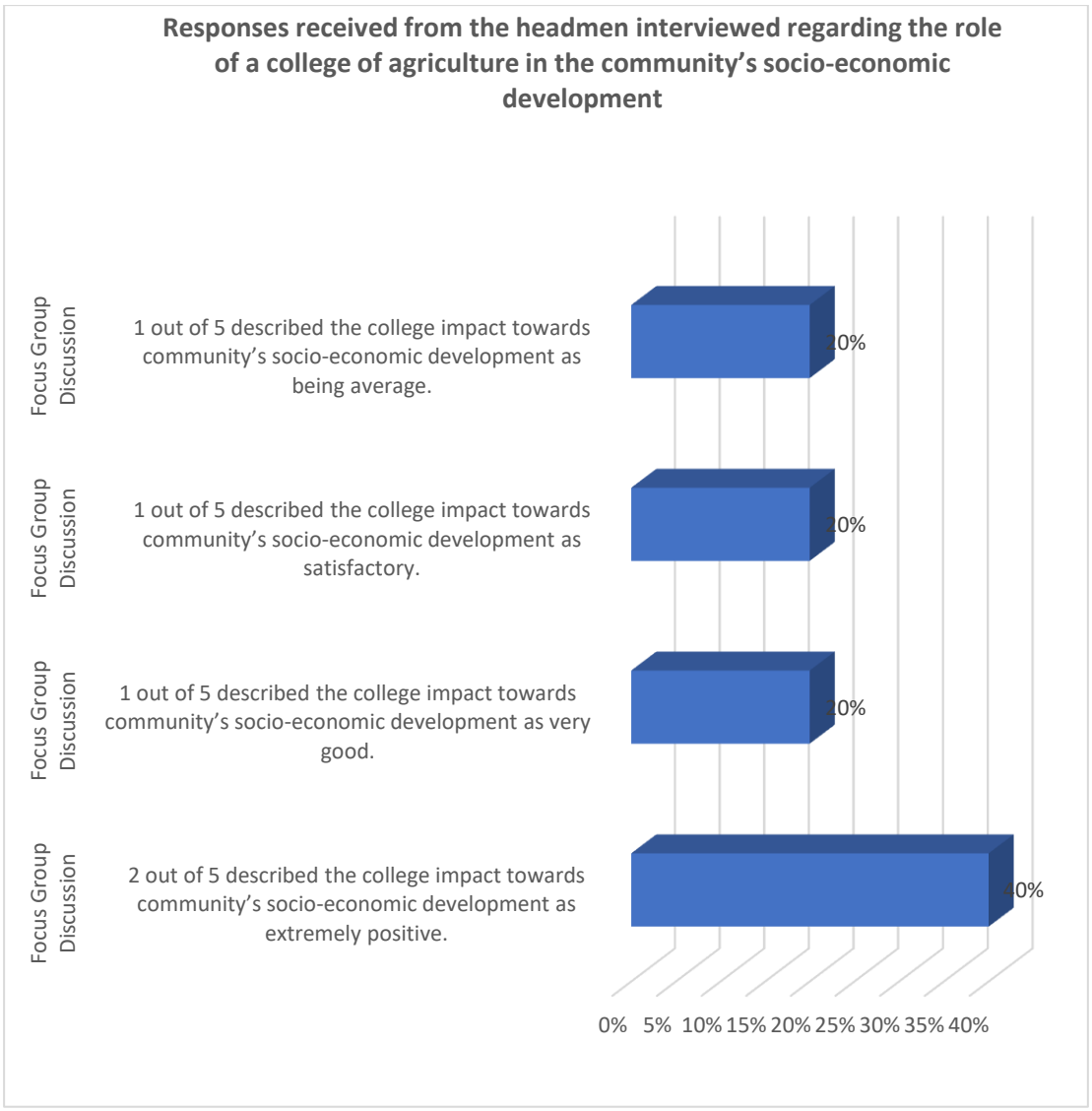

Figure 4.1: Outline of the responses received from community members

According to Figure 4.1, 2 interviewed headmen of a total of 5 described the role of colleges of agriculture in the community's socio-economic development as being extremely positive. One of the headmen said:

> Our village, Mafisheng, is next to TSCA and as such we are able to buy milk, vegetables, fish, fruits and livestock from the college at a very reasonable price. We, therefore, regard Tompi Seleka College as our mine because some villages are far from the college as compared to us.

To confirm what the headman said when describing the role of colleges of agriculture in the community's socio-economic development, the other said:

> Some of the Tompi Seleka College first-year students without bursaries are residing in the Phetwane village. Other Phetwane community members are working in the college and our youth are getting learnership programmes and valuable information from the college.

The Phetwane headman further said:

> About 90 per cent of the security personnel working in the college are from nearby rural communities.

The point being made here by these headmen is that the nearer their communities are to TSCA, the more advantage they have regarding the services that the college is offering. As an example, the Mafisheng headmen regard the college as their “mine”, apparently because they get what they need milk, fruits, vegetables and fish from the college without having to spend money on transport going to the college.

The Letebejane headman, the only woman interviewed of the 5 headmen, described the college’s impact on the community’s socio-economic development as very good. According to her, apart from the good things the college is doing for the Letebejane community members such as hiring people on the Extended Public Works Programme (EPWP), she reminisced about bygone days, saying:

> The college should plant nice flowers like before. You should know that people used to come to the college during wedding days to take some pictures.

In addition, one participant described the impact of the role of colleges of agriculture on the community’s socio-economic development as satisfactory and further said:

> I believe that the college should consider employing the nearby community members as opposed to hiring someone from Polokwane as an example. And within a short space of time, he or she wants to be transferred back to where they are from. If the local people are hired, they will be here for many years as their homes are just next to the college and will help to protect the college from vandalism is rampant.

The interviewee was satisfied with the impact of the role of colleges of agriculture on the community’s socio-economic development but worried about the vandalism that takes place in these colleges of agriculture. According to the headmen, as much as the college is helping

the communities surrounding them, instead of the communities protecting the college, vandalism occurs.

Finally, 1 participant described the role of colleges of agriculture on the community's socio-economic development as average. He had this to say:

> The college should renovate the playgrounds such as the netball and soccer fields. Second, the college should make the athletics facilities available like before where our school children were able to come and compete on the college grounds.

The above results are in keeping with DAFF (2011: 11), which emphasises that colleges of agriculture in South Africa should develop their capacity to make significant contributions to the socio-economic development of communities. Functionally, the colleges of agriculture should be centres of excellence and rural wealth creation hence they should contribute to the socio-economic development of the rural communities (DAFF, 2011: 8). In addition to being Centres for Rural Wealth Creation (CRWC), agricultural colleges according to DAFF, (2011: 8) are expected to develop their capacity to be the centres of excellence within their respective agro-ecological zones.

The data in Figure 4.1 and the excerpts above show that the college's work has a significant impact on the community's socio-economic development. This is in line with Lebrun and Rebelo (2006: 27), who point out that colleges of agriculture should provide technical advice and give support to rural communities to promote the community's socio-economic development. The results in Figure 4.1 are similar to the conclusion of Stringer (2001: 11), who argues that agricultural socio-economic development operates as an important social welfare infrastructure in rural communities by permitting people to supply themselves with the three fundamental human needs food, clothing and shelter.

4.4 Phase 2 analysis

The second stage of analysis assessed the perception of the stakeholder community regarding the value of the diploma offered at the colleges and whether it meets the requirements of the agricultural industry. The researcher first presented the reasons given by the interviewees regarding their view on the extent to which the diploma offered at the colleges of agriculture contributes to the sustainable development of the community. Representatives of the Agricultural Sector Education and Training Authority, Technical and Vocational Education and Training, and Tshwane University of Technology were represented

respectively. This was followed by an examination of the interviewees' perspectives on whether the diploma offered at colleges of agriculture meets the needs of the surrounding agricultural industries. The reasons provided either supported or challenged the significance of the diploma offered at colleges of agriculture.

The second question asked had two parts.

Question 2a:

Whether the stakeholder community thought that the diploma had value or not and whether it contributed meaningfully towards the community's sustainable development.

Question 2b:

Whether the programme addresses the needs of the agricultural industry as key stakeholder.

When asked to assess if the diploma offered at colleges of agriculture was aligned to the requirements of the surrounding communities and agricultural industries as stated in Figure 4.2, the researcher noted a number of different responses. Figure 4.2 captures the received responses.

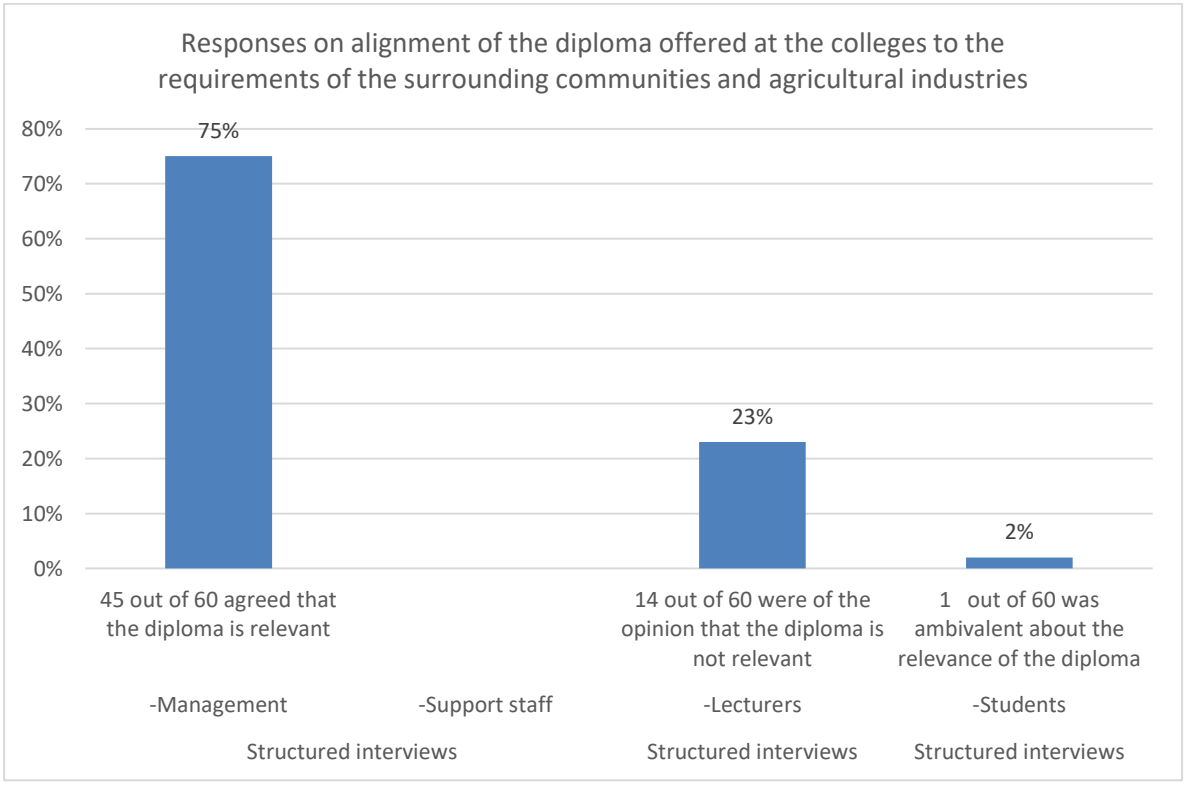

Figure 4.2: Responses on alignment of diploma offered

In response to whether the diploma addresses the needs of the surrounding communities and the agricultural industry (Figure 4.2), 45 of the 60 participants were confident that the diploma offered in the colleges of agriculture is aligned with the agricultural industry. Fourteen of the 60 interviewees believed that the diploma offered in the colleges of agriculture is not aligned with the agricultural industry. One lecturer highlighted that “there are few training facilities in the college which make it difficult for some of the learners to use them for practical purposes”. Another lecturer said that “we are still behind with the content of our learning materials as some are not up to standard for a college of agriculture”. In emphasising the need of the training facilities, one lecturer said that; “most of our college training facilities need to be replaced as they are out dated and do not match the present agricultural technology systems”. Finally, 1 participant of the total of 60 was ambivalent about the relevance of the diploma.

The data in Figure 4.2 shows that overall the participants who participated in this study thought that the diploma offered in the colleges of agriculture had been researched and validated by stakeholders and agricultural industries. One lecturer said that “because the curriculum in the college has been approved by both South African Qualification Authority and the Council on Higher Education, the diploma offered is relevant and also meet the standard of higher education”. The other lecturer emphasised that “because we are part of the college now, it is for us to identify the gaps of our curriculum and fill them during the reaccreditation process”. Lebrun and Rebelo, (2006: 69) believe that the quality of services offered in a college of agriculture should be such that they meet the expectations of their clients. This is particularly important given that the perception of quality is linked to the evaluation of the colleges of agriculture in South Africa by DAFF as stated (section 2.5). Finally, the Department of Education, (2003: 6) argues that all colleges of agriculture in South Africa are accredited by the CHE and SAQA and offer accredited higher education programmes.

The reasons for relevancy or irrelevancy and alignment or misalignment of the diploma offered in a college of agriculture are outlined in Figures 4.3 and 4.4.

Figure 4.3 outlines the response to the question of whether the diploma offered in the college is contributing to the agricultural skills of the surrounding communities and the needs of the agriculture industry. There were 60 interviewees.

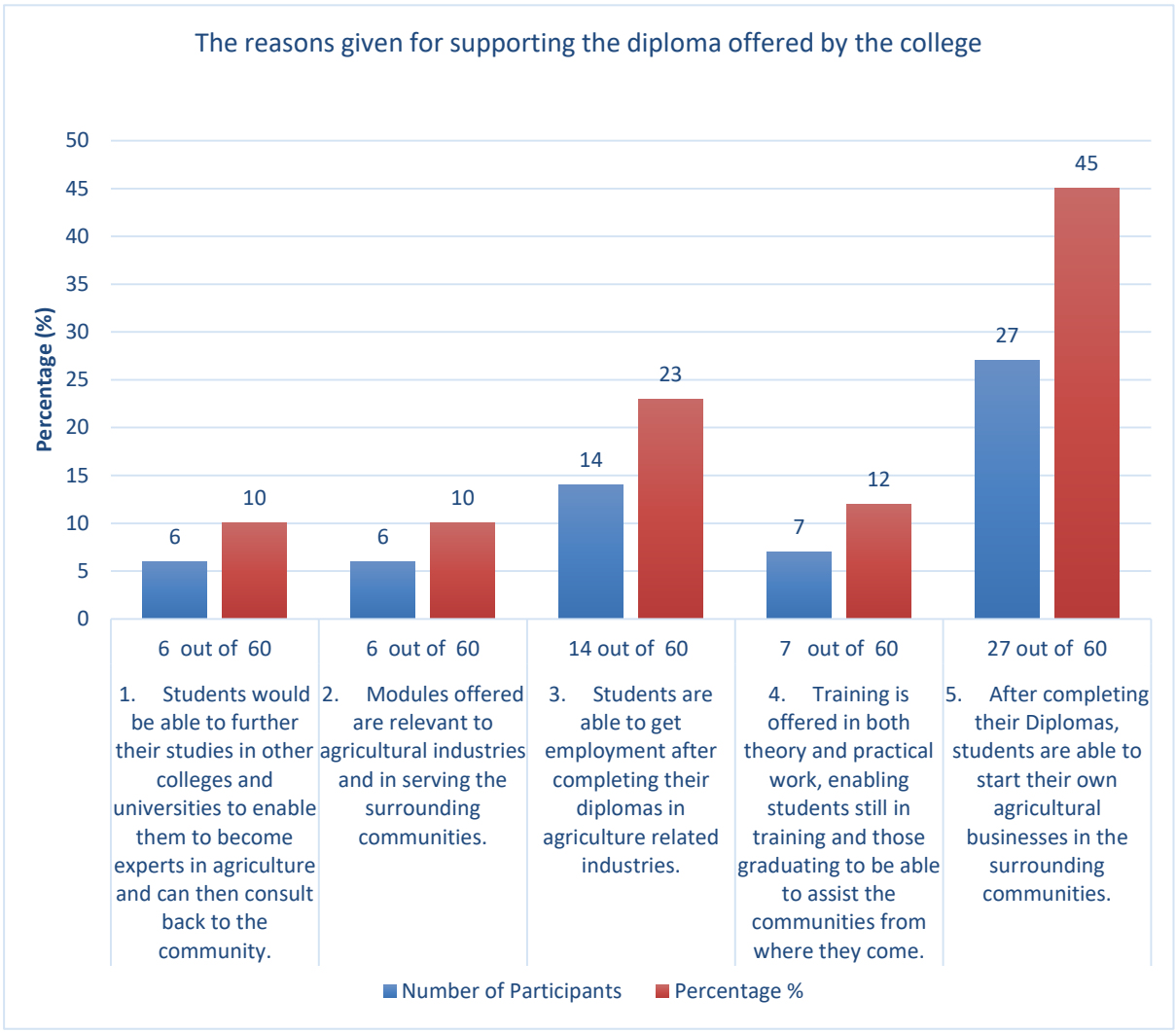

Figure 4.3: Reasons given for supporting the diploma offered by the college

Figure 4.3 above shows that 27 of the 60 students feel that they can start their own businesses after completing their diplomas. One student said:

> We can start our own agricultural projects in our respective communities due to the information obtained from a college of agriculture.

In emphasising the self-employment capabilities after the completion of the diploma in a college of agriculture, this is what was said by one member of management:

> Some of the students managed to have a piece of land where they are practising agriculture. They are now entrepreneurs because they are able to employ other people.

Another participant, a new farmer, commented from his cattle kraal:

> Do you see those women over there at my house? They are waiting to buy this milk. People here like milk but I am unable to supply all of them with my three cows; some are buying milk from Tompi Seleka College. Although milk is expensive here at six rands a litre, people are buying it every day as milk is good for them and their children.

Even if not all students can start their own agricultural businesses, the above participants are confident that some of the students manage to become agricultural entrepreneurs after completion of the diploma course. Fourteen of the 60 students interviewed were confident that they can get employment in agricultural industries and the departments of agriculture after completing their diplomas in a college of agriculture. One student responded and said:

> Students find job opportunities after completing the diploma course in the college; some are now managers in the nearby white-owned farms like Schombie Landgoed and Schoeman Boerdery. Other students are employed by the LPDARD and Agricultural Research Council (ARC), respectively.

When stakeholders were asked why they support the diploma offered at colleges of agriculture, 7 of them said that they supported the agricultural diploma because the training offered is focused on vocational training which is one of the requirements of SAQA. One of them from Rahlagane Grapes, who was a student in Tompi Seleka College of Agriculture, had this to say:

> Yes, we are able to use the experiences we got from Tompi Seleka College like planting the vines as you can see how our orchard looks. We were taught how to calibrate how to apply fertilisers on the vines and how to drive a tractor.

Finally, 6 students interviewed of the 60 said that students can further their studies in other colleges and universities once they obtain the diploma offered by colleges. One participant commented:

> The diploma is valuable because most of the students, after completing their diploma programme, continue studying in institutions of higher learning such as the University of South Africa (UNISA), University of Limpopo (UL) and TUT. They are using this diploma as a stepping stone.

Six of the 60 students also emphasised that modules offered at colleges of agriculture are relevant to the rural communities that colleges of agriculture are servicing. One said:

> Yes, the modules offered in the college of agriculture are relevant because a poultry farm project at Ga-Reagopola was aimed at a very low level of production. They had a high mortality rate of broiler chickens before the college's intervention and presently they can sell their chickens and get the profit they wanted to get. For me, this proves that the modules are relevant for the benefit of rural communities.

These results and utterances show that interviewees agree with the relevancy of the diploma offered in the agricultural college and suggest that the college is doing what it is mandated to do, that is, to provide quality education and training which is used in the surrounding communities and for progression to higher levels of learning. Colleges of agriculture in South Africa have the common mandate of providing training, retraining and upskilling and in-service training of agricultural extension and advisory personnel and resulting in the reduction of poverty in their respective provinces (DoE, 2003: 6).

The Department of Agriculture, Forestry and Fisheries (DAFF, 2011: 12) confirms that colleges of agriculture offer qualifications at National Qualifications Framework (NQF) levels 1 to 7, as they are registered with the South African Qualifications Authority (SAQA) and the Council on Higher Education (CHE). These colleges also adhere to policies established by the National Development Agency (NDA) and align with the principles and goals of the National Agricultural Education and Training System (NAETS). It is noteworthy that these colleges have the potential to continue making significant contributions to the agricultural sector, but require re-focusing and re-capitalisation.

While the benefits of the diploma offered at colleges of agriculture were acknowledged, Figure 4.4 depicts the reasons cited by some participants for why the diploma did not adequately meet the needs of the agricultural industry.

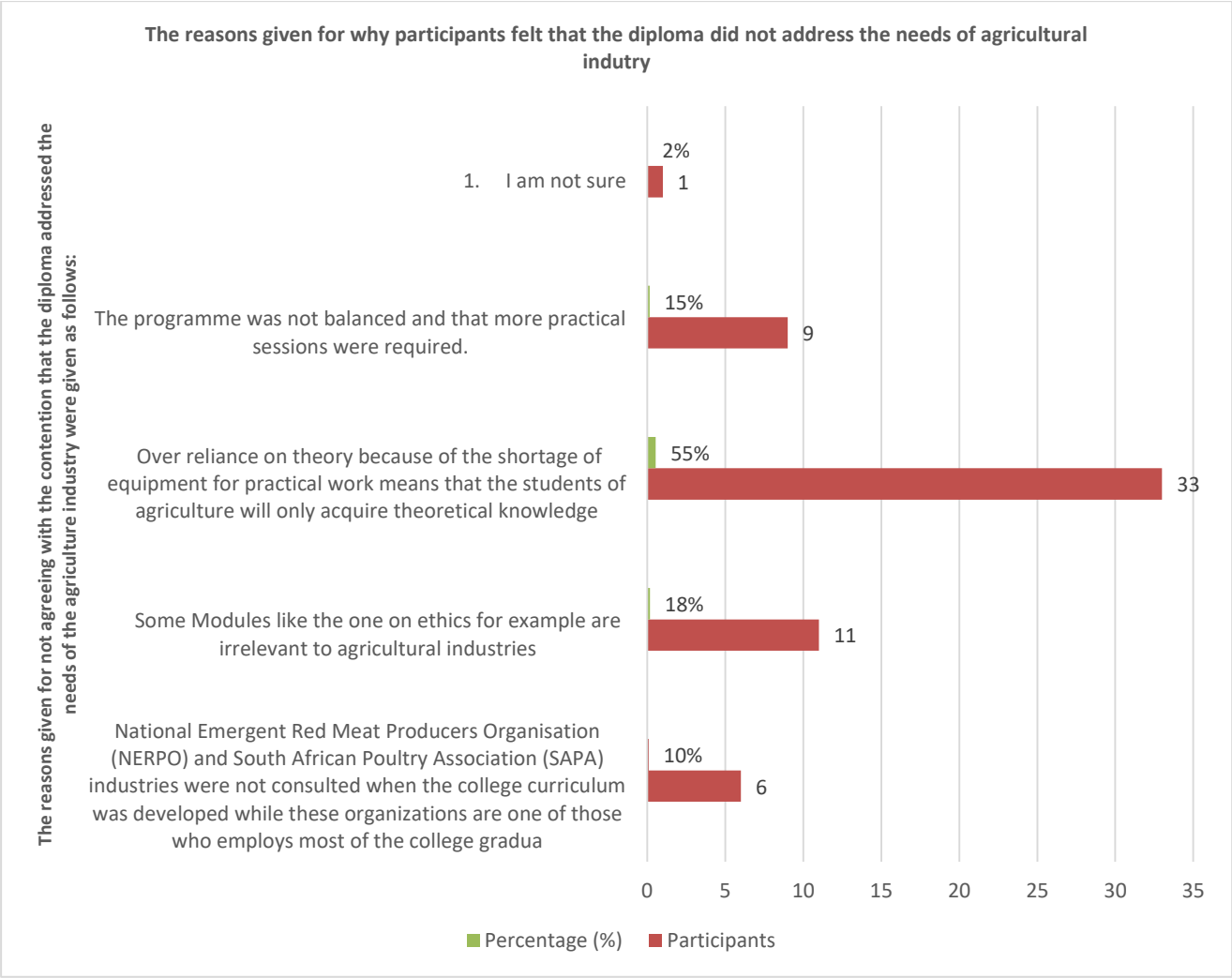

Figure 4.4: Reasons given why diploma does not address agricultural industry needs

Thirty-three of the 60 participants did not support the contention that the diploma addresses the needs of the agricultural industry. According to one farmer participant, the diploma offered at colleges of agriculture is too theory-based, leading to a lack of practical, commercial knowledge among students. As a result, commercial farmers may not choose to employ graduates from these colleges. The participant stated:

> First, there are cattle from the nearby communities which roam around the college campus and damage the trials and other work done by students. This compromise the practical's of students leading to the over-reliance on theory rather than practical knowledge. Therefore, until such time that the college fences its ploughing fields and all roaming livestock are arrested or prevented to enter the college premises, students of agriculture will continue to acquire the theoretical knowledge.

Another farmer participant suggested that:

> The horticulture, nursery, floppy, centre pivot and wine yard sections should be renovated so that students should have the necessary equipment for practical purposes; hence, we are saying that there is an over-reliance on theoretical knowledge.

However, some of the interviewees 6 of the 60 in Figure 4.4 stated that industries such as the National Emergent Red Meat Producers Organisation (NERPO) and the South African Poultry Association (SAPA) were not consulted when the college curriculum was developed. This is what one of the admin staff said:

> The animal production students are not recognised by the agricultural industries such as NERPO which is one of the employers of students who have knowledge of animal production. The South African Poultry Association (SAPA) was also not consulted for input when the college curriculum was developed. What do you expect will happen to the animal production students after completing their diploma from the college?

In addition, 11 of the 60 interviewees stated that a module such as ethics is irrelevant to agricultural industries. One of the participant lecturers said:

> There are some institutions offering B-Tech degrees which have commented that students from a college of agriculture do not have enough scoring points to be admitted. This is because modules like ethics are not considered when adding up the scores for admission purposes.

Nine of the 60 participants said that more practical knowledge and practice are needed for students. In appreciation of the students from colleges of agriculture who always do their practicals on the neighbouring farms, one of the farmers said:

> Tompi Seleka should continuously send their third-year students to other farmers for them to gain the inside and practical knowledge of farming. Second, Tompi Seleka should start buying other vine seedlings and start planting on their so that their students can also be exposed to the real practice of farming while in the college.

The above statement affirms that few practical sessions occur in colleges of agriculture. The data in Figure 4.4 suggests that over-reliance on theory because of the shortage of

equipment for practical work means that the students of agriculture will only acquire theoretical knowledge. According to the data in Figure 4.4, despite most of the interviewees not supporting the diploma offered in colleges of agriculture. Only 1 of the 60 participants had no opinion to express, saying:

> I do not have anything to say about whether the diploma offered in a college of agriculture has been accredited or not accredited.

These findings suggest that colleges of agriculture should have a balance between theory and practice. Kuhnen, (1978: 79) commended that more farm practicals and fewer classroom sessions in agriculture are required because agriculture is more about practice and not all theory.

Finally, as discussed in Figure 4.4, participants were of the opinion that although the proposed college diploma might have been researched with the relevant agricultural industries at the time, the results might not have been communicated to all stakeholders for their review. DAFF, (2011: 12) recommends that each ATI should be encouraged to consult, develop and implement a curriculum in consultation with relevant stakeholders in the locality. From this short review, colleges of agriculture should contribute to the overall strengthening of the capacity of other service providers to contribute to the development of human resources for agriculture in the areas where the ATI has a geographical impact.

4.5 Phase 3 of the analysis reviews the impact of policies on education and agricultural training and assesses their impact on the colleges of agriculture

Andeniran, Muraina and Llugbana, (2023: 14) describe policy as “a plan of action agreed to by a group of people with the power to carry it out and enforce it”.

The significance of the inclusion of a question on policies in this study was for the researcher to have an understanding of how policies used in a college have an impact on the community’s sustainable socio-economic development.

The researcher will be able to assess how the data from Phase 1, which deals with the role of a college of agriculture with special reference to how it addresses the needs of the surrounding communities and how those communities perceive the college’s involvement in their communities, aligns with that of Phase 2, which covers the involvement of the relevant stakeholders in a college of agriculture, to help colleges to improve their role in the socio-economic development of their communities.

The focus group discussions method was used on 30 farmer stakeholders near the college headmen, BDF members and crop and livestock farmers from May 2018 to July 2018 to obtain data on the perceptions of the surrounding communities regarding the role of a college of agriculture in the community's socio-economic development.

These farmers are aware of the existence of such policies because colleges use them when farmers borrow equipment and farm implements, such as planters, ploughs and bailers, for use on their farms. The summaries of these policies, written in the local language, are read and given to the farmers when they borrow farming equipment.

Question 3

To what extent do the agricultural policies of the government contribute to the colleges driving the socio-economic development of the surrounding communities successfully?

Policies were identified by the participants of the six colleges of agriculture as pertinent to the question on types of policies used by a college of agriculture to stimulate a good working relationship between the colleges and surrounding communities. In Figure 4.5 below, the stakeholder participants identified, in order of importance, the policies that they felt were critical in building a good relationship between the college and the surrounding community. To get the information as populated in Figure 4.5, the researcher used the Focus Group Discussion as outlined in section 3.7.2 of Chapter 3 of this study.

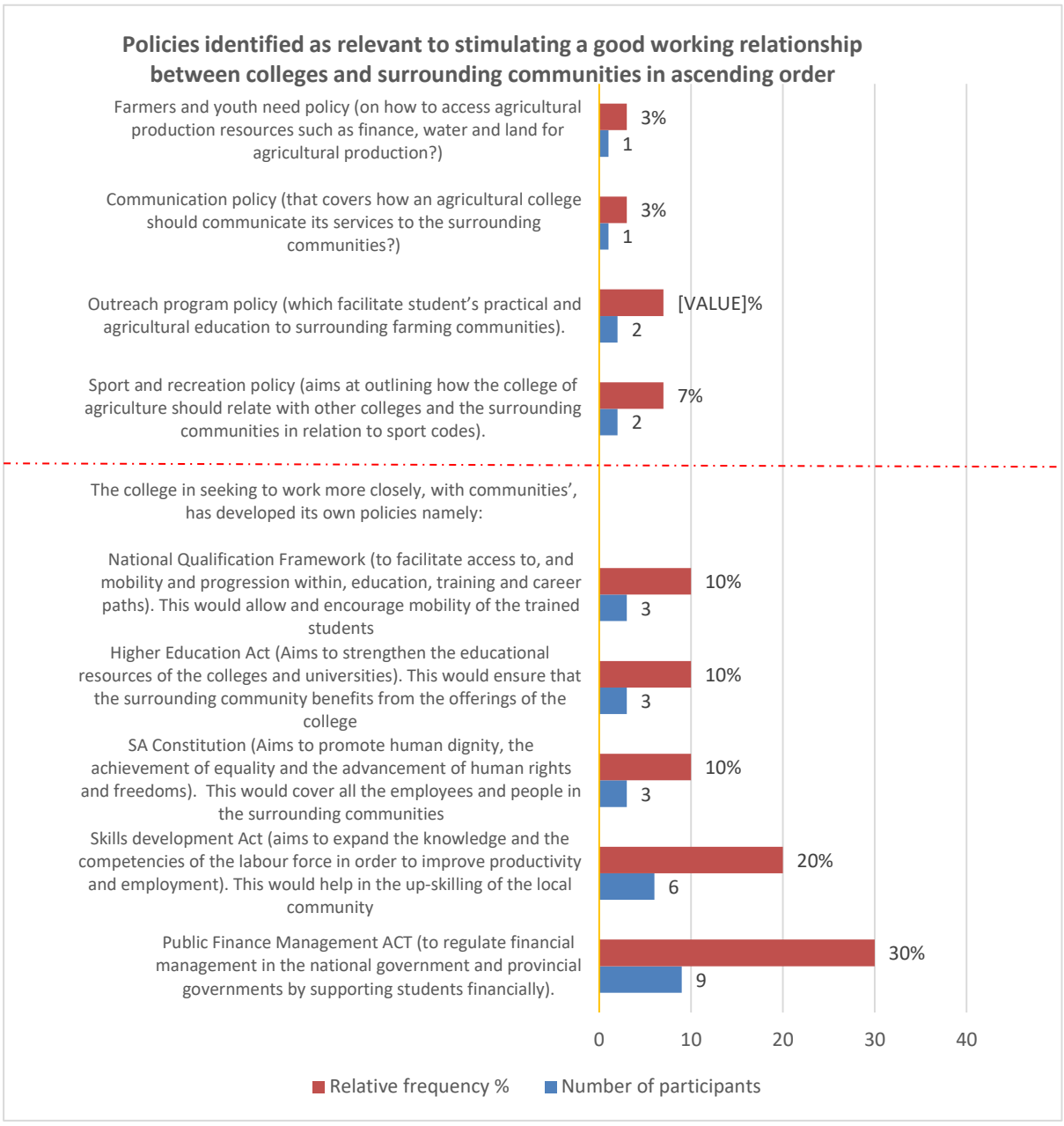

Figure 4.5: Policies relevant to stimulating good working relationships

As seen in Figure 4.5, 9 of the 30 participants identified the Public Finance Management Act as the most important policy to enable a good working relationship between the college and the surrounding farms. According to one of the stakeholder participants from Biofuel Business Incubator:

> The Public Finance Management Act is the cornerstone of every institution because the finances of the institution should be taken care of because they are the public monies. Public Finance Management Act also serves as a measuring

> tool for the success of the institution on whether there is financial stability in the institution or not.

Another stakeholder participant from the Agricultural Sector Education and Training Authority said:

> Students will also be supported financially by the guidelines of the Public Finance Management Act.

As an interpretivist, the researcher speculates that it could simply mean that there is a need to align different policies within the existing organisational framework.

The Skills Development Act was identified by 6 of the 30 participants as the second most useful policy in a college of agriculture. One stakeholder participant from the Limpopo Department of Agriculture Land and Rural Development said:

> Because the Skills Development Act enables the expansion of the knowledge and competencies of the labour force, this will help to improve productivity and employment.

According to one of the stakeholder participants from the Agricultural Sector Education and Training Authority:

> The expansion of the knowledge for the college workforce will automatically help in the up-skilling of the local communities.

The Constitution of South Africa, Higher Education Act and National Qualification Framework were third with 3 (10%) participants, respectively, arguing that:

> For the fact that the Constitution of South Africa is talking about taking care of human dignity, the college of agriculture is compelled to abide by all the regulations as stated in the Constitution.

Another stakeholder participant from Biofuel Business Incubator said:

> The Higher Education Act helps students with information about our institution, its registration and which qualifications it is offering.

Yet another stakeholder participant said of the NQF:

> It facilitates the mobility and the progression within education and training career paths.

These findings support the notion of Vikhe, (2020:423) that it is extremely important to efficiently identify explicit policies and institutional arrangements for the work of colleges of agriculture. These arrangements in the colleges of agriculture would make for the more strategic and sustainable socio-economic development of the surrounding communities. In real terms, the Department of Agriculture should concentrate on facilitating the collective implementation of the relevant policies for efficient and effective cooperation and better working relationships between colleges and the surrounding communities and stakeholders to serve as a blueprint for all colleges of agriculture throughout the country.

Apart from training students and farmers in the colleges of agriculture in South Africa based on the national and provincial policies, one of the other roles of the colleges is to be actively involved in the economic development of the rural communities they are in (Lebrun & Rebelo, 2006: 14). As such, the Tompi Seleka College of Agriculture, in seeking to work more closely with communities, has developed its own policies to work efficiently and effectively with communities as outlined in the bottom part of Figure 4.5.

The policies above the dotted line of Figure 4.5 were rated as follows by the participants;

Two of the 30 participants identified the sports and recreation policy as a means for colleges of agriculture to work closely together with their surrounding rural communities. The participant said:

> Apart from keeping people fit and physically strong, sporting activities improve the personalities of people and promote unity among organisations such as communities and agricultural institutions.

The college, Tompi Seleka College of Agriculture, has discovered that tournaments help in students' personality development. Tournaments enhance students' sportsmanship spirit and develop positive attitudes. Since not all educators share the same enthusiasm and passion for sport, assistance from other competent people and stakeholders needs to be sought. Educators are also encouraged to become more involved in sporting activities such as attending sports meetings and assisting with first aid. The current trend is to train learners and community participants to become umpires, trainers, athletic officials and referees.

Two of the 30 participants identified the outreach programme policy as one of the policies that promote working closely with surrounding communities. One farmer participant said:

> Outreach programmes that are conducted through sports, improve learning, promote civic engagement and strengthen communities through addressing their societal needs.

Another stakeholder participant added:

> An outreach programme creates a partnership between the communities and the educational institutions.

The college outreach programme offers agricultural education, social planning and support of activities to community residents freely and openly. As colleges act as advocates for students and connect people to services, colleges have learnt that outreach programmes must be active in their attempts to attract communities to participate in their activities. It is during these outreach programmes that the third-year students are actively involved because 50 per cent of their final marks are allocated to community engagement.

Another supporting argument for this policy is that the plant production students help farmers to plant, harvest and monitor the health status of their crops and vegetables. On the other hand, the animal production students help livestock farmers in earmarking, branding, castrating and vaccinating their livestock. This is in line with what the UN, (2012: 6) highlights when it says that agricultural training must be inclusive and people-centred, benefitting and involving all people, including youth and children and that gender equality and women's empowerment are important for sustainable development and the common future.

Furthermore, 3% of the participants identified the communication policy as the policy that works closely with surrounding communities. One of the farmer participants stated:

> Being able to communicate effectively, is the most important of life skills. It is what enables us to pass information to other people and to understand what is said to us.

The communication policy encourages the effective exchange of meaning or understanding in formal and informal communication. Kam, (2009: 1) holds the belief that communication between stakeholders is easily overlooked but the ability to communicate is necessary to carry out the thoughts and visions of an organisation. So, communication in colleges serves as the foundation of planning and all essential information is communicated to relevant

stakeholders and sports managers who in turn must communicate the plans to implement them. In addition, college sports managers devote a great part of their time to communication, whether face-to-face or telephonic communication, with superiors, subordinates, colleagues, parents, learners, suppliers and various other stakeholders; written communication in the form of letters, reports or memos wherever oral communication is not possible is also employed.

Finally, Figure, 4.5 shows that 1 participant of the 30 identified farmers and youth as needing a policy on how to access agricultural production resources such as finance, water and land for agricultural production. One of the farmer participants said:

> The younger generation becoming farmers now has the opportunity to be the generation that ends world hunger and alleviates malnutrition.

Notably, the Department of Agriculture, Forestry and Fisheries (2012: 15), argues that low access to agricultural finance is one of the limiting factors for smallholder participation in the farming business. As such, the Department of Agriculture has identified a lack of entrepreneurial and technical skills by emerging smallholder farmers as the cause of their inability to access credit and formal market sources. To promote the competitiveness of farmers, colleges are strengthening the provision of agribusiness development services such as record keeping and business management skills, thus, working closely with communities.

The findings in Figure 4.5 are directly in line with the findings of Edusah and Antoh (2014: 1), who argued that people trained in agricultural-related fields can create jobs, foster entrepreneurial development, offered employment and generate incomes, among others, for a large number of people, particularly those in rural areas.

The research then sought to assess the impact of college policies on the performance of colleges of agriculture. This was in relation to the socio-economic development of the surrounding areas.

Figure 4.6 displays the impact of the identified policies, the number of participants and the relative frequency of the participants who are primarily college stakeholders in answering the question of whether the government policies have an impact on the performance of colleges of agriculture.

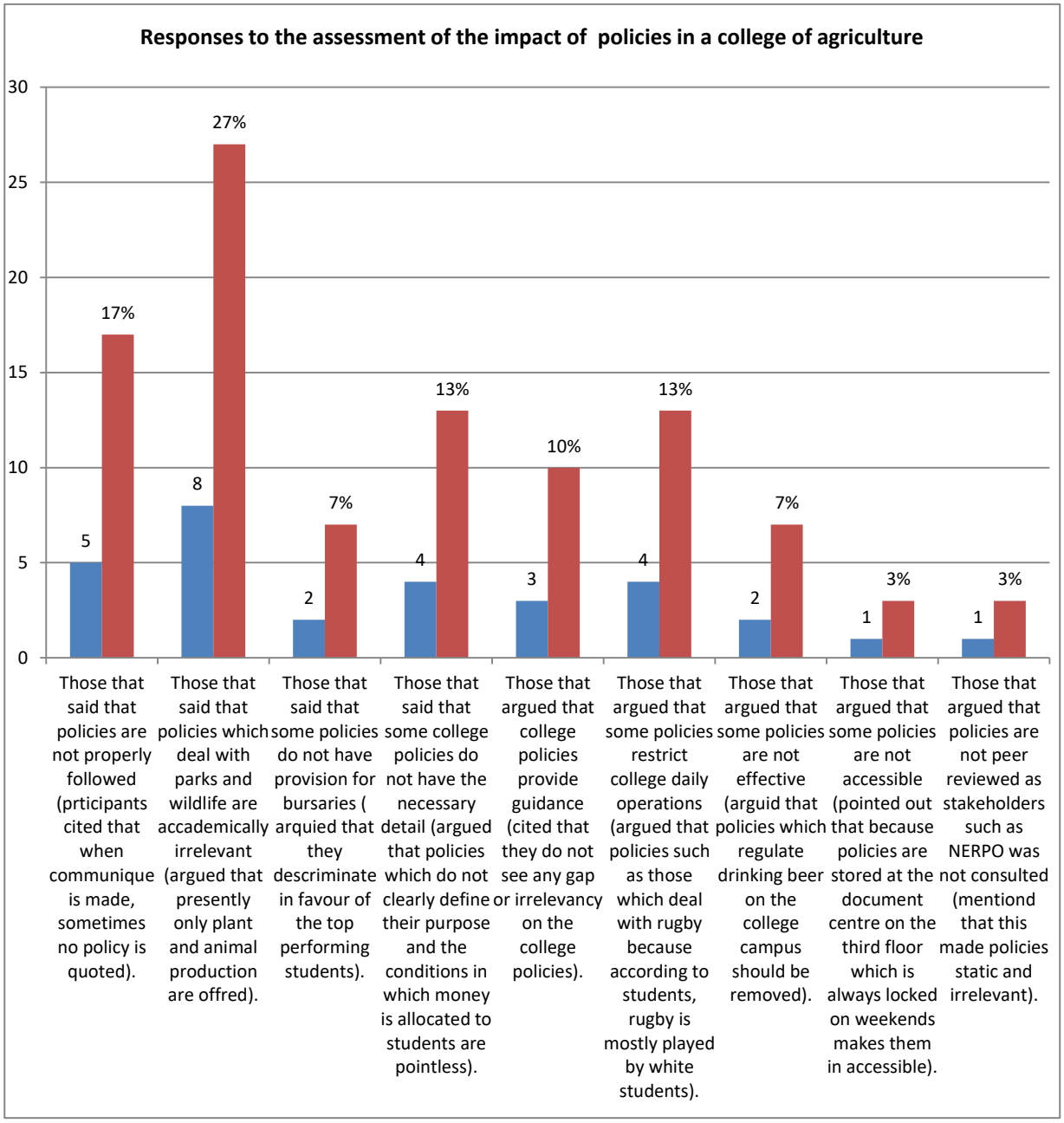

Figure 4.6: Shows responses to the assessment of the impact of college policies

In the analysis, whose outcomes are captured in Figure 4.6 above, 8 of the 30 participants highlighted that policies that deal with parks and wildlife are academically irrelevant. One participant representing three of the respondents said:

> The college is presently offering animal and plant production streams; it is not appropriate to have policies dealing with parks and wildlife in the college.

Vikhe (2020: 423), however, argue that policies are important for good governance because they provide the means for the colleges to engage with and inform the college community on

matters of importance which relate to the college curriculum. Van Crowder *et al.* (1999: 7), also report that policies related to non-renewable resources such as groundwater should be highlighted in training.

A few of the stakeholders, 5 of the 30, lamented that when a communiqué from college management is made, sometimes no policies are cited. One of the participants from 5 of the 30 said:

> In most cases when the communiqué is made to students, policies are not quoted. It will be proper if they link every communication to the policy in question in order to give weight to the communiqué.

In addition, 4 of the 30 participants said that policies such as those which regulate drinking beer on the college campus are not effective and that they are restricting daily college activities such as the policy which deals with rugby because, according to the students, rugby is mostly played by white students. One of the students said:

> Students should be allowed to drink beer as long as they do not damage college property and miss some classes after drinking.

Another student argued:

> Policies such as those that deal with rugby are irrelevant because it is played by white students in most cases. This policy was introduced by white lecturers previously because they preferred rugby compared to other sports.

Yet another student suggesting that policies such as this one should be removed and replaced by other policies more relevant policies said:

> There is no policy offering provision for bursaries to students.

This would be a relevant policy in modern Africa. Van Crowder *et al.,* (1999: 7) argue that although policies might be relevant to teaching and learning, agricultural curricula are in most cases not guided by policies in rural colleges of agriculture. The situation where agricultural curricula are not guided by the agricultural policies is however not the case in this study because, during the visit to the college by CHE in 2014, they found that the college curriculum is guided by the government policies. It should also be noted that Cuttington University (2012: 49), argue that the significance of the inclusion of policies in agricultural

curricula will enable students to understand the justification for collective action in developing skills that will enable them to actively participate in agriculture.

The results in Figure 4.6 demonstrated three things, namely, that people agree that there are policies needed to run the colleges. Secondly, that although there are guiding policies in colleges of agriculture, some of them such as those which regulate the drinking of beer on the college campus are not aligned appropriately.

Finally, other participants claimed that although colleges have policies, the policies are not accessible. One admin staff respondent said:

> Those policies are not accessible to the end-users because they are stored at the document centre on the third floor which is always locked on weekends because officials who work there do not work on weekends. Also, because of the lack of relevant technology, the same policies cannot be accessed online.

Another college lecturer commented that:

> Some of the policies are not peer reviewed and therefore not speak to the needs of students, stakeholders and other users.

Overall, the findings reflected in Figure 4.6 suggest that there are relevant policies that can direct colleges of agriculture to drive the socio-economic development of the surrounding communities successfully but some of these needs modifying to suit the intended objectives and environment. More importantly, the results in Figure 4.6 confirm the argument of IISD (1992: 1), that says that policies must be incorporated into college curricula and processes to ensure the smooth running of college activities.

Overall, the findings outlined in Figure 4.6 are in accordance with findings reported by Cuttington University, (2012: 49) that point to the significance of the inclusion of policies in college curricula in helping students to understand the economic justification for collective action that will enable them to actively participate in agriculture.

4.6 Summary of findings

This study aimed to investigate the role of agricultural colleges in fostering sustainable socio-economic development within communities. The findings were organised into three sections.

The first section aimed to examine the function and influence of agricultural colleges with particular emphasis on their efforts to meet the needs of the surrounding communities and the perception of these communities regarding the college's participation in their socio-economic development. The study established several key findings.

The study found that, upon graduation, students from agricultural colleges can establish their own agricultural businesses within their local communities. Both theoretical and practical training is provided at these colleges, equipping students in training and those who have graduated to support their communities.

Although the participants expressed satisfaction with the positive impact of agricultural colleges on the socio-economic development of their communities, they also raised concerns about the instances of vandalism occurring at these institutions. The study found that farmers in the vicinity of these colleges borrowed farming equipment and implements after receiving appropriate training, with third-year students providing aftercare for these projects. Additionally, farmers purchased goods, livestock, fruits, and vegetables from these colleges at reasonable prices.

The study also revealed that communities close to agricultural colleges benefit from employment opportunities, either on a permanent or seasonal basis. It was noted that agricultural training and development can be considered a means of enhancing the freedoms of agricultural wealth creation for rural communities near these colleges, enabling them to lead the lives they value.

Furthermore, the study emphasised that agriculture has the greatest potential for reducing poverty and inequality, as it provides sources of productivity that can benefit the most disadvantaged individuals in the sector. As such, the study suggested a reputation management framework for small medium enterprises.

The study's second section analysed the participation of relevant primary stakeholders in agricultural colleges to assess their role in promoting the colleges' contribution to the socio-economic development of the communities. The following conclusions were reached.

To carry out its mandate of meeting the geopolitical requirements of rural areas, the study discovered that Agricultural Training Institutes had been successful in establishing strategic partnerships with important stakeholders and service providers such as government departments, non-governmental organisations, farmers' organisations, and nearby rural communities.

The study found that the different structures have differing responsibilities and as such, their commitment varies based on their area of expertise. For instance, the Department of Agriculture is responsible for overseeing the college and provides it with resources and support for its programmes, and is accountable for ensuring its success.

College stakeholders offer their experiences, knowledge, and insights to assist the colleges, making it imperative to capture their inputs. The study emphasised the importance of coordinating and collaborating with relevant stakeholders to ensure sustainable economic development.

The study revealed that despite the positive efforts of agricultural colleges, some participants noted the over-reliance on theoretical work due to a shortage of equipment for practical work, as a hindrance. The results from the focus group discussions showed that the diploma offered in agricultural colleges is aligned with the needs of the agricultural industry, and participants believed that the diploma has been researched and validated by stakeholders and agricultural industries.

The study found that experiential learning both inside and outside of the classroom is an effective method for students to gain understanding and therefore, outreach programmes are critical. The study highlighted that there are disparities in the use of experiential learning, with some colleges having sufficient resources to provide students with practical experience, while others do not. The study emphasised that future graduates should not only possess subject knowledge, but they should also be experts in knowledge implementation.

The study found that colleges of agriculture offer accredited programmes and that students are central to their training. Upon completion of their diploma programmes, these students return to their communities as public servants of the Department of Agriculture across various provinces.

focus group discussions revealed that while the proposed college diploma was researched with relevant agricultural industries at the time, the results may not have been communicated to all stakeholders for their input.

The study also identified widespread political interference in colleges of agriculture, which was found to be one of the greatest challenges. This political interference undermines good governance, distorts public policy, leads to the misallocation of resources and negatively impacts the students.

The study also revealed that proper maintenance of education infrastructure can enhance the quality of education by preventing obstacles such as broken windows and doors, which expose students to cold and rain. Agricultural colleges must provide adequate and accessible infrastructure and training facilities to foster student interest and motivation, as argued by Stringer (2001: 11), who stresses that teaching and learning in agricultural colleges should take place in a conducive educational environment.

Moreover, the study highlights that for agricultural institutions to keep up with the rapid advancements in science and technology, they should intensify research and technology efforts in colleges of agriculture. Scientific knowledge is rapidly changing due to modern communication technologies that facilitate global information sharing among scientists and educators. This study highlights that the primary role of research and training in colleges of agriculture is to support innovation rather than being the source of it.

The third section of the study examined the policies of the government and the colleges of agriculture in regards to their contribution to the socio-economic development of the surrounding areas. The findings showed the following:

The colleges of agriculture require rational and sustainable education policies with the necessary resources to implement these policies. The study found that having all relevant information compiled in a single document, referred to as a national policy on sustainable agriculture, would make it easier for colleges of agriculture to promote sustainable agriculture practices throughout South Africa.

Additionally, the study found that there are policies in place in agricultural colleges. Some policies were designed specifically to be issued to farmers when borrowing farm implements and tools, while others were not readily accessible to students during weekends as they were kept in a locked strong room when officials were unavailable.

In conclusion, this study will add value and relevance outside of the higher education standards that are required of all institutions to be able to operate. It is required that all Agricultural Education and Training graduates are expected by Natural Scientific Professions Act (27 of 2003) to become members of South African Council for Natural Scientists. The aim

of SACNASP is to provide statutory Council for the regulation and advancement of the natural scientific professionals to ensure high quality services for economic growth and societal benefits (South African Council for Natural Profession of Scientists, 2021: 6). On the other hand, Tompi Seleka College of Agriculture during its intervention to rural communities highlighted to farmers to move away from taking agriculture as the family heritage to a commercial enterprise aiming at making profit. As such, this will also add value and relevance outside of the higher education standards because the college energetic youth alumni would be coming with improved communication, innovation, and technological skills to be able to help increase production in the areas already in use.

CHAPTER 5

CONCEPTUAL FRAMEWORK TO GOVERN COLLEGES OF AGRICULTURE

5.1 Introduction

This chapter discusses the proposed conceptual framework for colleges of agriculture in South Africa. The main reason to have a conceptual framework in this study is based on one of the study's objectives which was to create a framework or guidelines that will show how best to address agricultural education to actually contribute to positive sustainable development in the Limpopo Province specifically and South Africa in general.

A conceptual framework is described by Hall, Scoones and Tsikata (2017: 516), and Wiggins, Kirsten and Llambi (2011: 17), as guiding directives, which would apply in this case, to the implementation of agreed upon principles or a roadmap for governing agricultural colleges. According to Anh (2018: 488), the debate about how the balance between productive agriculture and quality of rural life can be achieved through well thought out guidelines on how agricultural colleges can contribute positively to the sustainable agricultural and socio-economic development of communities is growing.

The question is whether colleges of agriculture will merely fine tune their current ways of operation or if they will pursue creative approaches and guidelines to contribute to innovative local alternatives in food production and consumption to survive in this rapidly changing global industry. The fact that Anh (2018: 488), suggests that significant changes must occur if colleges are to be important educational players in the future sustainability of local communities through increase of productivity, quality and efficiency is noteworthy.

However, it should also be noted that agricultural colleges are faced with declining numbers of students and alternative structures and guidelines to meet the challenges of a sustainable food supply need to be carefully evaluated. In addition, Khan and Mathur, (2023: 1) contend that colleges of agriculture are beginning to demand that college guidelines should be included in discussions about the future of agriculture and the use of the rural landscape, food security, energy security as well as supporting bioethanol.

As a follow-up to the findings of the research, the researcher developed a framework made up of seven guidelines to help promote the effective daily running of activities at colleges of agriculture. These guidelines are depicted in Figure 5.1. These guidelines emerged from the responses from the participants at the colleges of agriculture and the stakeholders to the

questions asked regarding what may be the best way to govern colleges of agriculture in South Africa for them to contribute to the sustainable development of agricultural activities in the surrounding rural communities. Figure.5.1 is structured into three categories foundation, pillars and roof which will be explained in more detail later in this chapter.

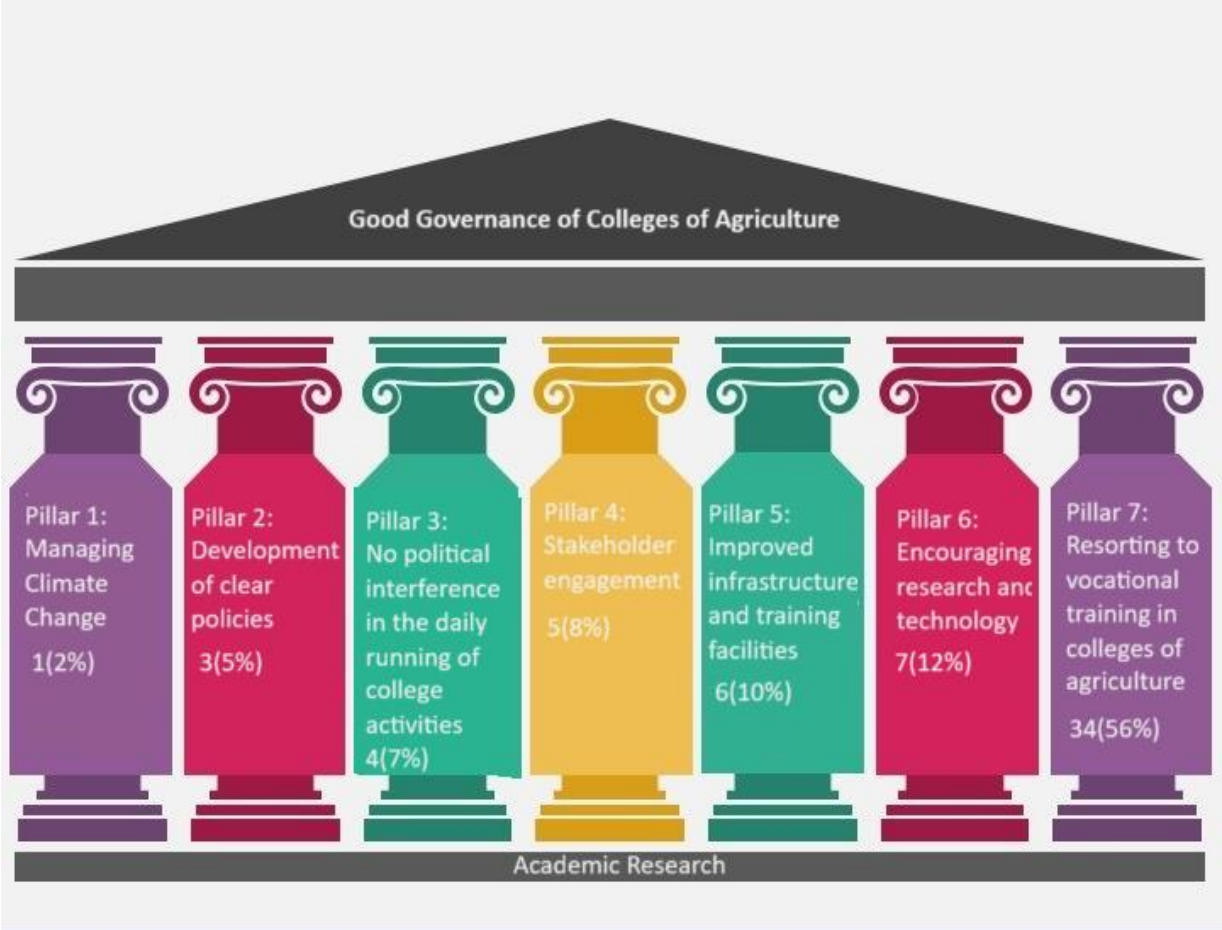

Figure 5.1: Participants' views on potential guidelines to govern colleges of agriculture

5.2 Participants' views on potential guidelines to govern colleges of agriculture

Alternative strategies to meet the challenges found in colleges of agriculture need to be evaluated. The suggested framework presents guidelines (Figure 5.1) which highlight the views of participants who are actively involved in colleges of agriculture daily. Their views and suggestions will help to improve the governance of the colleges so that they can play an important role in their communities.

The establishment of guidelines to govern colleges of agriculture is an attempt to address the ongoing challenges that are experienced with the services offered by these colleges in South Africa. The guidelines outline what colleges need to do to improve the way they operate and

can support the needs of the farmers and stakeholders in the surrounding areas. The framework will enable agricultural colleges operate in a more efficient and effective manner in order to fulfil their mandate of contributing towards the sustainable socio-economic development of the farmers and communities surrounding the colleges.

The guidelines were drawn up from the responses of both the farmers and the identified colleges of agriculture as well as the respondents that provided data between January and October 2016. These guidelines should entrench good practices for the efficient and effective working relationship between the colleges and their surrounding communities.

Figure 5.1 outlines the guidelines the colleges and the stakeholders perceive from their unique vantage points as having a significant impact on the setting up and running of successful colleges of agriculture in South Africa. Currently farmers are impacted by the inability of colleges of agriculture to serve as service providers to address their needs. Interviewed students also highlighted the fact that agriculture is not recognised as a major science subject by the DoE, meaning that not much attention is placed on studies in that field at an early stage. Ngcobo, Dladla and Worth (2002: 97), also argue that the inadequate access to resources is because of no explicit policies and institutional arrangements to address agricultural education and training holistically. The proposed framework is constructed around seven pillars drafted from the responses and suggestions made by different participants who took part in the research.

5.2.1 Pillar 1 – Managing climate change

Pillar 1 underscores the importance of teaching about climate change in education and agricultural training and assesses its impact on colleges of agriculture. The global climate is changing at a fast pace and will continue to change in ways that affect the planning and day-to-day operations of education and training, businesses, government agencies and other organisations. The definition of climate change, according to Roshani (2020: 56), “is a long term shift or alteration in the climate of specific location, a ration or the entire planet”.

Nowotny, Scott and Gibbons, (2001: 1) further contend that the manifestations of climate change include higher temperatures, altered rainfall patterns and the increased frequency of intense extreme events such as heat waves, droughts and storms. The UN (2022: 1), further describe climate change as long-term shifts in temperatures and weather patterns. According to Vermeulen, Campbell and Ingram (2012: 318), climate change affects crop productivity and the ability of farmers to harvest and process agricultural produce, thus, directly impacting

nearly 70% of people in developing countries living in rural areas where agriculture is the main source of livelihood.

Managing climate change is important because the Limpopo Province has experienced a drastic increase in natural disasters such as heavy rain fall during the past four years and the indications are that this trend will continue as the impact of climate change takes full effect. Climate change creates widespread risk for food production. As the effects of climate change are often locally specific, large scale initiatives to support smallholder farmers must consider local priorities and integrate lessons from successful autonomous adaptation efforts (Wright, Vermeulen, Laganda, Olupot, Ampaire and Jat, 2014: 318).

Currently, justifying the inclusion of Pillar one in the framework (Figure 5.1) is the persistent and widespread flooding in South Africa. The recent impact of climate change in KwaZulu-Natal, where massive floods wreaked havoc in Durban, Pinetown, Amanzimtoti, Port Shepstone, Umdloti and many more towns which were hit by heavy rains in April 2022, is devastating (South African Broadcasting News, 2022: 1). More than 398 people died in these floods with many people still unaccounted for. President Cyril Ramaphosa postponed his official visit to Saudi Arabia to focus on government intervention in the KwaZulu-Natal flood disaster (South African Broadcasting News, 2022).

Consequently, climate change has led to a full-scale review of the way coastal and inland flooding is managed in the country. In 2018, the country called for a conference to discuss a comprehensive climate change programme and identify both the risks associated with climate change and a range of policy measures and initiatives which would contribute to its management. Evidence shows that extreme weather events are becoming more prominent due to climate change. In November 2019, South Africa developed the National Climate Change Adaptation Strategy (NCCAS). This strategy also outlines priority areas for achieving this vision and includes water resources, agriculture, commercial forestry and ecosystems, human settlement and disaster risk reduction.

Climate change was identified as one of the guidelines to be considered in the governance of colleges of agriculture by 1 (2%) interviewee. The climate change discussion emerged in FGD meetings with the neighbouring farmers. This was a critical exercise which yielded great insights. The meeting was to affirm and confirm the findings of Phase 1 of the study. An important question asked was how climate change was affecting the colleges of agriculture. Kirby, Beaugrand and Lindley (2008: 12), argue that people choose how to act on climate change but the change that is needed is in people themselves.

It is significant to mention that economically, the two Limpopo colleges of agriculture, namely Tompi Seleka College of Agriculture and Madzivhandila College of Agriculture, are strategically situated. At Tompi Seleka College of Agriculture, the Flag Boshielo dam lies adjacent to the college while the Nandoni dam is near Madzivhandila College. These two dams were used for training in fishery management in the past. Madzivhandila College is also the hub of tropical fruits which is now also unfortunately affected by the changing patterns of rainfall and inconsistent weather changes as a result of climate change.

Another factor affecting the two agricultural colleges in Limpopo Province concerning climate change is the drying up of the colleges' boreholes due to the sporadic rainfall. As a result, water resources are under threat from water scarcity and water pollution. The programmes and syllabi of the colleges are negatively affected by climate change and necessary updates have to be made to reflect the situation on the ground. Colleges of agriculture should systemically integrate all college activities to solve the nationwide devastating climate change challenge.

The finding of this study suggests that the total quantity of water available at any given time is an important consideration for agricultural development. As the experience and perception of climate change continue to penetrate society in the years ahead, the increasing politicisation and culturalisation of climate change will require knowledge from both academics and the affected people. Knowledge needs to be built from traditional science and modelling and to allow research to embrace the dimensions of context, psychology, emotion and morality that lie behind decisions.

In many rural areas, episodes of extreme weather interrupt market access, while restricted livelihood options and insufficiently diversified energy systems perpetuate the degradation of those ecosystems which are needed more than ever as natural buffers of soil erosion. This study also suggests that climate change materialises predominantly as a threat multiplier for poor rural households, adding a new dimension to the portfolio of risks, opportunities and longer-term trends facing people whose livelihoods depend on agriculture.

The ideal situation concerning climate change is that the key role players, namely, the research services, provincial departments of agriculture, and farmer organisations, should work in partnership with colleges of agriculture. These organisations should tailor-make adaptation technologies for local rural communities to improve their socio-economic development. However, Wright *et al.* (2014: 318), argue that climate change initiatives require not only the integration of these organisations but also the building of inclusive

governance to ensure that rural communities can engage with the processes of climate change for sustainable socio-economic development.

5.2.2 Pillar 2 – Development of clear policies

Pillar 2 highlights the significance of the development of clear policies by the government to enable colleges to drive the socio-economic development of their surrounding communities successfully. Policy development is not a simple case of understanding the priorities and ideas of the government or colleges but should be seen as a dialectic process in which all those affected by a particular policy will be involved in shaping its development.

The presidency of the RSA (2020: 8), articulates that a policy is the organisation's stated position on internal or external issues. Policies are important for good governance because they provide the means for colleges to engage with and inform the college community on matters of importance. The Department of Education and Training, (2020: 15) contends that a college policy should be accessible to the college community where it applies to more than just staff and should focus on a single topic. To take the definition of a policy further, Devon and Boyd, (2000: 25) describe a policy as "a plan of action agreed to by a group of people with the power to carry it out and enforce it".

The DLA report (DLA, 2006: 6), mentioned previously in section 2.8 of this study, states that some of the apartheid policies which pushed millions of black South Africans into overcrowded and impoverished reserved homelands and townships are still being used in colleges. In addition, Vikhe, (2020: 423) argues that some of those policies cited by the DLA report excluded the participation of women in most agricultural activities. Women could not become extension agents, agricultural researchers, teachers and policymakers. This suggests that the development of clear policies is significant as one of the guidelines to govern colleges of agriculture and to change things.

Policies should be formulated to include all relevant stakeholders in the agricultural sector as the current situation makes it difficult for colleges of agriculture to promote sustainable agriculture. It becomes difficult for college staff to source all relevant policies, documents, legislation and guidelines, which are widely scattered. If all relevant information is arranged in a single document and labelled as national policy on sustainable agriculture, it would make it easier for colleges of agriculture to promote sustainable agriculture throughout South Africa.

The inclusion of a question on policies in this study was significant because the researcher desired to have an understanding of how policies used in a college impacted the sustainable socio-economic development of surrounding communities. The researcher also wanted to assess the validation of the data collected in Phase 1 of this study which sought to find out whether the agricultural policies of the government contributed to the colleges driving the socio-economic development of the surrounding communities successfully.

It is not possible to understand why certain things must be done in a particular way without developing an understanding of policy that reflects both its multi-stage and multi-tier character. Farmers are aware of the existence of college policies because colleges use these policies as guidelines when farmers borrow equipment and farm implements, such as planters, ploughs and bailers, to use on their farms. The summaries of these policies, which are written in the local language, are read and given to farmers when they collect the farming equipment.

In addition, Shaaban, Schwartz, Macpherson and Piorr (2021: 9), also contend that such policies should be well communicated and be supported by all stakeholders. When stakeholders support college policies, the human technology interface will be promoted and the process of deploying the development of human capital will ultimately embrace both the employee and the end-user.

The development of clear policies was identified by 5% of the stakeholder participants as one of the guidelines to be considered in the governance of a college of agriculture. Figure 5.1 shows that the rationale for sustainable education policies for a college of agriculture together with the resources needed to implement the policies is what is needed in a college of agriculture.

The finding of this study suggests that although some participants raised some challenges related to the policies in colleges of agriculture, these policies provide and make training opportunities accessible to all college clients. The policies in colleges of agriculture are based on the requirements of the curriculum the colleges are implementing as directed by the education and training authorities. ATIs also base their teaching and learning, as well as practicals, on the application of current technology which is guided by the policies at hand.

The ideal situation concerning the development of clear policies in colleges of agriculture is that a uniform performance and assessment policy must be adhered to by all ATIs. It is also ideal that all administrative and support staff are appointed following the recruitment

procedures and approved by the relevant authority. All administrative and support staff in colleges of agriculture should have a clearly articulated career path that is guided by clearly developed college policies. Finally, ideally, colleges of agriculture should ensure consistent and impartial access to resources and the consistent and impartial application of policy to all college personnel.

5.2.3 Pillar 3 – No political interference in the daily running of college activities

Pillar 3 examines political interference in agricultural education and training to demonstrate its impact on colleges of agriculture. The significance of pillar one in this study is to show how political interference in a college of agriculture has an impact on a community's sustainable socio-economic development.

Political interference, as defined by Flora and Flora (2008: 18), is the "organisation, connections, voice, power and the influence an external group has on making change". Amundsen (1999: 3), adds that political interference is when politicians and state agents, who are entitled to make and enforce laws in the name of the people, are themselves corrupt and are there to promote their own interests.

Political interference is the perverted relationship between the state and society. The state arm made up of civil servants, functionaries, bureaucrats and politicians and anyone who holds a position of authority to allocate rights over scarce public resources in the name of the state or the government has much influence over society. This influence results in the misuse of the power bestowed upon them for private benefit.

One of the stakeholder participants from the Bakone Development Forum in the study said that those in political power should stop hiring college staff based on cadre deployment and neglecting qualified people as this practice has an impact on how colleges can effectively impact the surrounding communities. The hitherto uncontrolled and unrestricted political interference in colleges of agriculture has the negative effect of undermining ATIs.

Politicians have been noted to have a deep interest in who is appointed as the rector of a college. They want to manage who ascends the academic ranks and who serves in student leadership. According to Oanda (2016: 1), the procurement of goods and services by colleges of agriculture attracts business people who are often politicians, to interrupt the procurement system or appointment of college staff to bring in-service providers from their own networks.

Political interference in colleges of agriculture increases the operating costs of the government, revenue leaks out and the resources available for college students wane. It is worth noting that the misallocation of talent which should be utilised to benefit colleges of agriculture occurs because such people do not want to be misused to contravene the Public Service Regulations. Political interference in colleges of agriculture also causes a lot of harm to society, sometimes leading to the non-observation of building codes designed to ensure public and student safety. As such, political interference will compromise any contributions to securing the longevity of the college buildings.

Pillar 3 in Figure 5.1, therefore, proposes to create an environment whereby colleges of agriculture are as free as possible from political interference for the improved running of daily college activities. The importance of no political interference was identified by 7% of the stakeholders and colleges as one of the important guidelines to govern a college of agriculture in South Africa. DAFF, (2011: 10) also argues that ATIs are part of the formal educational infrastructure of South Africa and increasing their capacity as service providers will provide a non-political farmer and student training environment. Therefore, the smooth running of the institutions for Agricultural Education and Training needs long-term political support and not political interference.

In an ideal situation, according to Prinsloo (2006: 363), the appointment of the rector or vice rector should be free from political interference. The academic board of a college has to recommend a new appointee to the Head of Department for their appointments as in Section 20(i) of the College Act (Prinsloo, 2006: 363). The management of a college should be given the right to administer the college and appoint the lecturers and non-academic staff to be able to run the daily college activities without the interference of the state. This way the running of an agricultural college will remain independent of political interference and all the negatives associated with it.

The researcher, however, acknowledges the positive role played by politicians as lawmakers in the country. The focus of politicians should be on enabling the top management of the Department of Agriculture and facilitating the supply of critical resources such as finance, water, electricity and practical equipment and machinery for college students to have a complete educational experience.

5.2.4 Pillar 4 – Stakeholder engagement

Pillar 4 discusses the role of college stakeholder engagement in education and training to assess its impact on colleges of agriculture. Pillar 4 (Figure 5.1) demonstrates how different stakeholders have an impact on colleges to enable them to drive a community's sustainable socio-economic development successfully. Previously, the researcher looked at the involvement of the relevant primary stakeholders in colleges of agriculture and showed how they contribute to helping colleges to improve their role in the community's socio-economic development. The researcher believes that stakeholders have an important role to play in ensuring that colleges have a meaningful impact on the socio-economic development of communities.

Collaboration and the coordination of services through relevant stakeholders in colleges of agriculture are needed to ensure sustainable socio-economic development. A stakeholder is defined by Landau (2017: 1), as an individual, group or organisation that is impacted by the outcome of a project, has an interest in the success of the project and can be within or outside the organisation that is sponsoring the project. Eskerod and Huemann (2013: 40), further define stakeholders as individuals or groups interested in the procedural or substantive aspects of corporate activity and are identified by their interests in the organisation whether the organisation has interests in them or not.

Fares, Chung and Abbasi (2021: 3), state that stakeholders are defined as any group or individual who can affect or is affected by the achievement of the organisation's objectives and can include individuals and groups both inside and outside of an organisation. To overcome stakeholder identification challenges, colleges of agriculture have spelt out their vision and mission statements. As a result, colleges of agriculture have identified stakeholders that have a bearing on the activities of the colleges as well as those who benefit from the association, hence, their inclusion in the proposed model in Figure 5.1. The findings of this study indicate the presence of a multitude of stakeholders in every college of agriculture, who are either directly or indirectly involved in the college's activities. These stakeholders comprise the client or customer, community members, suppliers, government bodies, and non-governmental organisations. These stakeholders contribute their experiences, knowledge, and insights to support the colleges, making it essential to incorporate their inputs. It is noteworthy that this study suggests that it is crucial to assemble the appropriate individuals with the necessary skills to form relevant ATI stakeholders.

It is worth noting that partnerships and collaboration for agricultural development and the realisation of the vision of the agricultural sector, namely the 'united and prosperous agricultural sector' in the Limpopo Province where Tompi Seleka College of Agriculture is situated, require the meaningful participation of a wide range of stakeholders. The principal role players for the attainment of this vision are the national and provincial departments of agriculture, Agricultural Training Institutes, farmer organisations, the agricultural industry, rural communities and Sector Education and Training Authorities (SETAs).

According to DAFF (2011: 10), some of the mandates of the colleges of agriculture are to align the curricula to the HRD needs as identified by public and private sector stakeholders in the agricultural sector. Second, the partnerships serve to develop strategic partnerships with relevant stakeholders and service providers to strengthen the ATIs so that they can deliver on their mandates. Some of the stakeholders have a wealth of knowledge and insights about required agricultural processes and historical information. Some of these stakeholders will have been players for longer than some of the college management; hence, their presence will help increase the success of the college.

Fortunately, most college stakeholders have an interest in the success of the colleges of agriculture. Stakeholders in this study are not equity shareholders. They are business partners who rely on the college's success to produce good students who will be able to help produce agricultural produce to feed poor rural communities, especially those situated around the colleges of agriculture. The immediate stakeholders associated with the college include, but are not limited to, the farmers from the surrounding communities, who are primarily small-scale farmers enrolled in the Land Reform Programme and are being trained at the National Qualification Framework levels 1-4. The alumni of the Tompi Seleka College of Agriculture, who have completed their studies and are now contributing to the strategic growth and development of the college's programmes, are another key group of stakeholders. Finally, the study highlights that both governmental and non-governmental agricultural organisations, as detailed in Table 3.4 of section 3.7.2, also play an important role as stakeholders.

College stakeholders were identified during curriculum development so that they could advise college staff about good agricultural practices. Currently, stakeholders in colleges of agriculture are massively benefitting the colleges through empowering students during practical sessions. This symbiotic relationship has helped colleges to achieve better outcomes through informed decision making.

Figure 5.1 highlights that 8% of the participants mentioned that there should be significant stakeholder involvement in colleges of agriculture. DAFF, (2011: 8) also argues that ATIs are expected to develop their capacity to make significant contributions to creating wealth in rural communities in South Africa in partnership with relevant role players and stakeholders. One of the farmer stakeholder participants confirmed that they are now able to use the experiences, such as planting vines, calibrating fertilisers on the vines and driving tractors, which they obtained from Tompi Seleka College of Agriculture.

The findings of Atchoarena and Holmes (2004: 15), are also confirmed; they argue that to perform an active and constructive role in rural development, colleges of agriculture need to adjust their programmes to accommodate new topics and forge new partnerships with, for example, schools. No single role player or agency in the field of agriculture is best placed to offer the wide range of advisory services required to make agriculture more sustainable. From this standpoint, including stakeholder involvement in a college of agriculture as one of the guidelines (Figure 5.1) supports the point that many stakeholders support colleges of agriculture and is significantly important.

The points made above indeed show that college stakeholders should be providing advice and expertise because some college managers may not be experts in all college deliverables. The more relevant stakeholders are involved in colleges of agriculture, the more the reduction of risks because the stakeholders will suggest the mechanisms to deal with possible risks at the college. In this study, the five primary stakeholders involved in the functioning of the Agricultural Training Institutes are discussed in Section 3.7.2. These stakeholders are AgriSETA, the Department of Agriculture Forestry and Fisheries, the Limpopo Department of Agriculture Land and Rural Development, farmers union, and the Biofuel Business Incubator.

AgriSETA (Agricultural Sector Education and Training Authority) is tasked with the development of the agricultural workforce and students in colleges, facilitating learning through the allocation of grants and bursaries for learnerships, skills programmes, and in-service training. The Department of Agriculture Forestry and Fisheries plays a crucial role in ensuring that the Agricultural Training Institutes are adequately staffed and equipped with the necessary infrastructure to fulfil their mandates.

The Limpopo Department of Agriculture Land and Rural Development is instrumental in promoting agricultural value chains, providing inputs, monitoring production and consumption, and facilitating socio-economic development in rural communities. The farmers

union works closely with the colleges to offer advanced farm management and niche market training. The Biofuel Business Incubator assists the college with furthering their farm management and niche market training through the gathering and review of college requirements. Through regular reviews of college deliverables, stakeholders can stay informed of the college's scope, key milestones, and when they should expect to provide inputs before final acceptance.

5.2.5 Pillar 5 – Improved infrastructure and training facilities

Pillar 5 talks to the needs for improved infrastructure and training facilities on colleges of agriculture. Infrastructure is defined by Kapur (2019: 1), as playgrounds, library facilities, laboratories, computer centres and classrooms. Draga, (2015: 236) lists infrastructure and training facilities such as libraries, laboratory facilities, water supply, roads, lecture rooms and electricity as important college infrastructure.

Improved infrastructure and training facilities are important in colleges of agriculture because such colleges should be able to maintain a good and appropriate infrastructure to ensure training that incorporates both theory and practice. During data collection, one participant advocated the renovation of college infrastructure to its former glory to host nearby schools for competitions on college grounds. As a result, the researcher wanted to validate the data that emerged in the previous chapter and confirm how improved infrastructure, such as training facilities, impacts the sustainable socio-economic development of communities.

The importance of including improved infrastructure and training facilities as part of the Figure 5.1 framework is that the right to receive an education as expressed in Section 29, subsection (a and b) of the Constitution (RSA, 1997), entails the right to receive such in a physical environment that is conducive to learning.

The significance of education, for individual and societal development in South Africa's democratic dispensation, in the light of the legacy of apartheid, cannot be overlooked. Draga, (2015: 241) contends that the inadequacy of college facilities, particularly for many blacks, was entrenched by the formal institution of apartheid after 1948 when segregation even in education and agricultural colleges in South Africa was codified. Today, the lasting effects of the educational segregation of apartheid are discernible in the systemic problems of inadequate facilities and the discrepancy in terms of learning facilities for most learners.

According to Ankrah and Freeman (2021: 12), ATIs must provide sound and appropriate infrastructure and equipment to ensure training that incorporates both theory and practice,

irrespective of their limited budget allocations. Well-maintained education infrastructure helps to improve the quality of education through the avoidance of education barriers such as broken windows and doors where students will be subjected to cold and rainfall. The fact is that a good infrastructure with renewed spaces makes it possible for students who live in remote arrears to study under reasonable conditions in colleges of agriculture. It is therefore the responsibility of college management to create an environment that not only assures learning but also pays special attention to the mental and physical well-being of students.

The link between school infrastructure conditions and their effect on learning outcomes has been well documented by several reputable studies. A 1979 review conducted by Evertson and Weinstein (2011: 373), concluded that there was a link between improved educational outcomes and infrastructural factors such as the age and condition of college facilities. The Department of Basic Education, (2015: 20) also emphasises the negative effects, including irregular attendance and higher drop-out rates, of a poor schooling environment on learners. More importantly, Department of Basic Education (2015: 20), policy also recognises the detrimental effects of inadequate infrastructure on teachers, citing attrition, high turnover and teacher absenteeism – no doubt due to working in demoralising, unhygienic and often unsafe environments.

Ten per cent of the participants (Figure 5.1) identified infrastructure and training facilities as important factors to be considered by colleges of agriculture for better teaching and learning. Notably, DAFF, (2011: 8) also highlights that ATIs must maintain a good and appropriate infrastructure and equipment to ensure training that incorporates both theory and practice. In addition, Baig, Al-Subaiee and Straquadine (2009: 7), argue that two-thirds of the nation's communities are unable to support economic development until major new investments are made in basic college facilities such as water supply, sanitation and roads.

Gargiulo, (2006: 1) contends that the training facilities of colleges of agriculture should enable teaching and learning to take place without any disturbances. Thus, basic needs such as barrier-free facilities and a comfortable and safe classroom should be considered unequivocal for purposes of teaching and learning. Barrier-free facilities will enhance sustainable development within colleges of agriculture because teaching and learning will not be compromised.

The findings of this study suggest that improved infrastructural and training facilities are needed in colleges of agriculture. This should be one of the guidelines for proper college governance. The establishment and maintenance of a conducive teaching and learning

environment will have an impact on how colleges can better serve their surrounding communities. Farmers, in particular, also highlighted the fact that even more pressing than knowledge and skills, is the issue of improved infrastructure and equipment required for successful farming.

To nurture interest and motivate students to continue learning, an agricultural college must provide adequate and accessible infrastructure and training facilities for the needs of all students. Improving the quality of infrastructure and training facilities of a college of agriculture requires continuous effort and commitment from all parties.

5.2.6 Pillar 6 – Encouraging research and technology

Pillar 6 proposes the encouragement of research and technology in education and training and assesses its impact on colleges of agriculture. Research and technology innovation is important in colleges of agriculture and its impact on a community's sustainable socio-economic development is the validation of the data as analysed in Chapter 4. Acknowledging the importance of research and technology is in response to the assertions made by some of the participants that colleges of agriculture lack technological aspects in their curricula.

The development of technologies that improve environmental quality or at least reduce damages to the environment implemented by existing technologies is a major research topic and a priority that needs to be considered by colleges of agriculture. Tihanyi and Roath (2002: 188), contend that research and technology include information that is not easily reproducible and transferable. Based on this argument, technology is seen as "tacit knowledge, secrets or knowledge known by one organisation" (Nonaka, 1994: 14). Bozeman, (2000) argues that research, technology and knowledge are inseparable simply because when a technological product is transferred or diffused, the knowledge upon which its composition is based is also diffused.

To further elucidate the definition of research and technology, Solheim and Stolen (2017: 3), refer to research and technology as investigation or experimentation aimed at the discovery and interpretation of facts to produce new and better artefacts. Research and technology are also embodied in people, materials, cognitive and physical processes, facilities, machines and tools (Lin, 2003: 327). Based on these definitions of research and technology, it is clear that research is necessary because research improves services not just for the world today but for future generations since research is a tool by which people's theories can be tested to find answers and advance knowledge.

The importance of establishing research and technology as a component of Figure 5.1 is that scientific knowledge is changing very rapidly as modern communication technologies facilitate the global sharing of information among scientists and educators. However, if agricultural institutions are to keep pace with such rapid changes in science and technology, they should intensify research and technology in colleges of agriculture. This will necessitate scientific seminars and inter-institutional exchanges, including those that apply innovative uses of electronic information systems (e.g., electronic networks for collaborative curriculum development and distance education). Bolton, Edgar and Carter (2018: 275), point out that a commitment must be made by colleges of agriculture to improve their information infrastructure to ensure that students and farmers have access to the new information technologies as technology evolves.

Currently, the primary role of research and technology is more focused on the support for innovation in colleges than on being the source of innovation. Research and technology have typically been much more closely linked to the needs of projects in provinces as projects do not have the additional roles of education and basic research that colleges have. Although agriculture has generally kept up with scientific progress in the past, the pace of change is much faster today, requiring the continual updating of curricula.

A closer examination of Figure 5.1 reveals that the majority, 12%, of participants identified research and technology as another significant guideline to be considered when governing colleges of agriculture. A fundamental question for colleges of agriculture is about what kind of research should be carried out and who should determine the goals of the research activities.

Kuhnen, (1978: 85) contends that colleges of agriculture, because of their subjects, are institutions of applied research. DAFF, (2011: 20) also supports research and technology as one of the important pillars of the framework for colleges of agriculture because, according to DAFF, rapid advances in information technologies (e.g., electronic mail and the internet) will make new modes of collaboration and cooperation between institutions of agricultural education possible.

What is evident from the above-mentioned responses related to research and technology is the fact that these responses coincide with the views of Dunning (1994: 67), who believes that the most precious and valuable asset in any contemporary agricultural college of the 21st century is precisely their research and technology. On the other hand, clear policies and strategies need to be developed to guarantee research and technology development in

colleges of agriculture. The development of research and technology will stimulate and capitalise on the ideation process as well as ensure success rates in commercialising new agricultural offerings.

The finding of this study indeed suggests that research and technology are needed in colleges of agriculture. Sung and Gibson (2000: 5), also highlight that the most important source of knowledge for agricultural development is rural people themselves and the time-tested systems of production that embody their knowledge. An understanding of rural people and their production systems should be an integral part of agricultural education. This requires that agricultural education institutions play not only an academic role but also a community development or outreach role that allows them to understand local knowledge and to combine it with modern research and technology in agricultural colleges. According to Sung and Gibson (2000: 5), understanding the contributions that local people can make to solve their own problems is the key to sustainable rural development.

Agricultural education curricula need to be redirected to internalise the demands of the private sector through the introduction of research and technology. Curricular reorientation will need to incorporate both the new role of market-oriented agriculture and the issues of direct relevance to food security and rural poverty through research and technology. According to Lieblein, Francis and King (2000: 214), within these cultural changes in agriculture, much research and technology is moving to the private sector and results there become proprietary.

Based on the above discussion on research and technology as one of the pillars in colleges of agriculture, research and technology concepts encompass many different interpretations and views depending on an organisation's objectives. Therefore, various parties are likely to hold different views and perceptions of research and technology. Ideally, research and technology would assist colleges of agriculture with the technological upgrading of innovative systems for use by students and college staff.

5.2.7 Pillar 7 – Resorting to vocational training in the colleges of agriculture

Pillar 7 advocates the importance of the adoption of vocational training as a cornerstone in the development of sustainable community-based agricultural development. Agricultural colleges have based programmes on the principle that the gap between ignorance and knowledge is more pronounced than the gap between knowing and doing (Lieblein, Francis and King, 2000: 214).

Vocational training, according to Ukachi and Ejiko (2018: 10), is defined as the education that prepares people to work in various jobs, such as trades, crafts, or technical services. Vocational education and training allow students to gain practical experience in their chosen career path before they even graduate. Ukachi and Ejiko, (2018: 10) further highlight that vocational training is referred to as career education or technical education. Vocational training is education and training that provides the necessary knowledge and skills for employment (UNESCO, 2017: 3), and facilitates learner attachment at places of excellence as part of training

An important factor for colleges of agriculture to note when vocational training is considered are the requirements of the labour market which change simultaneously with changes in the economy. Consequently, no one knows what the requirements of the labour market will be 20 years from now when today's graduates are at the peak of their careers. Nonetheless, the researcher believes that it is well-justified to institute guiding principles for the governance colleges because this may mitigate any underperformance of colleges of agriculture.

Vocational learning opportunities play a critical role in skills development and employability. The importance of vocation development can largely be summed up as the difference between theoretical knowledge and practical skills. In non-vocational studies, students often spend hours of their time exploring a variety of different subjects. Their class time tends to be only a few hours per week as they will spend many hours in the library and on computers conducting research and writing papers that help them continue to build their theoretical knowledge in a variety of fields.

The reason for preferring vocational training in colleges of agriculture justifying its inclusion as a pillar in the Figure 5.1 framework. Traditionally, the assumption has been that knowledge leads to appropriate action. However, it is increasingly evident that lack of knowledge is not the problem in sustainable development; the problem is the gap between knowledge and action (Pfeffer, 1998). Robinson, Westfall-Rudd, Drape and Scherer (2018: 259), contend that agricultural education teachers know to develop students to become lifelong learners in agriculture. The current study found that the majority of the participants 56% said that colleges of agriculture should concentrate more on vocational training than on theory which, according to them, should work out at 70% on practical work and 30% on theory.

In terms of vocational training, the interviewed participants highlighted that the experiences they received at Tompi Seleka College of Agriculture like planting vines, driving a tractor and

calibrating the application of fertilisers on their crops are very useful. Agricultural colleges are providing education and research for food systems on the small number of farms and farmers surrounding their colleges. Consolidation in processing and marketing now means that fewer students are interested in conventional agricultural disciplines.

Other rapid changes include the introduction of new and expensive technologies, the consolidation of farms and commercial input and the establishment of supplier databases. Robinson *et al.,* (2018: 259) argue that focusing on developing 21st century skills across the curriculum will hone students' skill sets in a broad-based manner for a comprehensive experience. Colleges of agriculture will be able to manage their technology to best position their services to maximise their market share.

The finding of this study suggests that with more practical work, improved human resources with practical knowledge and skills will be established. ATIs in South Africa should be seen as major contributors to human resources development and knowledge generation in support of the Land and Agrarian Reform Programme (LARP). Training Institutes are also expected to strengthen their capacity to support the roll-out of the extension recovery plan as well as different government priority programmes that are aimed at the advancement of rural livelihoods in South Africa.

The method of training in a college of agriculture is primarily lecturing and using different teaching aids. This should change to a more practical/vocational type of education. Group discussions, individual and collective assignments and presentations should be used more widely and across the board by ATIs in South Africa. Practical sessions should be planned and organised for students as another method of providing agricultural training. Students should be exposed to experiential learning before acquiring their final qualifications.

Experiential learning should be prioritised because some colleges of agriculture have adequate resources to expose their students to practical experience as opposed to book knowledge only. The graduates of the future should not only be experts in subject knowledge but they should also be experts in how to implement the knowledge they have acquired.

The ideal situation is that personal development is important in almost every occupation. Equally, lifelong learning is needed to cope with the constantly changing knowledge economy. This suggests that students who undergo vocational training programmes have the credentials and training they need to get started right away in their chosen career path. Students feel confident in their abilities and employees themselves know that they have

made a solid choice in their new hire and can count on them to begin excelling in the position quickly because of the skills obtained during vocational training.

5.3 Summary

The framework proposed in Figure 5.1 serves to confirm that colleges of agriculture need to have comprehensive guiding principles for the daily running of their activities. Overall, it can be deduced from Figure 5.1, which reflects the responses of the interviewees, that the majority of the participants hold the view that the identified guidelines are all important to the optimum running of colleges of agriculture.

This study, therefore, proposes major conceptual and structural changes to prepare colleges of agriculture to make a constructive contribution to the complex and multifunctional agriculture and locally based food systems of the future and encourage their role as viable research and education centres through the use of these carefully considered collective guiding principles. In conclusion, the guiding principles of agricultural education and training, where the focus is on learning and the relationship between learning and action, should contribute to alleviating the complexity of change and add to institutional excellence.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the conclusion and recommendations based on the data analysed in the study. The research design, theoretical framework and data analysis methods are reviewed. The assumptions upon which the research was based, the objectives, research questions and the methodology that were used are then presented. The chapter also highlights the limitations of the study. The recommendations and possible further areas of future research conclude the chapter.

The main aim of the study was to identify factors and conditions at both institutional and national levels that facilitate or inhibit colleges of agriculture, such as Tompi Seleka College of Agriculture, from making contributions to sustainable agriculture and the socio-economic development of the surrounding rural communities.

6.2 Overview of the study

Chapter 1 outlined the background to the research problem and specified the research aim, objectives and questions. The chapter also outlined the assumptions upon which the study was based, the theoretical framework and the approach to the study. The chapter further identified the research paradigm of this study as the interpretivist paradigm which emphasises social interaction as the basis of knowledge. This paradigm is therefore aligned with the researcher's own ontological and epistemological perspectives.

Chapter 2 provided a review of the research literature relating to colleges of agriculture in South Africa and abroad. The importance of agricultural training and sustainable agricultural development and the link between socio-economic development and colleges of agriculture were investigated. The history of colleges of agriculture in South Africa and beyond was also examined. The chapter concluded by identifying the contribution of existing policies to sustainable agricultural development and the role of agriculture in the socio-economic development of rural communities.

Chapter 3 discussed the rationale for the research design and methodology. The sample selection, size and delimiters of the study were also discussed. This chapter also looked at the theoretical framework which underpinned the study.

Chapter 4 presented the data, statistical analyses and interpretation of the results.

Chapter 5 discussed the proposed conceptual framework for colleges of agriculture in South Africa. These guidelines are designed to address the challenges which are experienced with the services of these colleges in South Africa owing to the inequalities of the past and the other factors that must be put in place for these colleges to function as intended.

Chapter 6 summarises the research journey and its results, outlines recommendations and concludes the research.

6.3 Contribution of the research

The primary objective of research is to expand the existing knowledge and information pertaining to theories, methodologies, data collection, application, and other crucial components of scientific inquiry. This study aims to evaluate its contribution in terms of the set objectives. This evaluation is structured on the theoretical-methodological, descriptive, and application levels and each aspect is discussed in detail and the Return on Investment.

6.3.1 Objectives of the study

The study had four principal objectives;

Firstly, the study sought to investigate the impact of TSCA's contribution on the socio-economic development of the surrounding community, and examined the relationship between TSCA's activities and sustainable agricultural development.

The study found that farmers in the vicinity of the Tompi Seleka College borrowed farming equipment and implements after receiving appropriate training, with third-year students providing aftercare for these projects. Additionally, farmers purchased goods, livestock, fruits, and vegetables from these colleges at reasonable prices (see section 4.3 of chapter 4). Consequently, one of the headmen said; our village, therefore, regard Tompi Seleka College as our mine because some villages are far from the college as compared to us. Considering the above statements, the study managed to achieve this objective.

The study found that, upon graduation, students from agricultural colleges can establish their own agricultural businesses within their local communities as highlighted in Figure 4.3 of chapter 4. Secondly, 14 of the 60 students interviewed are confident that they will become agricultural entrepreneurs after completion of the diploma course because the Limpopo

government have a programme at hand to assist them to get government farms and financial assistance to run those farms as stated in chapter 4 section 4.4 of his study.

These results and utterances show that interviewees agree with the relevancy of the diploma offered in the agricultural college and suggest that the college is doing what it is mandated to do, that is, to provide quality education and training which is used in the surrounding communities and for progression to higher levels of learning. As such, this objective was achieved.

The second objective was to explore the extent to which various entities and organisations within and outside of TSCA are committed to promoting sustainable agricultural development, in accordance with the mandate set forth by the Department of Agriculture in the Limpopo Province. Given that no single actor or agency in agriculture is equipped to provide the complete spectrum of necessary advisory services, it is crucial to examine the level of involvement and commitment of different structures and authorities.

The stakeholders participants argues that the diploma offered in Tompi Seleka College of agriculture is valuable because most of the students, after completing their diploma programme, continue studying in institutions of higher learning such as the University of South Africa (UNISA), University of Limpopo (UL) and Tshwane University of Technology (TUT). “They are using this diploma as a stepping stone”. However, some of the stakeholder interviewees 6 of the 60 in Figure 4.4 stated that industries such as the National Emergent Red Meat Producers Organisation (NERPO) and the South African Poultry Association (SAPA) were not consulted when the college curriculum was developed.

These findings suggest that although the proposed college diploma might have been researched with the relevant agricultural industries at the time, the results might not have been communicated to all stakeholders for their review.

The third objective was to investigate to what extent do agricultural policies contribute to the performance of colleges of agriculture?

Overall, the findings reflected in chapter 4 Figure 4.6 of this study suggest that there are relevant policies that can direct colleges of agriculture to drive the socio-economic development of the surrounding communities successfully but some of these needs modifying to suit the intended objectives and environment. The study found that having all relevant policies compiled in a single document, referred to as a national policy on

sustainable agriculture, would make it easier for a college of agriculture to promote sustainable agriculture practices throughout South Africa. Finally, the study found that some policies were designed specifically to be issued to farmers when borrowing farm implements and tools as such, this objective.

The final objective was to suggest a reputation management framework for small medium enterprises that would demonstrate how to approach agricultural education in a way that positively contributes to sustainable agricultural development in the Limpopo Province and South Africa as a whole.

Overall, it can be deduced from chapter 5 Figure 5.1 of this study, which reflects the responses of the interviewees, that the majority of the participants hold the view that the identified guidelines are all important to the optimum running of colleges of agriculture.

This study, therefore, proposes major conceptual and structural changes to prepare a college of agriculture to make a constructive contribution to the complex and multifunctional agriculture and locally based food systems of the future and encourages their role as viable research and education centres through the use of these carefully considered collective guiding principles

6.3.2 Theoretical methodological level

The theoretical framework refers to the philosophical foundation upon which a research study is based and serves as a link between the theoretical and practical aspects of the investigation.

In this study, a systems thinking approach was adopted. As a result of this analysis, it is believed that colleges of agriculture can be viewed as complex systems in which various interdependent and interactive elements interact and influence each other, and which focus on the arrangement and relationships among their various components that form a cohesive whole.

The use of the case study method in this research aimed to broaden the existing knowledge base on the contributions of agricultural colleges to the socio-economic development of their rural communities through extending previous research experiences.

6.3.3 Descriptive level

This study employed a comprehensive qualitative research design, which incorporated Focus Group Discussions, in order to demonstrate the advantages of adopting an inclusive and blended methodology in descriptive research. The qualitative approach was utilised to examine the descriptions provided by representative stakeholders during interviews, and aimed to explore the meanings and explanations of the research activities in a broader context.

The results of this study are based on the analysis of participant answers and descriptions, and the care taken to ensure that the research participants were analysed in different interactional situations, that the research sites were described, and that any potential biases were avoided.

The six colleges of agriculture that participated in this research were selected to get the in-depth of information of all agricultural colleges in South Africa, and were accredited by the Council on Higher Education and the South African Qualification Authority. These colleges were located in diverse regions of South Africa, including KwaZulu-Natal (Cedara College of Agriculture), Eastern Cape (Grootfontein College of Agriculture), Western Cape (Elsenburg College of Agriculture), North-West Province (Taung College of Agriculture), and Limpopo Province (Tompi Seleka College of Agriculture). The results of this research are expected to provide significant insights from diverse participants.

6.3.4 Applied level

The study adopted a Participatory Action Research (PAR) approach to address pressing concerns and contribute to the well-being of individuals and their communities. The focus was on individuals and their developmental objectives. Tompi Seleka College of Agriculture (TSCA) students were exposed to practical learning as a means of promoting integral teaching, innovation, and new venture development.

PAR offers a systematic approach to problem-solving, allowing individuals to find effective solutions to the challenges they face in their daily lives. The colleges of agriculture in South Africa must be accessible and responsive to the demands of the country's agriculture sector, and this study aimed to promote this.

The outcomes of the research will be beneficial for South African colleges of agriculture from a training standpoint, as they should clearly demonstrate the colleges' ability to contribute to

the socio-economic development of their rural surroundings. Additionally, the findings could be adopted to advocate for academic programmes to be run without interference based on relevant academic policies.

This research is expected to shed light on the dynamics of South African colleges of agriculture and raise awareness among stakeholders regarding the experiences and challenges faced by these institutions.

6.4 Research Return on Investment (ROI)

6.4.1 Personal Return on Investment

- The involvement of parties affected by the research topic allowed for the researcher to gain valuable insight into the topic through the responses of surrounding communities, who were eager and willing to share information. This also helped the researcher to better explain the complexity of real life situations in a college of agriculture. The researcher therefore, believes that building on local knowledge is critical for sustainable development and that involving all individuals in decision Agriculture has to meet the demands of the growing population for food and other agricultural commodities by increasing production on land already in use. Having determined the context of the colleges of agriculture in South Africa, the need to improve the situation is imperative.

- Agriculture has to meet the demands of the growing population for food and other agricultural commodities by increasing production on land already in use. Having determined the context of the colleges of agriculture in South Africa, the need to improve the situation is imperative.

- Agricultural

- Practitioners and Scientists

making processes is crucial for promoting ownership, control and self-reliance, instead of creating a dependency syndrome through external hand-outs.

6.4.2 Professional Return on Investment

The researcher has learned that the element of people-centred responsive behaviours and participation at multi-levels is best conducted in partnership with other relevant stakeholders.

As such, the researcher believes that nothing should be done for people without them because development is about them. The researcher believes that social change begins in people's minds as they make choices about which values to adopt and how to live directed by those values. As a result, the researcher spends most of his time endeavouring to understand his students' development levels to change his methods to educate them based on their needs.

6.4.3 Organisational Return on Investment

Through the findings and recommendations of this study, a wide range of clients have been assisted and can draw on lessons for consideration in their daily activities. Among those who have been assisted by the study are the students, agricultural practitioners and scientists. Qualified learners, interested in HET for careers on NQF levels 5 to 7, were also availed of opportunities to study further where before many would have stopped at NQF level 6. In a broader context, this study has also contributed to the success of the African Agricultural Development Programme (AADP) objectives of promoting agricultural growth, rural development and food security.

6.4.4 Social Return on Investment

The rural surrounding farming communities operating at various levels and purposes comprise a major group of clients who were helped by the study. These farmers mainly produce for their own consumption but also produce a small marketable surplus. These farmers were taught more sustainable and productive farming methods and provided with farm management skills' training that enables them to become future agricultural entrepreneurs in order to feed the nation.

6.5 Limitations of the study

The limitations of the study must be specifically related to the research problem under investigation. It must be acknowledged that while this research study aimed to evaluate the contribution of colleges of agriculture to the sustainable development of agricultural activities in rural communities surrounding TSCA, it is not possible to reach definitive conclusions based on the data collected.

The generalizability of qualitative research findings has been criticised (Merriam, 2009: 3). However, many authors argue that qualitative research is not intended to generalise but

rather to provide in-depth examination of a specific issue (Merriam, 2009: 3). Merriam, (2009: 3) also highlights the lack of generalisable predictions in qualitative research.

Lack of financial support constituted a significant limitation of this study as the researcher was unable to visit other colleges of agriculture. This resulted in a lack of direct interaction with the participants and the inability to observe non-verbal communication nuances which might have provided a more nuanced understanding of the realities expressed by the participants through their facial expressions.

6.6 Recommendations

The following recommendations are put forward based on the conclusions of this study, aimed at enhancing the functioning of agricultural colleges in South Africa:

6.6.1. Agricultural colleges should persist in furthering their role as participants in community development.

6.6.2. The restructuring and renovation of agricultural colleges in South Africa, in collaboration with the private sector and other relevant non-governmental organisations, is necessary to offer a comprehensive curriculum.

6.6.3. The implementation of appropriate policies and institutional arrangements is essential to achieve positive outcomes in enhancing the socio-economic development of rural communities.

6.6.4. Agricultural colleges should collaborate with relevant agricultural stakeholders, including university scientists, to tackle the complex challenges posed by climate change.

6.6.5. There should be efforts to encourage school leavers to pursue agricultural vocational education offered by agricultural colleges.

6.6.6. In line with a wider democratic agenda, the study advocates for fighting against corruption to ensure politically impeccable and accountable agricultural colleges.

6.6.7. The proposed framework, consisting of seven pillars, serves as an appropriate guide for attaining the objectives of agricultural colleges.

6.6.8. The study suggested a reputation management framework for small-medium enterprises.

6.7 Suggestions for future research

The findings of this study could serve as a foundation for the formulation of future policy. Future research should be more comprehensive to enhance generalizability. The study

proposes some recommendations that merit further exploration, such as the creation of a communication and advocacy strategy to sustain the positive progress of agricultural colleges. The present research will chart the path for ensuring equity and parity in the quality of educational offerings at these colleges. Further studies should aim to gain a deeper understanding of the challenges posed by climate change and proactively respond to them. The establishment of guidelines for good practice in policy development and implementation could also provide a boost.

6.8 Conclusion

The current study gives a distinct view of the awareness and benefits of the contributions of colleges of agriculture to the socio-economic development of rural communities.

The study shows that colleges of agriculture in South Africa are better suited as agents of change and can spearhead sustainable development because they are closer to rural communities for agricultural education, training and the provision of aftercare services. Colleges of agriculture, through their different fields of study, have distinctive roles in promoting rural community development and sustainability as they are situated in rural communities.

Colleges of agriculture, according to the literature reviewed, have been described as the brain centre of agricultural progress because through their research efforts, they provide the scientific knowledge base required to boost agricultural activity which leads to greater output. The training provided at these colleges increases the quality of the human agent of production enabling new knowledge to be shared with local communities. Colleges of agriculture in South Africa offer diverse programmes which limit the opportunities for students to change from institution to institution and create barriers to higher levels of education.

Most students did not believe that or were unsure of whether a diploma from TSCA was good value for money and many students would not recommend or were unsure of recommending TSCA as a place of study to peers.

The study also shows that the work of colleges has a significant impact on the socio-economic development of their communities. As an example, the results of the study reflect that agricultural socio-economic development operates as an important social welfare infrastructure in rural communities by assisting the surrounding community to acquire their three fundamental human needs, namely, food, clothing and shelter.

The study further shows that despite the good work that colleges of agriculture are doing, these colleges face many challenges daily. For example, colleges need to link more effectively with the communities surrounding them for better sustainable agricultural development. The programmes and courses provided by colleges of agriculture should be re-designed after proper and effective communication with potential stakeholders as some stakeholders argued that they had not been consulted.

Ultimately, this study developed the researcher's views on the potential guidelines for the effective governance of colleges of agriculture.

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Appendix A: Interview Schedule

Purpose

I am Modise Philemon Tshwana. I work for the Department of Agriculture of the Limpopo Province as the rector of Tompi Seleka College of Agriculture. I am also a Philosophiae Doctor (PhD) student in the management of Technology and Innovation at The Da Vinci Institute (University) for Technology Management student number 7815. I am engaged in a research project that seeks to understand the role of agricultural colleges towards sustainable agricultural development.

The main objectives of my study are:

1. to identify what Tompi Seleka College of Agriculture is currently doing and should be doing differently to contribute towards improving agricultural education and training in the Limpopo Province and in South Africa as a whole.

2. to assess the impact of projects (for those who were trained by Tompi Seleka College) towards the community's socio-economic development.

I would appreciate if you could give some of your time to answer some questions. This interview will take about 30 minutes. Your decision to participate is completely voluntary. At any stage of the interview you may refuse to answer a question or stop the interview if you wish to do so without needing to supply a reason for your decision. Before you decide to participate in this interview, please feel free to ask me any questions you may have about the survey. Your responses will be kept confidential and your identity will be kept secret.

SECTION A: GENERAL INFORMATION

1. Interview no: ……

2. Name of the interviewee/Institution:…….

3. Gender (please mark with x) ☐ Male ☐ Female

4. How old are you? Please tick 1-20 20-30, 30-40 40-50 50+ and above ☐ ☐ ☐ ☐ ☐

5. Your responsibility in an institution/community:…….

6. Date of interview: ……

7. Time of interview: ……..

SECTION B: POLICIES (College Management, Lecturers and admin staff) (60 interviewees)

B1. Name any policy that you think is informing or guiding the operation of this college……

……
……

B2. How would you rate this policy using the rating scale where 1 is Extremely relevant, 2 is Very relevant, 3 is Moderately relevant, 4 is Slightly relevant and 5 is Not at all relevant

	1	2	3	4	5
- Relevancy					
- Efficient					
- Effective					

B3. Where do most of your students go after completing diploma?.....

B4. How likely could you rate this policy using the rating scale where 1 is Extremely likely, 2 is Quite likely, 3 is Moderately likely, 4 is Slightly likely and 5 is Not at all likely.

	1	2	3	4	5
contribution towards the socio-economic development					

B5. What do you regard as knowledge in this institution?.....

B6. To what extent do provincial policies contribute towards agricultural education? please tick. (Please explain why you think so d Bad

……

……

B7. According to you, what should change in terms of the policy to contribute towards sustainable agricultural development?.....

……
……

SECTION C: MANAGEMENT, LECTURERS, ADMIN STAFF AND STUDENTS VIEWS (60 interviewees)

C1. Does the Diploma in Agriculture that your institution offers meet the requirements of the agricultural industry? ……..motivate your answer……..

……
……

C2. Name any three primary stakeholders that are working directly with this Institution and please fill the relevant columns as per the below Table:

Name of the stakeholder	Success factor	Current role	Future role	Failure factor	Why

C3. In a nut shell what must this stakeholders do for positive change in helping this college?

……
…….

C4. What is this college doing for sustainable development?……..

C5. What do you think should be done differently?.....

C6. Are you engaged in any professional development (please mark with x) ☐
Yes no ☐

C6.1. If yes, what are you doing and if no why not……
…….

C7. Is there any clear career pathing for you in the institution (please mark with x) Yes ☐

C7.1 No ☐ if no please explain……..

……

C8. How would you rate this college using the rating scale of 1 – 5, where 1 is Extremely well, 2 is Very well, 3 is Somewhat well, 4 is Not so well and 5 is Not at all well.

	1	2	3	4	5
How well does this college contributing towards the body of knowledge					

C9. How would you rate this college using the rating scale of 1 – 5, where 1 is Extremely well, 2 is Very well, 3 is Somewhat well, 4 is Not so well and 5 is Not at all well.

	1	2	3	4	5
To what extent is the research playing a role in the college of agriculture?					

C10. Which framework or guidelines should be used on how best to address agricultural education to contribute towards positive sustainable agricultural development in the agricultural colleges?

……...

.....

Thank you for your time

Appendix B: List of the 3rd Year Students

No.	SURNAME	FULL NAMES	STUDENT NUMBER	GENDER
01	Dolamo	Frans	150037	M
02	Langa	Mathiba Jeniffer	150038	F
03	Lekala	Antonette	150040	F
05	Lesetja	Nelson	150042	M
06	Lehwelere	Phineas	150039	M
06	Magopa	Luther	150044	M
08	Makgato	Porati	150046	F
09	Makua	Lethamaga Nico	150047	M
10	Maphila	Patience	150048	F
11	Masekane	Percy	150049	M
12	Masenya	Esther	150050	F
13	Mashatola	John	150051	M
13	Mathabatha	Thuso Seribe William	150052	M
14	Mathoma	Ndanduleni	150053	M
15	Mavalela	Tebatso Jeremia	150054	M
16	Mkhabela	Karabo Mary	150055	F
17	Mogotlane	Phomolo	150056	F

No.	SURNAME	FULL NAMES	STUDENT NUMBER	GENDER
18	Mohlala	Zenitha	150057	F
19	Monama	Mangoro Desiree	150058	F
20	Monama	Raisibe Audrey	150059	F
21	Monama	Samuel Legopane	150060	M
22	Moselakgomo	Ntuba Justine	150061	M
23	Moswane	Kabelo	150062	M
24	Mothata	Kgoetsana Frans	150063	M
25	Motau	Willy	150022	M
26	Nkgudi	Edward	150064	M
27	Paledi	Thembi	150065	F
28	Ramanna	Thatiso	150066	M
29	Ramokhola	Boitumelo Besie Cecilia	150067	F
30	Ramothwala	Mpho Mathepe	150068	M
31	Ramphisa	Malk	150069	M
32	Raphadu	Neo Isaac	150090	M
33	Sathekge	Anna Mamoraka	150071	F
34	Sekgale	Mmankopodi Fellistus	150072	F
35	Seloane	Kaizer Telelo	150073	M
36	Sethole	Aron	150030	M

No.	SURNAME	FULL NAMES	STUDENT NUMBER	GENDER
38	Setlago	Rahlotse	150076	M
39	Mashangoane	Kgothatso Comfort	150082	F
40	Mabena	Andile	150043	F
41	Mphahlele	Tarnia Sibongile	150024	F

Appendix C: List of Tompi Seleka College of Agriculture Employees

LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
AGRICULTURE AND RURAL DEVELOPMENT

TOMPI SELEKA COLLEGE

LIST OF TOMPI SELEKA COLLEGE OF AGRICULTURE EMPLOYEES

Number	Academic staff complement	Area of specialisation
1	Mr Tshwana MP	Deputy Director, Plant Production
2	Mr Swana LW	Head of Department, Plant Studies
3	Mr Manavhela TS	Senior Lecturer, Plant
4	Mr Giliana F	Lecturer, Plant Studies
5	Mr Mokgolo MJ	Lecturer, Plant Studies - soil
6	Ms Mampana MR	Lecturer, Plant Studies - soil
7	Ms Sebola MS	Lecturer, Plant Studies
8	Mr Malatji C	Lecturer, Plant Studies - soil
9	Ms Mokgehle MS	Lecturer, Plant Studies
10	Mr Motala SG	Lecturer, Plant Studies
11	Mr Manchidi MJ	Head of Department, Animal Studies
12	Mr Makola LT	Senior Lecturer, Animal studies
13	Mr Lekgau MG	Senior Lecturer, Animal Studies
14	Mr Mphahlele M	Lecturer, Animal Studies

Number	Academic staff complement	Area of specialisation
15	Mrs Mogale MS	Lecturer, Animal Studies
16	Ms Matlou L	Lecturer, Animal studies
17	Ms Moela M	Lecturer, Animal Studies
18	Mr Maleka RB	Lecturer, Animal Studies
19	Mr Mahada NT	Agric Technician, Animal Studies
20	Mr Mabanna MA	Senior Lecturer, Computer studies
21	Ms Mashamaite KK	Lecturer, Computer Studies
22	Dr Diale NR	Senior Lecturer, Extension Services
23	Mr Mametja HJ	Agric Technician, Plant Studies
24	Mr Moeketsi BA	Lecturer, Agricultural Economics
25	Ms Legodi KJ	Lecturer, Agricultural Economics
26	Ms Shilajoe ST	Lecturer, Extension and Nutrition
27	Ms Mulaudzi VS	Lecturer, Agricultural Economics
28	**Support staff complement**	**Area of specialisation**
29	Mr Molaba CS	Human Resource Management
30	Mrs Maselela NI	Human Resource Management
31	Ms Mapheto JR	Human Resource Management
32	Mr Nkogatse KJ	Human Resource Management
33	Mr Maserumule MA	Human Resource Management
34	Ms Sepale PM	Receptionist
35	Ms Nyathi KG	Switchboard operator
36	Mr Masemola MA	Admin Clerk
37	Ms Nkogatse MM	Photocopy operator
38	Ms Lechalaba MO	Assistant Director, Finance

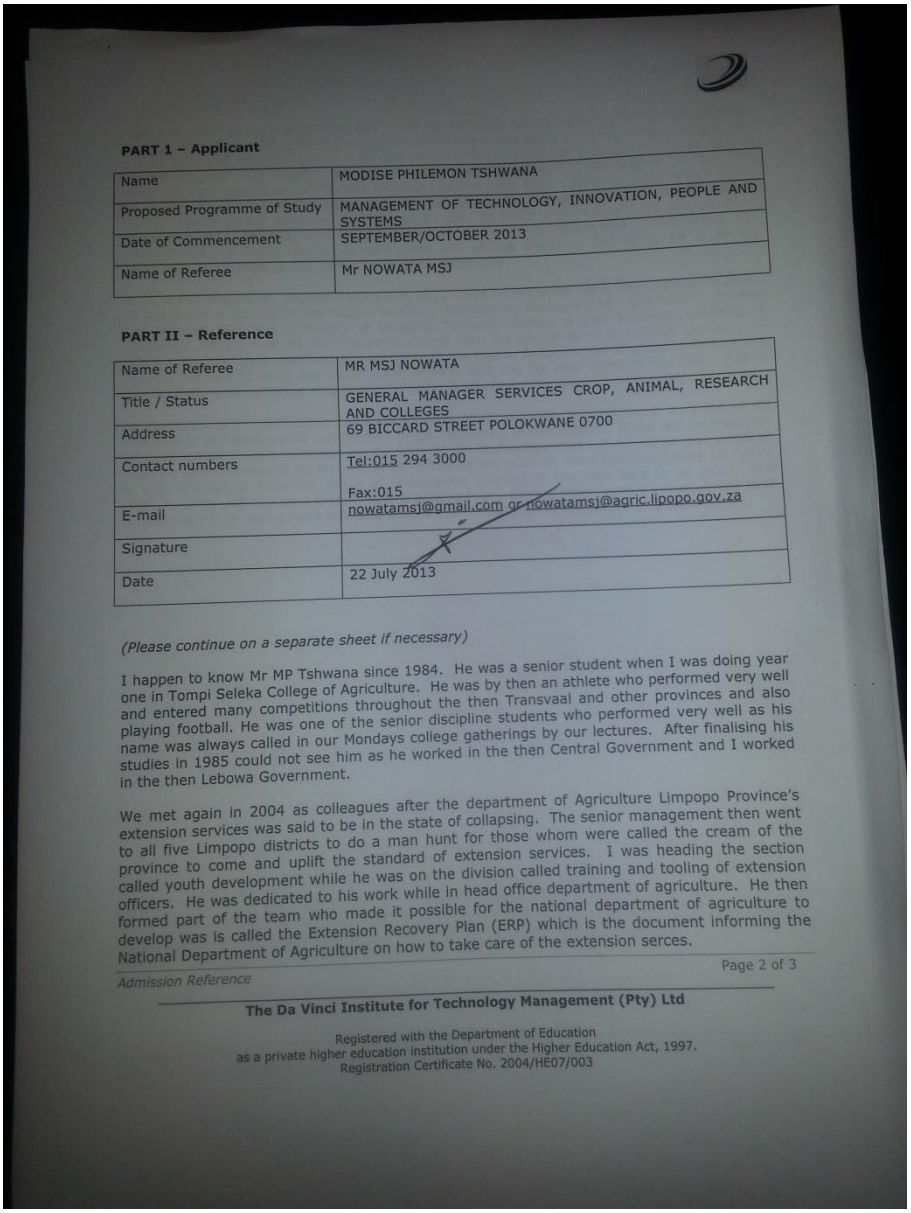
Number	Academic staff complement	Area of specialisation
39	Mrs Maphopha SR	Account Clerk, SCM
40	Ms Lekganyane MC	Account Clerk, Revenue
41	Ms Serote MS	Account Clerk, SCM
42	Mr Mphahlele KN	Senior Admin Officer, assets
43	Mr Manganeng KK	Finance Clerk
44	Mr Mahlokoane DM	Admin Clerk, Fleet management
45	Mr Molema WKO	Stores Clerk
46	Mrs Kontsimkwa MJ	Stores
47	Mrs Mohlasedi LL	Control Farm Manager
48	Ms Maloka MJ	Farm Manager, crops
49	Mr Mashilane NA	Auxiliary Officer
50	Mr Mphahlele MN	Artisan Foreman
51	Mrs Sepuru PS	Librarian
52	Ms Masikhwa NC	Computer Technician
53	Ms Mabeba MP	Library Assistant
54	Mr Pilusa KJ	Library Assistant
55	Mrs Makobe MN	Photocopy operator
14 employees	Farm Aids,	Horticulture, grounds and community
15 employees	Farm Aids,	Animal Production and aquaculture
12 employees	Maintenance staff	Building, Carpentry, Plumbing
5 employees	Cleaners, staff	Various sections of the college
2 employees	Drivers, staff	Buses, vehicles and machineries
TOTAL 103		

APPENDIX D:

MATRIX OF CODES, THEMES, AND CATEGORIES USED IN THE ANALYSIS OF DATA

Code	Theme	Categories	Identification number
Importance of the college of agriculture			
Accessibility to the college of agriculture			
College of agriculture and socio-economic development			
External support			
Constraints			
Teaching and learning			
Guidelines for college of agriculture			
Wealth creation			
Sustainable development			
Rural community			
Socio-economic development			

APPENDIX E: Letter from Limpopo Department of Agriculture



PART 1 – Applicant

Name	MODISE PHILEMON TSHWANA
Proposed Programme of Study	MANAGEMENT OF TECHNOLOGY, INNOVATION, PEOPLE AND SYSTEMS
Date of Commencement	SEPTEMBER/OCTOBER 2013
Name of Referee	Mr NOWATA MSJ

PART II – Reference

Name of Referee	MR MSJ NOWATA
Title / Status	GENERAL MANAGER SERVICES CROP, ANIMAL, RESEARCH AND COLLEGES
Address	69 BICCARD STREET POLOKWANE 0700
Contact numbers	Tel:015 294 3000 Fax:015
E-mail	nowatamsj@gmail.com or nowatamsj@agric.limpopo.gov.za
Signature	
Date	22 July 2013

(Please continue on a separate sheet if necessary)

I happen to know Mr MP Tshwana since 1984. He was a senior student when I was doing year one in Tompi Seleka College of Agriculture. He was by then an athlete who performed very well and entered many competitions throughout the then Transvaal and other provinces and also playing football. He was one of the senior discipline students who performed very well as his name was always called in our Mondays college gatherings by our lectures. After finalising his studies in 1985 could not see him as he worked in the then Central Government and I worked in the then Lebowa Government.

We met again in 2004 as colleagues after the department of Agriculture Limpopo Province's extension services was said to be in the state of collapsing. The senior management then went to all five Limpopo districts to do a man hunt for those whom were called the cream of the province to come and uplift the standard of extension services. I was heading the section called youth development while he was on the division called training and tooling of extension officers. He was dedicated to his work while in head office department of agriculture. He then formed part of the team who made it possible for the national department of agriculture to develop was is called the Extension Recovery Plan (ERP) which is the document informing the National Department of Agriculture on how to take care of the extension serces.

Admission Reference

The Da Vinci Institute for Technology Management (Pty) Ltd

Registered with the Department of Education
as a private higher education institution under the Higher Education Act, 1997.
Registration Certificate No. 2004/HE07/003

APPENDIX F

CONSENT TO PARTICIPATE IN THIS STUDY

I, _____ (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable).

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree to the recording of the <insert specific data collection method>.

I have received a signed copy of the informed consent agreement.

Participant Name & Surname……
……

Participant
Signature……..Date……..

Researcher's Name & Surname……..

Researcher's
signature……..Date……

APPENDIX: I.

Unstructured interview schedule (Headmen)

Interview Schedule

Purpose

I am Modise Philemon Tshwana. I work for the Department of Agriculture of the Limpopo Province as the rector of Tompi Seleka College of Agriculture. I am also a Philosophiae Doctor (PhD) student in the Management of Technology and Innovation at The Da Vinci Institute (University) for Technology Management student number 7315. I am engaged in a research project that seeks to understand the role of agricultural colleges towards sustainable agricultural development.

The main objectives of my study are:

1. to identify what Tompi Seleka College of Agriculture is currently doing and should be doing differently to contribute towards improving agricultural education and training in the Limpopo Province and in South Africa as a whole.

2. to assess the impact of projects (for those who were trained by Tompi Seleka College) towards the community's socio-economic development.

I would appreciate if you could give some of your time to answer some questions. This interview will take about 30 minutes. Your decision to participate is completely voluntary. At any stage of the interview you may refuse to answer a question or stop the interview if you wish to do so without needing to supply a reason for your decision. Before you decide to participate in this interview, please feel free to ask me any questions you may have about the survey. Your responses will be kept confidential and your identity will be kept secret.

SECTION A: GENERAL INFORMATION

1. Interview no: ……

2. Name of the interviewee/Institution:…….

3. Gender (please mark with x) ☐ Male ☐ Female

4. How old are you? Please tick 1-20 20-30, 30-40 40-50 50+ and above ☐ ☐ ☐ ☐ ☐

5. Your responsibility in an institution/community:…….

6. Date of interview: ……

7. Time of interview: ……..

SECTION F: COMMUNITY INVOLVEMENT (5 Headmen) (5 interviewees)

F1. To what extent are communities involved in the colleges of agriculture's activities?.....

.....

F2. How likely could you rate the impact of college of agriculture using the rating scale where 1 is Extremely likely, 2 is Very likely, 3 is Moderately likely, 4 is Slightly likely and 5 is Not at all likely

	1	2	3	4	5
What impact do colleges of agriculture have towards community socio-economic development?					

F3. How directly communities are benefitting from a college of agriculture using the rating scale where 1 is Extremely benefitting, 2 is Very benefitting, 3 is Moderately, 4 is Slightly benefitting and 5 is Not at all benefitting

	1	2	3	4	5
Communities that are next to the colleges of agriculture are directly benefitting from them.					

THANK YOU FOR YOUR TIME AND COOPERATION

APPENDIX G.

Interview Schedule (Focus Group Interview)

Purpose

I am Modise Philemon Tshwana. I work for the Department of Agriculture of the Limpopo Province as the rector of Tompi Seleka College of Agriculture. I am also a Philosophiae Doctor (PhD) student in the management of Technology and Innovation at The Da Vinci Institute (University) for Technology Management student number 7815. I am engaged in a research project that seeks to understand the role of agricultural colleges towards sustainable agricultural development.

The main objectives of my study are:

1. to identify what Tompi Seleka College of Agriculture is currently doing and should be doing differently to contribute towards improving agricultural education and training in the Limpopo Province and in South Africa as a whole.

2. to assess the impact of projects (for those who were trained by Tompi Seleka College) towards the community's socio-economic development.

I would appreciate if you could give some of your time to answer some questions. This interview will take about 30 minutes. Your decision to participate is completely voluntary. At any stage of the interview you may refuse to answer a question or stop the interview if you wish to do so without needing to supply a reason for your decision. Before you decide to participate in this interview, please feel free to ask me any questions you may have about the survey. Your responses will be kept confidential and your identity will be kept secret.

SECTION A: GENERAL INFORMATION

1. Interview no: ……

2. Name of the interviewee/Institution:…….

3. Gender (please mark with x) Male ☐ ☐ Female

4. How old are you? Please tick 1-20 ☐ 20-30, ☐ 30-40 ☐ 40-50 ☐ 50+ and above ☐

5. Your responsibility in an institution/community:……

6. Date of interview: ……

SECTION E: STAKEHOLDER PARTICIPATION (5 interviewees)

E1. How agricultural education can affect development in a positive way? Please explain……
……

E2. What do you think agricultural colleges should be doing differently to contribute towards community socio-economic development?.....
.....

E3. How would you rate Tompi Seleka College using the rating scale of 1 – 5, where 1 is Extremely well, 2 is Very well, 3 is Somewhat well, 4 is Not so well and 5 is Not at all well.

	1	2	3	4	5
Colleges of agriculture are successfully delivering to their mandates					

E4. There is low levels of awareness about the importance of agriculture nationwide what do you think agricultural colleges should do differently for a sustainable agricultural development?.....
.....

E5. What other programmes do you think the college should introduce to encourage youth participation in agriculture?.....

E6. What are factors and conditions at both institutional and national level that facilitate or inhibit colleges of agriculture to make sustained contributions to agricultural socio-economic development?.....

APPENDIX: H.

Interview Schedule (10 Alumni)

Purpose

I am Modise Philemon Tshwana. I work for the Department of Agriculture of the Limpopo Province as the rector of Tompi Seleka College of Agriculture. I am also a Philosophiae Doctor (PhD) student in the management of Technology and Innovation at The Da Vinci Institute (University) for Technology Management student number 7315. I am engaged in a research project that seeks to understand the role of agricultural colleges towards sustainable agricultural development.

The main objectives of my study are:

1. to identify what Tompi Seleka College of Agriculture is currently doing and should be doing differently to contribute towards improving agricultural education and training in the Limpopo Province and in South Africa as a whole.

2. to assess the impact of projects (for those who were trained by Tompi Seleka College) towards the community's socio-economic development.

I would appreciate if you could give some of your time to answer some questions. This interview will take about 30 minutes. Your decision to participate is completely voluntary. At any stage of the interview you may refuse to answer a question or stop the interview if you wish to do so without needing to supply a reason for your decision. Before you decide to participate in this interview, please feel free to ask me any questions you may have about the survey. Your responses will be kept confidential and your identity will be kept secret.

Thank you for your time

SECTION A: GENERAL INFORMATION

1. Interview no: ……

2. Name of the interviewee/Institution:……

3. Gender (please mark with x) Male ☐ Female ☐

4. How old are you? Please tick 1-20 ☐ 20-30, ☐ 30-40 ☐ 40-50 ☐ 50+ and above ☐

5. Your responsibility in an institution/community:……

6. Date of interview: ……

7. Time of interview: ……..

SECTION D. RELATIONSHIP BETWEEN THE ACTIVITIES AND ECONOMIC DEVELIPMENT (ALUMNI 10)

D1. Agricultural education gives one a basis from which one can use the knowledge acquired to generate wealth (tick with x) Yes ☐ No if ☐ no, why……

……

D2. How can continued learning and joint action by the partners and other key stakeholders be improved? (Please explain)……

D3. What do you think should be the roles of agricultural colleges……

D4. How would you rate Tompi Seleka College using the rating scale of 1 – 5, where 1 is Extremely well, 2 is Very well, 3 is Somewhat well, 4 is Not so well and 5 is Not at all well.

	1	2	3	4	5
What do you think are the relationship between the activities performed by the college and sustainable socio-economic development					

D5. Why do you think so?.....

APPENDIX

Interview Schedule

Purpose

I am Modise Philemon Tshwana. I work for the Department of Agriculture of the Limpopo Province as the rector of Tompi Seleka College of Agriculture. I am also a Philosophiae Doctor (PhD) student in the management of Technology and Innovation at The Da Vinci Institute (University) for Technology Management student number 7815. I am engaged in a research project that seeks to understand the role of agricultural colleges towards sustainable agricultural development.

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2. to assess the impact of projects (for those who were trained by Tompi Seleka College) towards the community's socio-economic development.

I would appreciate if you could give some of your time to answer some questions. This interview will take about 30 minutes. Your decision to participate is completely voluntary. At any stage of the interview you may refuse to answer a question or stop the interview if you wish to do so without needing to supply a reason for your decision. Before you decide to participate in this interview, please feel free to ask me any questions you may have about the survey. Your responses will be kept confidential and your identity will be kept secret.

SECTION A: GENERAL INFORMATION

1. Interview no: ……

2. Name of the interviewee/Institution:…….

3. Gender (please mark with x) ☐ Male ☐ Female

4. How old are you? Please tick 1-20 ☐ 20-30, ☐ 30-40 ☐ 40-50 ☐ 50+ and above ☐

5. Your responsibility in an institution/community:…….

6. Date of interview: ……

7. Time of interview: ……..

SECTION F: COMMUNITY INVOLVEMENT (Farmers) (30 interviewees)

F1. To what extent are communities involved in the colleges of agriculture's activities?.....

F2. How likely could you rate the impact of college of agriculture using the rating scale where 1 is Extremely likely, 2 is Very likely, 3 is Moderately likely, 4 is Slightly likely and 5 is Not at all likely

	1	2	3	4	5
What impact do colleges of agriculture have towards community socio-economic development?					

F3. How directly communities are benefitting from a college of agriculture using the rating scale where 1 is Extremely benefitting, 2 is Very benefitting, 3 is Moderately, 4 is Slightly benefitting and 5 is Not at all benefitting

	1	2	3	4	5
Communities that are next to the colleges of agriculture are directly benefitting from them.					

THANK YOU FOR YOUR TIME AND COOPERATION

APPENDIX I.

Interview Schedule (Unstructured Interviews).

Purpose

I am Modise Philemon Tshwana. I work for the Department of Agriculture of the Limpopo Province as the rector of Tompi Seleka College of Agriculture. I am also a Philosophiae Doctor (PhD) student in the management of Technology and Innovation at The Da Vinci Institute (University) for Technology Management student number 7815. I am engaged in a research project that seeks to understand the role of agricultural colleges towards sustainable agricultural development.

The main objectives of my study are:

1. to identify what Tompi Seleka College of Agriculture is currently doing and should be doing differently to contribute towards improving agricultural education and training in the Limpopo Province and in South Africa as a whole.

2. to assess the impact of projects (for those who were trained by Tompi Seleka College) towards the community's socio-economic development.

I would appreciate if you could give some of your time to answer some questions. This interview will take about 30 minutes. Your decision to participate is completely voluntary. At any stage of the interview you may refuse to answer a question or stop the interview if you wish to do so without needing to supply a reason for your decision. Before you decide to participate in this interview, please feel free to ask me any questions you may have about the survey. Your responses will be kept confidential and your identity will be kept secret.

SECTION A: GENERAL INFORMATION

1. Interview no: ……

2. Name of the interviewee/Institution:…….

3. Gender (please mark with x) ☐ Male ☐ Female

4. How old are you? Please tick 1-20 20-30, 30-40 40-50 50+ and above ☐ ☐ ☐ ☐ ☐

5. Your responsibility in an institution/community:…….

6. Date of interview: ……

7. Time of interview: ……..

SECTION F: COMMUNITY INVOLVEMENT (BDF) (10 interviewees)

F1. To what extent are communities involved in the colleges of agriculture's activities?.....

F2. How likely could you rate the impact of college of agriculture using the rating scale where 1 is Extremely likely, 2 is Very likely, 3 is Moderately likely, 4 is Slightly likely and 5 is Not at all likely

	1	2	3	4	5
What impact do colleges of agriculture have towards community socio-economic development?					

F3. How directly communities are benefitting from a college of agriculture using the rating scale where 1 is Extremely benefitting, 2 is Very benefitting, 3 is Moderately, 4 is Slightly benefitting and 5 is Not at all benefitting

	1	2	3	4	5
Communities that are next to the colleges of agriculture are directly benefitting from them.					

THANK YOU FOR YOUR TIME AND COOPERATION