

**THE ROLE OF UNIVERSITIES IN PROMOTING INDUSTRIAL
DEVELOPMENT IN TANZANIA: THE CASE OF SOKOINE
UNIVERSITY OF AGRICULTURE IN MOROGORO
MUNICIPALITY**

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DEVELOPMENT IN TANZANIA: THE CASE OF SOKOINE
UNIVERSITY OF AGRICULTURE IN MOROGORO
MUNICIPALITY**

By

Simalike E. Ngunga

**A Dissertation Submitted in Partial Fulfilment of the Requirements for Award
of the Degree of Master of Arts in Education (MAED) of the
Mzumbe University**

2020

CERTIFICATION

We, the undersigned, certify that we have read and hereby recommend for acceptance by the Mzumbe University a dissertation entitled “***The Role of Universities in Promoting Industrial Development in Tanzania: The Case of Sokoine University of Agriculture in Morogoro Municipality***” in partial fulfilment of the requirements for award of the degree of Master of Arts in Education of the Mzumbe University.

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Major Supervisor

Internal Examiner

Accepted for the Board of Faculty of Social Sciences

DEAN, FACULTY OF SOCIAL SCIENCES

DECLARATION

AND

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I, **Simalike Edson Ngunga**, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature _____

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DEDICATION

This dissertation is dedicated to every individual who positively support the industrial development strategies in Tanzania.

LIST OF ABBREVIATIONS AND ACRONYMS

ERP	Economic Recovery Program
ICT	Information Communication Technology
IMF	International Monetary Fund
NHEP	National Higher Education Policy
NSGRP	National Strategies for Growth and Reduction of Poverty
SAP	Structural Adjustment Program
SPSS	Statistical Package for Social Science
SUA	Sokoine University of Agriculture
SUACSP	Sokoine University of Agriculture Corporate Strategic Planning
TCU	Tanzania Commission for Universities
TDV	Tanzania Development Vision 2025,
TPB	Theory of Planned Behaviour
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
URT	United Republic of Tanzania
USA	United States of America
WB	World Bank

ABSTRACT

The study explored the role of universities in promoting industrial development in Tanzania taking a case of Sokoine University of Agriculture (SUA). Specifically the study identified the industrial related skills and competences imparted to students at SUA, determined the strategies applied by SUA in imparting industrial related skills and competences to its students, identified the perceptions of SUA stakeholders on industrial development movement, as well as determined opportunities and challenges that SUA face on promoting industrial development in the country.

The convergent mixed method design was applied in this study. Data were collected through questionnaires, interviews and documentary review. The purposive and quota sampling techniques were used to attain a sample of 109 respondents. Content analysis was used to analyses qualitative data whereas the descriptive statistical analysis method was employed in quantitative data analysis.

With regard to skills and competences, findings revealed that students from the selected degree programs demonstrated various skills such as machine operation, communication, mathematical and statistical computation skills. The study also gained that students at SUA acquire workplace competences, technical competencies, personal effectiveness competences, as well as managerial and academic competences.

Apart from the skills and competences, the study revealed that among the strategies which are applied by SUA in promoting industrial development in the country are practical training in industries and installation of mini-factories at the university areas. These make students be familiar with industrial practices.

However SUA face some challenges like budget deficits and lack of new technology. These challenges retard some SUA's useful strategies towards mainstreaming industrial competences and skills to the students.

Based on the findings, the resources, the nature of the university and the fact that agriculture is providing employment, contribute to Gross Domestic Product (GDP) of Tanzania, and provide inputs for industrial sector; SUA joins hand the industrial development strategies in the country and its contribution should be explicitly realized and appreciated.

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CHAPTER ONE

PROBLEM SETTING

1.1 Background of the Problem

Industrialization is acknowledged world wide as the engine of growth (Lin, 2011). In the African continent, the imperative to industrialize in today's global context has been spelt out in various documents such as UNIDO and UNCTAD (2011), ECA and AU (2013), and identifies commodity-based industrialization as an engine of growth and economic transformation (Mbelle, 2016). Therefore promotion of industrial development strategies in Tanzania is inevitable so as to make the country acquire a middle income economy with high level of industrialization.

The process of industrial development and transformation in Tanzania has passed through different phases and has been much influenced by changes in social economic landscape (URT, 2016).

The trend of industrial development in Tanzania can be grouped into five distinct policy periods which are early post-independence period of industrialization (1960-1967), after Arusha Declaration (1967-1985), Structural adjustment and Economic Reforms (1986-1995), Economic Reforms with industrial development as an industrial agenda (1996 – 2005) and Growth and Economic Transformation for Human Development (2006 – To date) URT(2009). By struggling to improve the industrial sector since her independence, Tanzania recognizes and appreciates the importance of the industrial sector on the socio-economic development.

Tanzania has prepared a development vision which aspires to achieve a middle economy with average per capita income of \$3000 by 2025 (URT, 2011). The development vision perceives that the country will have been transformed from a low productivity agricultural economy to a semi-industrialized one. This vision is characterized by high level of industrialization, competitiveness, quality livelihood, rule of law and having in place an educated and pro-learning society (Msami and Wangwe, 2016). Thus the 2011/12–2024/25 vision plan gives education a great

priority in transforming the nation to the middle income economy with high level of industrial development together with higher application of science and technology.

The contribution of universities in industrial development and economic transformation in any country is of great importance because economic development is a process of knowledge and capital accumulation (World Bank, 2001). Universities support economic growth and poverty reduction strategies through training a qualified and adoptable labour force, generating new knowledge, and building the capacity to access the existing stores of global knowledge and to adopt that knowledge to local use (World Bank, 2002). Therefore in Tanzanian universities are the catalysts for industrial development and poverty reduction strategies through the roles they play.

Worldwide universities play a great role in the process of the economic growth as sources of new knowledge and trainer of scientists who work in industries as they are main providers of new technology and innovative systems (Kaijage, 2007, Hatakenaka 2008, & Gabagambi, 2016). According to TCU, (2016) Tanzania possesses about 71 universities. These universities are expected to play a crucial role of transforming the country to middle income economy by 2025 through the skills and competences imparted to students which will increase their knowledge on industrial development strategies.

The Tanzanian National Higher Education Policy (NHEP) of 1999 is insisting about the training and research objectives of higher learning institutions to target on the development and promotion of a strong indigenous base of science and technology so as to enable Tanzanians to solve their development problems. The policy states that; the curricular emphasis of higher education should be on programmes geared towards responding to the changing world of science and technology, correspond to changing needs of the people, their government, industry, commerce and surrounding environment in general (URT,1999). This explanation shows how far universities in in the country are mostly needed for the development of the country to the middle income economy through knowledge, and skills imparted to students.

Sokoine University of Agriculture (SUA) is among the largest university in Tanzania. It is the leading higher learning institution in the field of agriculture in Tanzania and plays a key role in the process of economic growth, as both a source of new knowledge and a trainer of scientists who work in industries and is essential for national and individual development (Gabagambi, 2016). SUA operates in line with all national development goals and policies as well as national higher education policy and it is meant to be an institution where people are trained at the highest level for clear and independent thinking, for analysis as well as for problem solving at the higher level (SUA, 2016). Therefore SUA could be a part and parcel in the country's current industrial development strategies through skills and competencies imparted to students.

This study explored the contribution of SUA to industrial development in Tanzania through competencies and skills imparted to the undergraduate students.

1.2 Statement of the Problem

Tanzania is in the poverty reduction movement. This movement was initiated by the World Bank (WB) and International Monetary Fund (IMF) since 2000's (Ngowi, 2009). The poverty reduction movement led to the formulation of Tanzania Development Vision 2025 (TDV 2025) (Mandalu, Thakathi & Hofisi, 2018). Among the characteristics of TDV 2025 is high level of industrialization (Msami & Wangwe (2016). Industrialization is the engine of growth (Lin, 2011). Therefore for Tanzania to win its poverty reduction movement the development of the industrial sector is of a great importance.

Universities worldwide play a crucial role in the development of the industrial sector through skills and competences they provide to students. Hatakenaka, (2008) shows that universities played a great role to the development of industries in countries like Japan, Korea, Taiwan, Israel, Finland, Ireland, China and India. With this reference it is clear to say that universities in Tanzania play a great role in the development of the industrial sector in the country and worldwide: though little is known about this.

Mishra (2007), Tisimia (2014), Kaijage (2016), and Mutayoba (2016), show how industrial development in Tanzania could be the solution to unemployment challenge

which face majority of university graduates. The literature explains much about the role of industries in solving graduates challenges especially the unemployment challenge rather than the role of universities in developing the industrial sector.

Therefore, as Tanzania intends to move towards industrialization so as to combat various problems such as poverty and unemployment, and as the industrialization process is accompanied with production of jobs which requires different skills and competences; universities have been directed to produce relevant skills for industrialization process. However little is known on how these skills are developed among university students. This study addressed the gap by exploring the contribution of SUA in industrial development in Tanzania through skills and competences imparted to students.

1.3 Objectives of the Study

1.3.1 General Objective

To explore the role of universities in promoting industrial development in Tanzania with reference to Sokoine University of Agriculture (SUA) in Morogoro Municipality.

1.3.2 Specific Objectives

- i) To identify the perception of the SUA stakeholders about the university's position on the current industrial development movements in the country.
- ii) To identify the industrial related skills and competencies imparted to students at SUA which are geared toward industrial development.
- iii) To identify the strategies applied by SUA in providing industrial related skills and competencies to students to enhance industrial development in the country.
- iv) To identify the opportunities and challenges which SUA face in contributing to industrial development in the country.

1.4 Research Questions

- i) How does SUA stakeholders perceive about the position of the university on the current industrial development movements in the country?
- ii) What are the industrial related skills and competencies which are imparted to students at SUA?
- iii) What are strategies which SUA apply in providing industrial related skills and competencies to the students so as to enhance industrial development in the country?
- iv) What are the opportunities and challenges that SUA face in contributing to industrial development in the country?

1.5 Significance of the Study

1.5.1 Theoretical Significance of the study

The study employed the TPB. The theory was very useful to the study as the findings prove that without early plans is difficult to achieve the goals. SUA has achieved the goals of promoting industrial development due to early stated plans and strategies which the university is struggling to implement.

With such perspective, the researcher explored how SUA enhance industrial development in Tanzania especially through competencies and skills provided to students. Although there are some challenges prevailed in SUA, the positive plans and roles in promoting industrial development makes a university a pioneer in promoting industrial development.

1.5.2 Practical Significance of the study

The findings from this study are more useful for SUA to improve in its provision of industrial related skills and competences as well as for other universities to learn on how they should do in order to participate in national development strategies. The challenges that SUA face in promoting industrial development probably are the same with what other universities. Through collaboration between the universities, universities and industries as well as conducting researches worldwide on how to improve the industrial sector, Tanzania will benefit from having these universities as

they will be in front line in combating poverty in the country through developing the industrial sector. This will make Tanzania improve its social economic status.

1.5.3 Policy Significance of the study

This study is more helpful for curriculum developers in universities to review and amend the curriculum according to the needs of industrial sector and technological development in the country. Universities in Tanzania should practically offer various courses on developing the industrial sector.

This study may be useful to policy makers and education officials as it provides reasons for them to discover different ways of making the education system in Tanzania fit in all development policies and make it a catalyst in the country's development agendas.

The study is important in evoking the need to strengthen the link between universities and industries in the learning and training programmes so as to create a coordinative relation which would impact on development of the country and the industrial sector.

1.6 The scope of the study

The study mainly explored the skills and competences provided to students at SUA which marks the university's contribution on national industrial development strategies. The provision of industrial related skills and competences prepares university students to become important personnel on the industrial sector in the country.

The study was carried to the top Management leaders at SUA together with lecturers and students from five selected degree programmes found from four selected departments at the college of Agriculture. Data was collected from administrative staff, lecturers and third and fourth year undergraduate students with special concern to the selected five undergraduate degree programmes.

1.7 Definition of key Concepts

The practical concepts defined in this study were industry, industrial skills, industrial competency, and strategies.

1.7.1 Industry

Industry is a business activity, which is related to the raising, producing, processing or manufacturing of products (Akran, 2011). An industry is characterized by intensive production, rapid change of knowledge of organizations, network oriented system of clients, suppliers, freelancers and mobile skilled labour mostly organized on project basis (De Valence, 2000). In the course of this study, whenever the word industry is referred should denote any groups of firms specialized in processing and manufacturing activities such as agro-industry, textile industry, mineral processing, and other manufacturing firms.

1.7.2 Industrial skills

Industrial skills refer to both hard and soft skills that an employee candidate is supposed to have in order to perform his or her functions as required. Chikumba (2012) the hard skills are related to technical and scientific knowhow such as engineering skills like computations, mathematics, machine operations, ICT literacy, conduct of scientific research and project evaluation. The soft skills comprise of communication skills, leadership and management, language proficiency, social interaction, personal sense of responsibility, critical thinking, conflict management, team-work ability and sense of humour (Poskey, 2011; Denise, 2009). The study used the term skills to refer to both hard and soft skills.

1.7.3 Competence

According to the Employment and Training administration of the USA department of labour (2017), the term competence is defined as the ability to use or apply a set of related knowledge, skills, and capacities needed for successful performance of a given task or work in a defined work setting.

1.7.4 Strategy

Jonas (2000) defines strategy as a plan, method, approach or series of an action to achieve the already set goals or indented results. A strategy ought to be formulated, designed, implemented, managed and monitored as in other business processes.

1.8 Organization of the Dissertation

The dissertation is organized into six chapters. The first chapter is about the research problem and its background. The second chapter presents the literature review while the third chapter describes the research methodology and its procedures employed in the study. Chapter four is about data analysis, chapter five is the discussion of the findings and chapter six describes the summary, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the review of literature on issues related to the study. The special attention was on revealing the literature related to the importance of universities in industrial development strategies, importance of industries in national development, industrial skills and competences imparted to university students, as well as the strategies employed by several universities in promoting industrial development in different countries. The chapter also presents a body of theories related to the study together with the conceptual framework of the study.

2.2 Theoretical Literature Review

This part provided an understanding of the key concepts and the theory related to the study so as to describe the study intensively.

2.2.1 Theory of Planned Behaviour (TPB)

The theory of planned behaviour (TPB) that was conceptualized by Ajzen (1991) predicts an individual's intention to engage in behaviour at a specific time and place. The theory expresses the behavioural intention which is the person's motivation in the sense of conscious plan or decision to perform certain behaviour. Here it is more likely that the behaviour will be performed as the person will decide intentionally to perform certain behaviour (Barro, 2001). If the intentions to engage in behaviour are strong, it is more likely that an individual will actually perform the behaviour. Conversely, if intentions are weak, it is less likely that one will engage in the specified behaviour (Sitepu, 2011). In this case, SUA may plan to provide knowledge, skills and competencies to students that could help in undertaking projects that may enhance their contribution to industrial development in the country. This theory helped the researcher to explore the role of the SUA in promoting industrial development strategies in Tanzania so as to join hand the national efforts of making Tanzania a country with a middle income economy by 2025.

2.2.2 Industrial Competency Model

The industrial competencies needed are developed in a model famously called industry competency model which indicate a set of crosscutting knowledge related to understanding essential components for success in the industrial sector. The model is pyramidal shaped showing the degree of demanded competencies in the industrial sector. The pyramid is divided in tiers of blocks representing competencies useful for the successful industrial performance (USA-Employment and Training administration, 2017). Each competency level is determined by set of behaviours or technical proficiency related to the industry.

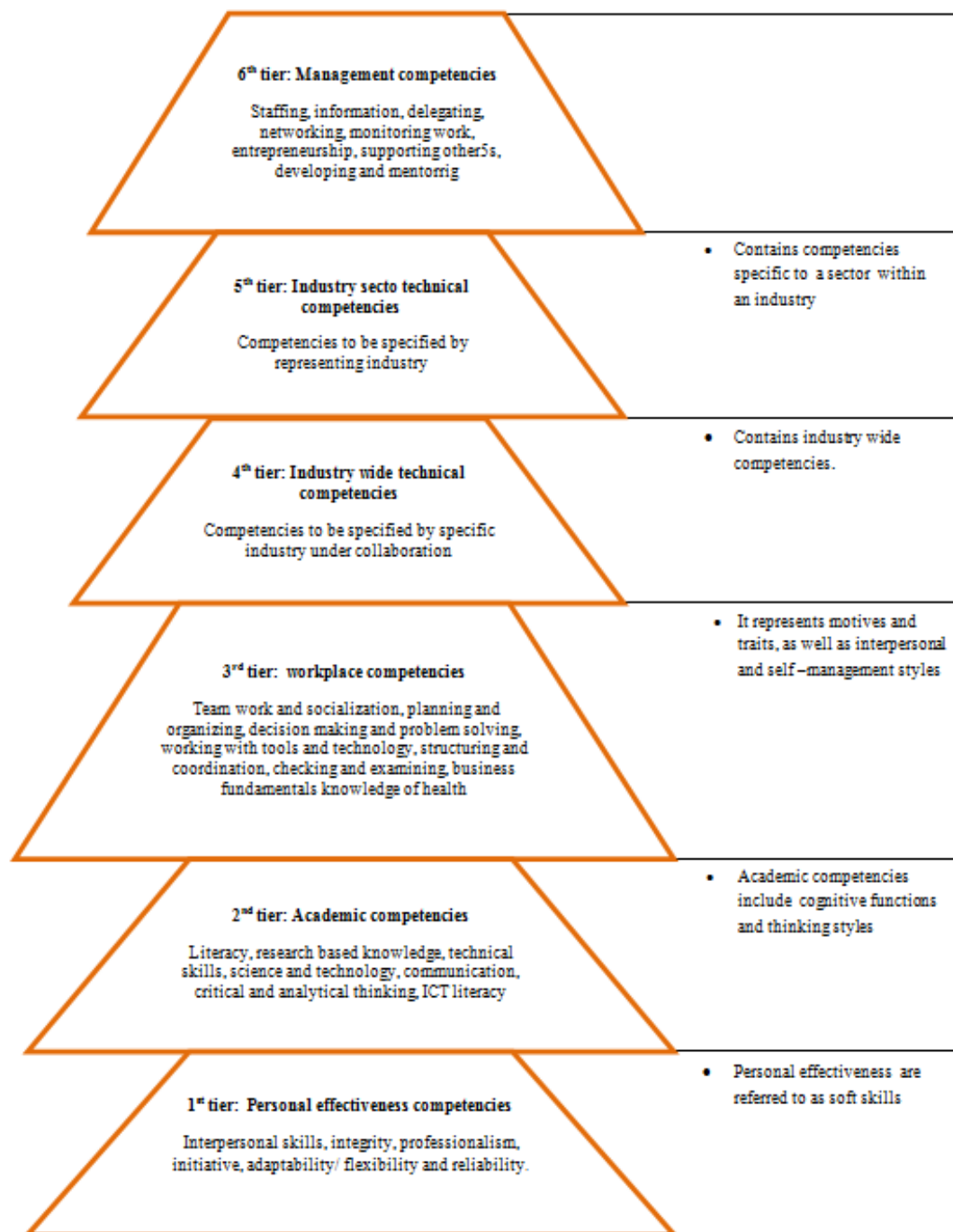


Figure 2.1 Industry competency model

Source: USA-Employment and Training Administration (2017:64)

2.2.3 Importance of Industrialization in National Development

Industrialization is very essential for developing human beings economically, socially as well as improving community welfare. Sutkino & Suliswan (2017), indicate that industrialization is expected to be the primary solution to increasing population in agricultural sector and beneficial stimulant to increase activities in other areas of the community life which is expected for production and national income in general directly or indirectly. By expressing that industrialization is beneficial to agricultural sector and stimulant to increase activities; this is the same as saying that industrial sectors promote all kinds of development within the country. Musa (2014) expressed that industrialization is one of the measures that have worked historically in combating unemployment and accelerating overall economic growth and development. Therefore it is highly expected that if universities in Tanzania join hands the efforts of industrialization in the country, Tanzania will become a country with the middle income economy and many economic and social challenges will be embarked hence eliminate the poverty situation in the country.

2.2.4 Importance of Universities in Industrial Development strategy

History shows that in both developed and developing countries, universities contribute much towards industrial development. Universities played a great role to the development of industries in countries like Japan, United States, Korea, Taiwan, Israel, Finland, Ireland, China and India (Hatakenaka, 2008). Therefore in these industrial development movements in Tanzania universities have a great role to play so as to make Tanzania industrialize and have a middle income economy.

Msola (2013) showed that universities and other higher learning institutions are key players in dispensing knowledge and diffusing it into national economy. This shows how universities could result in industrial and economic development since they are engines of innovations, technological advancement, source of professional managers, engineers, business experts and other information and technology operators.

2.3 Empirical Literature Review

There are various studies conducted related to the role of universities in promoting industrial development for the benefits of the nation and the entire universities.

2.3.1 Industrial skills and competencies imparted to students in universities

Grzybowska and Łupicka (2017) conducted a study on “Key competencies for industry” and ushered a new venture in understanding the set of competencies needed for employees to possess for industrial labour. The study shows that manufacturing industry demands personnel with internationality spirit, literate in information technology and well prepared for competitive trade. The demanded skills call for more qualified managers, production labour with knowledge to work with new materials, machines and ICT. The central question for the study was; what kind of competencies needs contemporary managers to cope with new industry related challenges? The study proceeded with the analysis of the categorization of the core managerial competencies: the technical competencies and managerial competencies.

The technical competencies are related to all job-related knowledge and skills like media, coding, knowledge management and statistical command. The technical skills are acquired through practice and learning. The managerial competencies comprises abilities and skills related to problem solving and decision making, analytical and research skills, conflict resolution, and problem solving. Other skills include response behaviour, social competencies, ability to transfer knowledge, leadership skills, and ability to work in a team, communication and negotiation tactics.

Ndalichako (2016) in her study on the role of education for industrial development in Tanzania found that the path for industrial growth is challenged by a number of issues including lack of requisite skills to support and sustain industrialization. Among other things the study calls for adoption of technology and quality assurance systems for education to deliver and support industrialization. However the study could not assess the competence attained by graduates pertaining to industrial expertise.

Chikumba (2012) concentrated in studying necessary skills for engineering students in universities. His study entitled “Development of soft engineering skills for industrial engineering technologists through effective mentoring”. The study was probed by the fact that engineering is concerned with resolving social problems in

sustainable approaches as per the perspective of the society. It follows that engineers are to be well equipped with both hard and soft skills. The hard skills deals with the technical part where there is little interaction with other people, and that is achieved through tuition and integrated learning. The gap is found in attaining the soft skills which can facilitate their interaction with the rest of the society in the world of work. The soft skills include nurturing effective communication. To gain soft skills student are to be mentored effectively by the institution and industrial supervisor assigned to work in integrated learning.

A study by Kaijage (2010) on the role of universities in promoting industrial development in Tanzania indicated many benefits to economic rise and a good relationship between universities and industry. The relationship was occupied with how the two would cooperate in order to produce graduates that would be beneficial to all stakeholders. Moreover, the study could not identify strategies that universities utilize in promoting industrial development.

2.3.2 Universities strategies in enhancing industrial development

A study by Guimón (2013) was on investigating the best practices for promoting university-industry collaboration in Developing countries. It is argued that the demand for interaction between academia and industry increases at a breakneck pace for need to foster national innovation systems. The other focus of the study was on establishing the factors for the collaboration of university-industry from the policy perspectives in developing countries. The collaboration is necessary for adoption of knowledge, acquisition of knowledge, technology transfer and entrepreneurship abilities.

Edmondson, Valigra, Hudson, Kenward and Bedfield (2012) shows that university and industry have been in collaboration for centuries, however efforts are to be made to make this partnership more realistic. Among other push factors are the increased intensification of global knowledge economy, need for more scientific research and university funding. The world-class research universities are championing to that partnership by designing new areas for investment, and assessment of company

competitiveness in the business sector. The universities through the partnership with industries are urged to go further to create practical knowledge necessary for resolving social challenges of the 21st century and catalyse the economic growth. To achieve this goal, both sides are to work co-ordinately and go beyond the conduct of traditional research for funding and reach to merge a strategic discovery-driven culture for a university and innovation-driven environment for industry. The paper call for the need to overcome traditional practices and venture into advanced modality of partnership between university and industry as to uphold their potentials. Hanushek and Wobmann (2007) in their study on role of graduates in enhancing industrial development reported that the role of universities in promoting economic well-being has to focus on the role of educational quality. Results showed that cognitive skills of graduates have strong relationship with individual learning, distribution of income, and economic growth. Yet, the study could not examine the competencies attained by graduates in universities.

2.3.3 Position of universities in contributing to industrial development

Popescu (2014) conducted a study on importance of university in development. The title of the study is “The University as a Regional Development Catalyst: Frameworks to Assess the Contribution of Higher Education to Regional Development”. The study assumes that universities are becoming more and more sources of development through conduct of research, education provision and consulting activities on several social and economic arenas. The paper was developed following a list of questions like; how are universities embedded in the regions they belong to? What are the facets of their contribution to the regional development? How might universities interact with and what is the strength of their linkages to the regions in which they are located? How can we measure this strength and how can we assess their participation to region’s development? With all these questions the author went further to demonstrate how universities could contribute to regional development on the matters of economy and social changes. A university plays a role of expertise, education provision, source of policy analysis and discussion at local to regional level. In addition, different trainings are undertaken in a university.

A study by Mishra (2007) showed that higher learning institutions have been regarded as a backbone of development to any society. This is due to the fact that the higher education is acknowledged as the engine of development in the new knowledge economy whereby the new modes of economic growth are dependent on knowledge and information technology. The study recommended that competence among graduates was the drawback something that was needed to be enhanced. However, the study did not assess the skills imparted to graduates for industrial development in universities.

2.4 Research gap

Learning from the reviewed empirical and theoretical literature, the study underscored important contributions from these studies. It is evidenced that universities played certain roles to enhance industrial development worldwide through knowledge creation, innovations and training.

Following the synthesis of the observed findings, the present study found that in spite the fact that there are several studies which shows the importance of industries in Tanzania especially on solving the unemployment challenge; there was a shortage of literature which showed how universities are useful in promoting industrial development. Studies by Kaijage (2010) and Ndalichako (2016) have not been able to reveal the situation of the universities in creating necessary competencies and skills needed for the industrial sector.

Gabagambi (2016), strongly affirms that SUA is the blossom of economic growth and industrialization in Tanzania particularly in agricultural sector; the researcher did not go further to demonstrate the competencies, skills and the strategies which are clearly provided by SUA so as to the promote the development of industrial sector in Tanzania. With such perspective, the researcher found a need to explore on how SUA enhance industrial development in Tanzania especially through competencies and skills provided to students.

2.5 Conceptual Framework

The conceptual framework is developed from the wings of the theoretical and empirical reviews. The planned behaviour theory provides the modal to which the study has to be pictured. The empirical review provided light on the variables to be measured in the course of undertaking the study. The Figure 2.2 provided the conceptual framework whereby the perception of SUA stakeholders on university-industrial roles, strategies applied by SUA to enhance industrial related skills and competences to students and kinds of industrial skills and competencies offered at SUA are the predictor variables. The promotion of industrial development is the affective variable.

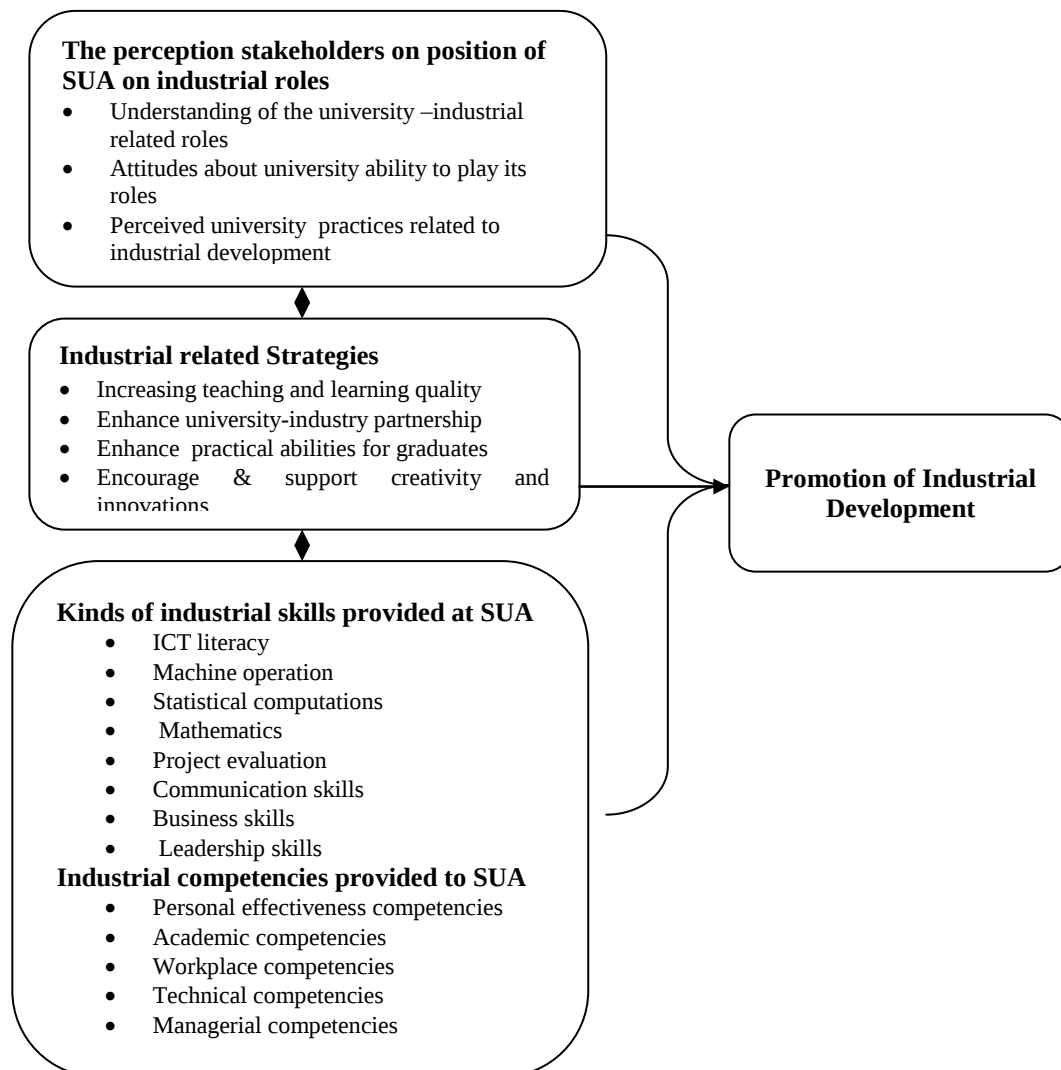


Figure 2.2: The conceptual Framework

Source: Adopted and modified from Ivatury and Mas (2008:34)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes research design, study area, variable operationalization and measurement, study population, sampling technique, sample size, types and sources of data, reliability and validity of study, data analysis methods and ethical issues.

3.2 Research Approach

This study adopted mixed methods research approach which comprises both qualitative and quantitative methods. According to Creswell, (2012) the purpose of using mixed approach was to facilitate the collection of both types of data like qualitative then quantitative either simultaneously or sequentially, but in all the cases, the intention is to triangulate the collected data from the other method. The second method normally is for complementing the first or the dominant method. The study has mainly employed the qualitative approach and used quantitative approach in complementing data collection and analysis.

3.3 Research design

The study employed a convergent parallel mixed method design to undertake the entire course of field work. This design allows the researches to collect qualitative and quantitative data in parallel, analyse them separately and lastly merge the results for comparison or by relating them and then explain in convergence. With this design qualitative and quantitative data are collected concurrently and analysed separately and the results are merged and interpreted together.

The design was useful in the study as it helped the researcher to make an independent analysis of data and then compare the results from the analysis of data as well as influence the interpretation of findings. According to Creswell (2014) the rationale of applying convergent design was to triangulate the collection of data thereby complementing the methods basing on the strengths and weakness of each method.

3.4 Study Area

This study was conducted at Sokoine University of Agriculture (SUA) which is located in Morogoro Municipality. The reason for this selection arises on the matter that being the largest agricultural university in the country, SUA is expected to play a great role in transforming Tanzania to the middle income economy through supporting and participating fully in industrial development strategies as agriculture has a great contribution in industrial development by providing raw materials to industries, food to industrial workers and is a market for industrial products such as chemicals, seeds, foods and machines produced in industries.

3.5 Study Population

The targeted population for this study were SUA stakeholders composing of SUA Administrative staff as well as students and lecturers from the five selected undergraduate degree programmes at the university.

3.6 Sampling Techniques

The study has employed non-probability sampling techniques. The purposive sampling technique was used in selecting the five administrative staff from SUA management, lecturers from the selected degree programmes as well as selection of college of agriculture and five degree programmes from it. Quota sampling technique was employed in selecting students.

3.6.1 Purposive sampling technique

Purposive sampling technique was used to select the Administrative Staff at Sokoine University of Agriculture in particular the Deputy Vice Chancellor Administration and Finance (DVC A& F), Dean of Students (DoS), Chief Human Resource Administrative Officer (CHRAO) and the representative of the head of the Department of Animal Aquaculture and Range Science. Also the collage of agriculture was purposefully selected as the researcher thought that being a mother collage at SUA it will be easy to get the needed information from the collage. In addition, the purposive sampling technique was used to five degree programmes at the college of agriculture together with lecturers who teach students belonging to the

five selected degree programmes which are Bachelors of Sciences in Agronomy, Animal Science, Family and Consumer Studies, Food Science and Technology and Irrigation and Water Resource Engineering. Creswell (2014), defines purposeful sampling as a sampling procedure in which researchers intentionally select individuals and sites to learn or understand the central phenomenon. Therefore the college of Agriculture was selected because it is a mother college at the university and many of its courses are directly linking to industrial activities as the course structure describes.

3.6.2 Quota Sampling Technique

The application of quota sampling technique is due to categorisation of certain specific characteristics of respondents. Babbie (2008) defined quota sampling as the a type of non-probability sampling in which units were selected into a sample on the basis of specified characteristics, so that the total sample could have the same distribution of characteristics assumed to exist in the population under study.

This study has employed quota sampling in selecting third and fourth year students who are at their final year of study from the five selected degree programmes. The reason was that, these students have had potential experiences and intensive information or training in their areas of specialisations. It is also expected that since these students are heading towards the end of their program they would be having a practical exposure from the university and elsewhere which are necessary to place them in a position to evaluate their skills, competencies and university strategies as well as present their views on possible chances and weakness observed regarding the university. Referring to the aforementioned reasons, the quota sampling is judged to be useful in the study as it allowed the researcher to plan out the sample frame of the respondents beforehand.

3.7 Sample Size

Kothari (2004) defined sample size as the number of items to be selected from the universe to constitute a sample. Usually sample size is derived from the population selected. According to Cooper and Schindler (2008) the sample size of the population should not be less than 30% of its population. Therefore the sample size

of the population in this study was calculated by taking the 30% of the sample frame especially for students as described in the sample distribution table 3.1. The cumulative sample size of respondents is 109 was 131 and the attained sample was 109.

Table 3.1: Sample size distribution

S/N	Category	Population n	Sample size	Attained sample	Sampling Method
1	Administrative staff	5	5	4	Purposive
2	Lectures	32	32	15	Purposive
3	Students from Bachelor of Science in Agronomy	78	23	16	Quota sampling
5	Students from Bachelor of Science in Animal Science	115	35	29	Quota sampling
6	Students from Bachelor of Science in Family and Consumer Studies	37	11	9	Quota sampling
7	Students from Bachelor of Science in Food Science and Technology	103	31	24	Quota sampling
8	Students from Bachelor of Bio-processing and post-harvest engineering	41	12	12	Quota sampling
Total		413	131	109	

Source: Researcher's construct (2019)

The reference to table 3.1 the difference between the expected number of respondents and the obtained number of respondent was due to a number of factors. With regards to students some of the selected respondents failed to submit the questionnaire document timely. The number of lectures differed due to the fact that some courses were shared among classes of students, and the other reason was that the research programmes was not taught in class since students were supposed to go to the field while guided by different supervisors hence reducing the number of lectures involved in the study.

3.8 Type of Data and methods of Data collection

3.8.1 Types of Data

The study gathered both primary and secondary data.

3.8.2 Data Collection Methods

The primary data were collected by the use of interviews and questionnaires methods whereas the secondary data were collected through documentary reviews.

3.8.2.1 Interview method

Semi structured Interview was conducted to five (5) administrative staff who were purposefully selected. Creswell (2014) expresses that an interview occurs when researchers ask one or more participants general, open-ended questions and record their answers. The semi-structured interview was conducted to the Deputy Vice Chancellor (Administration and Finance), Chief Human Resource Manager, Dean of Students and representative of the Head of Department of Animal, Aquaculture and Range Science. The semi-structured interview took about twenty to thirty minutes length of conversation. The application of semi-structured interview facilitated the attainment of in-depth information Deputy Vice Chancellor (Administration and Finance), Chief Human Resource Manager, Dean of Students and representative of the Head of Department of Animal, Aquaculture and Range Science.

3.8.2.2 The questionnaire method

The questionnaire method allowed a collection of data from many respondents in short period of time. The method was used to collect data from 15 university lectures and 90 undergraduate students already selected from the given degree programmes. Open and closed ended questionnaires were applied in this study. The questionnaires were administered as to encourage respondents to fill in the responses and gave back the questionnaire. This facilitated to economise time as well as easy collection of data to the students from the selected degree programmes.

3.8.2.3 Documentary review

Secondary data were obtained through reviewing various documents. Creswell, (2014) shows that documents consist of public and private records that can be obtained such as newspaper, minutes of meetings, personal journals or diaries. The study revisited different articles, journals and magazines published by SUA on the matters related to industrial development in Tanzania.

3.9 Reliability and Validity of Instruments

3.9.1 Reliability

Reliability refers to the consistency of a research study or measuring (Kothari 2004). If findings from research are consistently replicated they are reliable. A correlation coefficient was used to assess the degree of reliability. If a test is reliable it should show a high positive correlation (Yin, 2003). There are two types of reliability – internal and external reliability. Internal reliability assesses the consistency of results across items within a test. External reliability refers to the extent to which a measure varies from one use to another.

In this study pilot study was carried out to test the interview guide and questionnaires in the respective study area for their reliability; afterwards corrections will be done, in order to obtain reliable data for the research. This allowed the researcher to study the properties of measurement scales and the items that make them. Since the reliability of data goes with the accuracy or precision of a measuring instrument, in this research study, reliability concerned with the questions' consistency of responses in repeated measurements (Carmines & Zeller, 2006).

3.9.2 Validity

Validity is defined as the instrument's ability to measure exactly what concept it is supposed to measure (Kothari, 2004). It also refers to the credibility or believability of the research. The researcher validated the data and instruments (interview guide and questionnaires) used in the research by undertaking a pilot study, review the interview and questionnaire tools and set them to ask the intended question.

3.10 Data Analysis Methods

The researcher analysed both qualitative and quantitative data using appropriate methods. The qualitative data gathered from interview and documentary review were subjected to qualitative analysis. The narrative information was first transcribed from oral to written text, then translation followed. The translated texts were analysed by the use of content analysis method, whereby the concepts and ideas were analysed basing on their similarity, degree of apparition and their differences. The procedures

for carrying out content analysis method included coding of ideas, making categories and production of cases or thematic contents which relate to the specific objectives. The quantitative data obtained from questionnaires were subjected to descriptive statistical analysis. The process started by coding the variables, data entry and then cleaning. Upon the completion of data cleaning the analysis followed. Basically, the analysis was descriptive hence search for central tendency measurement, frequencies and percentages.

3.11 Ethical Considerations

Ethical consideration is the means taken by the researcher for the purpose of alerting respondents on the issues to be done regarding the study (Creswell, 2014). Before visiting the area for data collection, the researcher obtained the research permit in writing from the Director of Postgraduate Studies at Mzumbe University, and presented it to the management of SUA. The researcher showed the permission given, explained the purpose of the study and asked for the consent of the respondents. The respondents were as well allowed to withdraw from the study when they do not feel to continue. During analysis and report writing, the raw data kept confidently, and anonymity was observed unless the respondents accept to be revealed in case of necessity.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1 Introduction

The chapter provides a presentation of findings attained from the field. The presentation follows the specific objectives. The chapter begins by presenting the socio-demographical information of respondents participated in the study. Essentially the study has four specific objectives that intend to identify the perception of SUA stakeholders about the position of university on the current country's movement to industrial development, to identify the kinds of industrial related skills and competencies imparted to students at SUA which are reliable for industrial development, to determine the strategies applied by SUA in providing industrial related skills and competences to students and finally the study intended to identify the opportunities and challenges facing SUA on imparting industrial related skills and competences to students.

4.2 Socio-demographic characteristics of respondents

The study sought for the socio-demographic profile of 90 students, 15 lectures and 4 administrative staffs from Sokoine University of Agriculture (SUA). The major demographic characteristics that were sought from respondents included age group, sex, education level or academic year (for students), work experience in years and department of specialization or pursued degree Programme. The need was to understand the social-demographic background of respondents who took part in the study.

4.2.1 Characteristics of Respondents by Age-Group

The age group of respondents composed the first characteristic aspect. The study presupposed that individuals varied in age had different experience and understanding of the role of SUA in contribution to industrial development in Tanzania. Table 4.1 shows that, 59.6% of respondents belonged to the age group of 19-25 years, 23.8% of respondents were aged between 26-35 years, 4.6% of respondents were aged between 36-45 years and 12% of respondents belonged to 45

and above years of age. It was revealed that the study covered the age groups from 19 years to 45 and above years that implies an advantage to the study since it managed to collect opinions from participants with young age to the old age generations.

Table 4.1: Profile of respondents by age group (n=109)

Age group	Participants by method of data collection												Grand total	
	Questionnaires				Interviews									
	University Students		Lectures		Administrative staff									
					DVC-(A&F)		DoS		CHRAO		DAS			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
19-25 years	65	59.6	-	-	-	-	-	-	-	-	-	-	65	59.6
26-35 years	24	23.8	2	1.8	-	-	-	-	-	-	-	-	26	23.8
36-45 years	1	0.9	3	2.8	-	-	1	0.9	-	-	-	-	5	4.6
45 and above years	-	-	10	9.2	1	-	-	-	1	0.9	1	0.9	13	12
Total	90	82.5	15	13.8	1	0.9	1	0.9	1	0.9	1	0.9	109	100

Source: Field data (2019)

4.2.2 Distribution of Respondents by Sex

The presentation of respondents in terms of sex characteristic was sought to show the sense of concern for gender balance among respondents. The researcher was not biased in selection of respondents for data collection. The sex distribution of respondents shows that most of the participants who were available for providing information were male as compared to female. With regard to the table 4.2 a total of 109 respondents were involved in the study whereby about 77% of respondents were males and the 23% were females. Across the category of male respondents, 62.0% were university students, 11.0% of respondent were lecturers, 4.0% Administrative Staff. Female respondents comprised of 20.2% of students and 2.8% of lecturers.

Table 4.2: Profile of Respondents by Sex Distribution (n=109)

Sex profile	Participants by method of data collection												Grand Total	
	Questionnaires				Interviews									
	University Students		Lecturers		Administrative Staff									
	N	%	N	%	DVC-AF		DS		CHRAO		DAS		N	%
Male	68	62.0	12	11.0	1	1.0	1	1.0	1	1.0	1	1.0	84	77
Female	22	20.2	3	2.8	-	-	-	-	-	-	-	-	25	23
Total	90	82.2	15	13.8	1	1.0	1	1.0	1	1.0	1	1.0	109	100

Source: Field Data (2019)

The results of table 4.2 shows that the information on sex distribution presents that representation of male sex override that of female sex in the study. The huge difference in representation basing on sex characteristics of respondents could be explained by their availability in taking part in the study. The best thing to note is that the study considered participation of both male and female since their opinions were equally valued in the analysis of findings.

4.2.3 Profile of Respondents by Education Level or Academic Year

Education level of the respondents was another category that was sought to be useful in understanding the study. The levels of education were categorized into academic years for students, bachelor degree, Masters and Doctor of Philosophy (PhD) levels for lecturers and administrative staff. The search for education levels in terms of academic years of schooling at university levels a person possessed implied the ability to make plausible reflections on issues under study. The results from the table 4.3 denotes that, majority of respondents 59.7% were in the third year, fourth year 22.9%, PhD level 12.8%, Bachelor degree 1.9% and Masters level 2.7% of respondents. The notable thing was that all respondents were literate with pursuing undergraduate degree or acquired bachelor, masters and PhD education. The level of education of a respondent is expected to impact on the level of information possession by the individual about the subject under study as well as the ability to express oneself clearly and logically.

Table 4.3: The characteristics of respondent by education level (n=109)

Education level	Participants by method of data collection												Grand Total	
	Questionnaires				Interviews									
	University Students		Lecturers		Administrative Staffs									
	N	%	N	%	DVC-AF		DS		CHRAO		DAS		N	%
Third Year	65	59.7	-	-	-	-	-	-	-	-	-	-	65	59.7
Fourth year	25	22.9	-	-	-	-	-	-	-	-	-	-	25	22.9
Bachelor Degree	-	-	2	1.9	-	-	-	-	-	-	-	-	2	1.9
Master Degree	-	-	1	0.9	-	-	1	0.9	1	0.9	-	-	3	2.7
Doctor of Philosophy (PhD)	-	-	12	11.0	1	0.9	-	-	-	-	1	0.9	14	12.8
Total	90	85	15	13.8	1	0.9	1	0.9	1	0.9	1	0.9	109	100

Source: Field data (2019)

4.2.4 Characteristics of Respondents by Working Experience

The profile for the work experience was mainly sought from lecturers and administrative staff. The study presupposed that the number of years in work of an individual entails the level of understanding about the operation of the university. With this study the great concern was on the matters related to the roles played by SUA on industrial development strategies in Tanzania. Students were set free from the question of work experience within the university. Referring to the table 4.4 the study observed that 26.2% of respondents worked for about 21-25 years, 21.1% of respondents had the work experience 6-10 years, 21.1% of respondents had the work experience of 1-5 years, 15.8% of respondents worked for about 11-15 years, and 15.8% of respondents worked for about 16-20 years.

The dominant group of respondents in the study worked for many years for about 21-25 years, implying that they are vested with information about SUA and its contribution to industrial development through skills and competences imparted to students.

Table 4.4: The characteristics of respondent by working experience (n=19)

Work Experience	Participants by method of data collection												Grand Total	
	Questionnaires				Interviews									
	University Students		Lecturers		Administrative staff									
	N	%	N	%	DVC-AF		DS		CHRAO		DAS		N	%
1-5 years	-	-	4	21.1	-	-	-	-	-	-	-	-	4	21.1
6-10 years	-	-	4	21.1	-	-	-	-	-	-	-	-	4	21.1
11-15 years	-	-	2	10.5	-	-	1	5.3	-	-		-	3	15.8
16-20 years	-	-	1	5.3	1	5.3	-	-	1	5.3		-	3	15.8
21-25 years			4	21.1							1	5.1	5	26.2
Total			15	79.1	1	5.3	1	5.3	1	5.3	1	5.1	19	100

Source: Field data (2019)

4.2.5 Department of Specialization and Pursued Degree Programme

The other social characteristic was identifying the department of specialization for the lecturers and students involved in the study. Students were categories into their degree programmes belong. The information is summarized in the table 4.5.

Table 4.5: Profile of respondents by degree programmes and departments

Degree Programme and Department		Participants by method of data collection												Grand Total	
		Questionnaires				Interviews									
		University Students		Lecturers		Administrative staff									
		N	%	N	%	DVC-AF	DoS	CHRAO	DAS	N	%	N	%		
BSc. Animal Science		29	26.6	-	-	-	-	-	-	-	-	-	-	29	26.6
BSc. Food Science and Technology		24	22.0	-	-	-	-	-	-	-	-	-	-	24	22.0
BSc. Agronomy		16	14.7	-	-	-	-	-	-	-	-	-	-	16	14.7
BSc. Bio-processing and Post-harvest Engineering		12	11.0	-	-	-	-	-	-	-	-	-	-	12	11.0
BSc. Family and Consumer Studies		9	8.3	-	-	-	-	-	-	-	-	-	-	9	8.3
Department of Aquaculture and Animal Range Sciences		-	-	2	0.9	-	-	-	-	-	-	1	0.9	2	1.8
Office of DVC (A&F).		-	-	-	-	1	0.9	-	-	-	-	-	-	1	0.9
Department of Human Resource Management		-	-	-	-	-	-	-	-	1	0.9	-	-	1	0.9
Students Welfare and Administration		-	-	-	-	-	-	1	0.9	-	-	-	-	1	0.9
Department of Food Technology, Nutrition and Consumer Sciences		-	-	5	5.5	-	-	-	-	-	-	-	-	6	5.5
Soil and Geological Sciences		-	-	5	4.6	-	-	-	-	-	-	-	-	5	4.6
Department of Engineering Science and Technology		-	-	3	0.9	-	-	-	-	-	-	-	-	1	0.9
Total		90	82.6	15	12.8	1	0.9	1	0.9	1	0.9	1	0.9	109	100

Source: Field data (2019)

The table 4.5 shows that 26.6% of respondents pursue a Bachelor of science in Animal Science, 22.0% of respondents pursue a bachelor of Science in Food Science and Technology 14.7% of respondents pursue a bachelor of Science in Agronomy, 11% of respondents pursue a bachelor of science in Bio-processing and Post- Harvest Engineering, and 8.3% of respondents pursue a bachelor of Science in Family and Consumer Science Studies. On the other hand, 5.5% of respondents belonged to the Department of Food Technology, Nutrition and Consumer Sciences, 4.6% of respondents belonged to the department of Soil and Geological Sciences and the 1.8% of respondents was from the department of Animal Agriculture and Range Sciences (DAARS), 1.8% of respondents belonged to the department of Engineering Sciences and Technology (DEST)

4.3 Perception of SUA Stakeholders about the position of the University in

Promoting industrial development in the Country

The first objective intends to identify the perceptions of SUA stakeholders about the contribution of the university towards the current country's strategy of industrial development. To describe perception the study begins by unveiling the understanding of SUA stakeholders on university industrial related roles, the attitudes of stakeholders about university ability to take party on the roles and the perceived university practices that relate to industrial development. The results were attained through questionnaires and interview methods.

4.3.1 Stakeholders' understanding of the university –industrial related roles

The study sought to unveil the knowledge of respondents about the roles that SUA play to enhance industrial development in the country. Respondents were first asked to state whether SUA plays any role towards industrial development. The position of the university was to be expressed in line with some activities that the university undertook in view of promoting industrial development in the country. The results are presented in the figure 4.1.

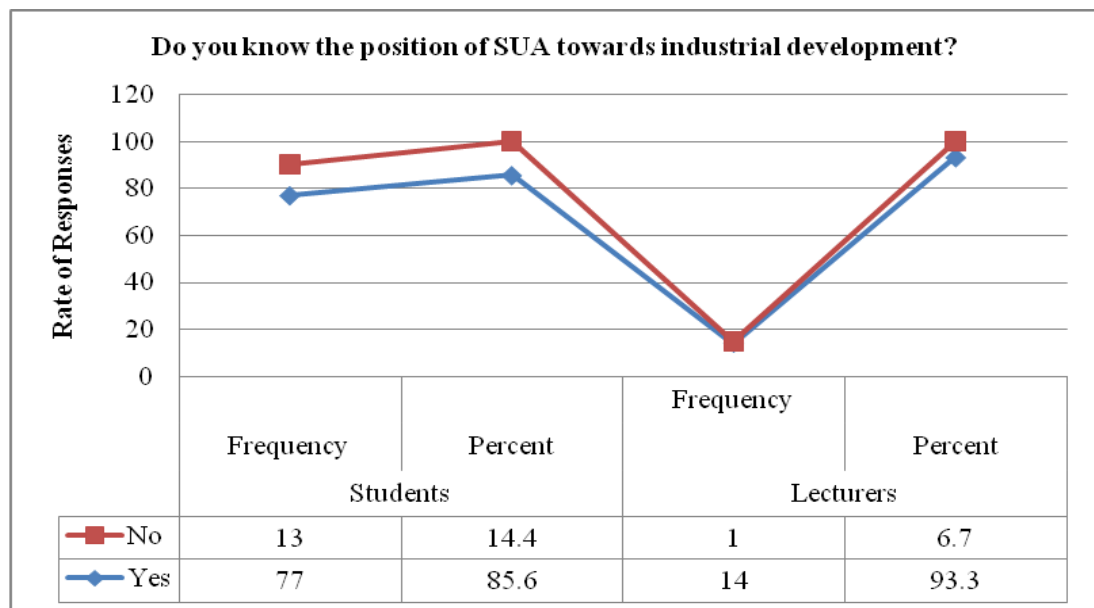


Figure 4.1 Stakeholders knowledge about SUA-industrial related roles

Source: Field Data (2019)

From figure 4.1, 77% of students and 93% of lecturers' respondents agreed to be aware about the position of SUA in enhancing industrial development. The agreement implied some awareness about the roles that the university undertakes in view of industrial development. The affirmations were attained by the mention of the practical industry related roles that the university performs. The table 4.6 presents those roles that SUA undertakes in promoting industrial development strategies in the country according to the opinions of the respondents.

Table 4.6: Roles played by SUA for industrial development

Mention the roles that SUA play towards industrial development	Students		Lecturers	
	N	%	N	%
Knowledge creation through training on agriculture, management and processing, research, workshops and seminars	19	21.2	3	20.0
Enhance creativeness, innovations and entrepreneurship by providing experts, consultancy and new technology	13	14.4	4	26.7
Build practical skills on students by field practices, farming activities, productions and extension services	45	50.0	6	40.0
Provide raw materials for industries like skilled manpower and new products,	13	14.4	2	13.3
Total	90	100.0	15	100.0

Source: Field Data (2019)

The table 4.6 shows that SUA is well positioned to contribute on national industrial development strategies through different roles it plays to foster industrial development. The most notable roles are like building practical skills on students by field practices, farming activities, productions and extension services as perceived by 50% of students' respondents and 40% of lectures' respondents. Others are knowledge creation through training on agriculture, management and processing, research, workshops and seminars, enhancement of creativeness, innovations and entrepreneurship by providing expertise, consultancy and new technology and provision of raw materials for industries like skilled manpower and new products.

Key informants reported to be informed about the roles that SUA plays in favour of industrial development. Respondents expressed that the University conducts research projects which intend at imparting skills and curiosity to students. In addition student acquire different theoretical knowledge on how to run machines, organize business, innovate projects and technologies which could facilitate them to be useful human capital for the current industries. Among other key interviewees who asserted about the role of SUA in industrialization was the second interviewee who shared his convictions in the following words:

“SUA has a contribution in the country's industrial development strategies as it provides experts who help in agro-processing activities.” (26/6/2019).

He further mentioned that SUA produces engineers for agro-machineries, irrigation schemes and food processing industries who are supposed to work in several industries across the country. The sharing of the second key informant represented the feeling and ideas of the rest of the key informants who had shared almost similar perspectives regarding the roles of SUA in industrialisation.

4.3.2 Attitudes about university ability to play the industrial related roles

4.3.2.1 Influence of SUA on its Stakeholders in promoting industrial development

Having known that SUA has different roles in fostering industrialization in the country, the study sought to discover the attitudes of stakeholders on the ability of the university to influence stakeholders contribute to industrial development strategies in the country. The figure 4.2 provides a descriptive demonstration on the influence of SUA to its stakeholders.

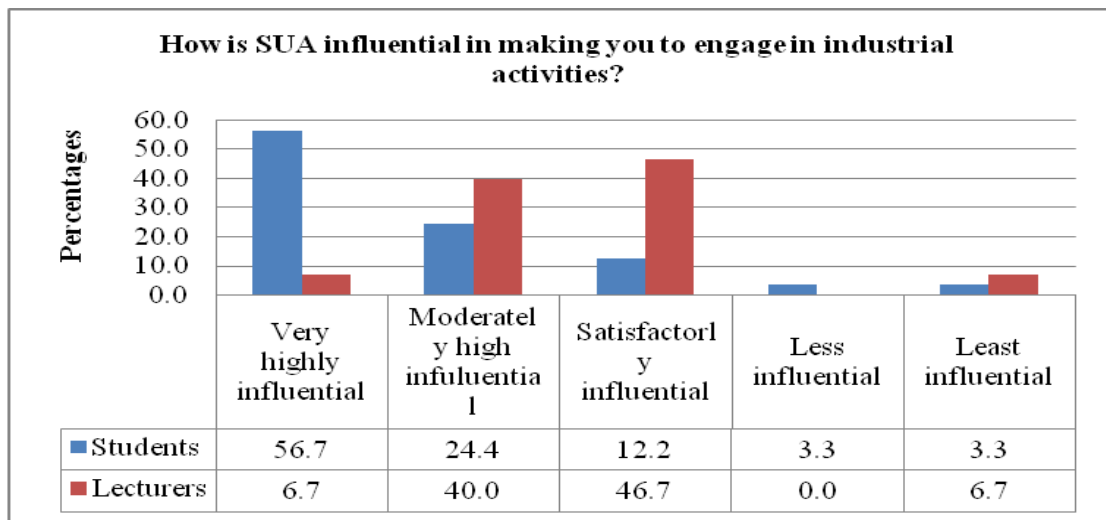


Figure 4.2: Influence of SUA on its stakeholders towards industrialization

Source: Field data (2019)

The figure 4.2 shows that respondents have positive attitudes towards the influence of SUA on making them contribute to industrialization strategies of the country. The figure shows that 56.7% of students' responses showed that SUA's ability to influence its stakeholders in contributing on industrial development strategies is very high and 46.7% of lecturers' respondents had satisfactory attitude about the influence of the university to its stakeholders.

4.3.2.2 Attitudes of stakeholders towards SUA participation on industrialization

Respondents were required to express their views or convictions about the participation level of SUA on country industrialization. The responses were analysed and presented in the figure 4.3.

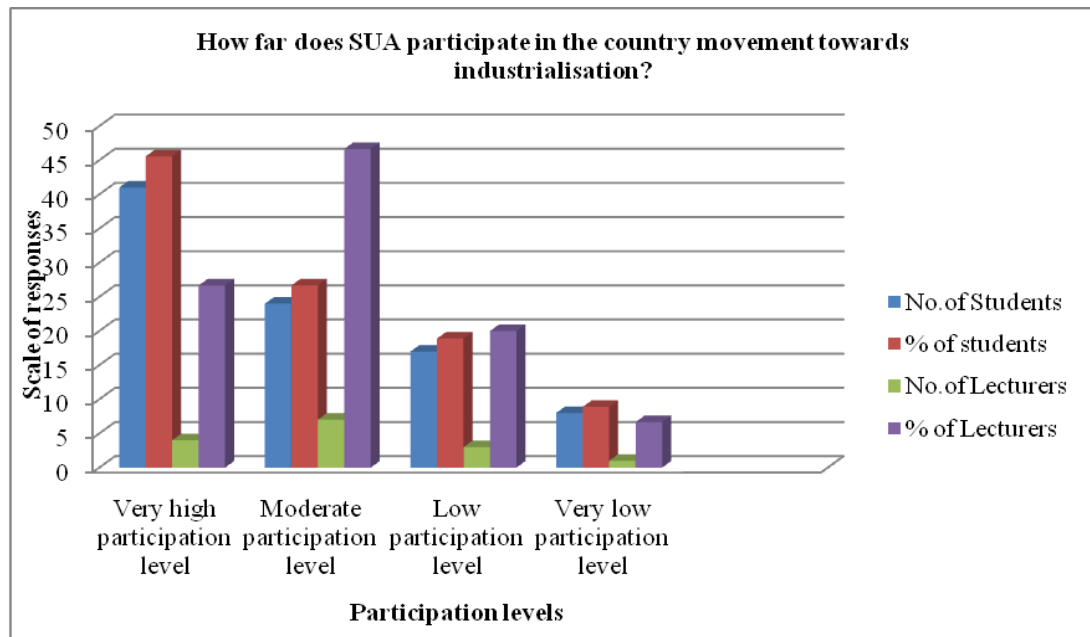


Figure 4.3: Attitudes of stakeholders towards SUA participation on industrialization

Source: Field Data (2019)

From figure 4.3 it is portrayed that students and lecturers appreciated the level of contribution undertaken by the university. It was revealed that 45.6% of students showed that the participation level was very high while 46.7% of lecturers showed that the participation level was moderately high. Taking a note from respondents the study contends that those respondents have a positive attitude and optimism about SUA's role of promoting industrial development in Tanzania.

4.3.2.3 Need to support the country industrial movement

Key informants shared that the university and its entire people are supposed to support the country movement of industrialization. The re-establishment of industrialization is not a new opinion but it has come to be stressed at the right moment when the political will and the real situation of the country is in great

demand of industries. According to key informants industrialization programme is expected to open new venture towards employment opportunities for the young generations from universities. In this regard, SUA should consider the country movement of industrialization as an opportunity. One administrative staff who was the 3rd interviewee had this to say.

“It is high time therefore for the country and all institutions to promote industrial development of which SUA has no exception from the move.”
(30/6/2019).

One administrative staff who was the fourth interviewee mentioned that;

“The industrial development movement is a good move, a necessary move, and there is no way we can avoid it.” (10/7/2019).

To put the opinions of the two key informants, the study contends that respondents are optimistic with SUA’s participation in industrial development movements in Tanzania.

4.3.3 The perceived university practices related to industrial development

The third aspect in describing the perception of stakeholders about the contribution of SUA towards industrial development is the practices related to industrialization processes. The study sought to learn about the concrete behaviour or activities that exhibit SUA’s engagement in promoting industrial development in the nation. The descriptive results are summarized in the table 4.7.

Table 4.7: Contribution of SUA to industrial development

Cross tabulation		Do you know any practical event that marks the university contribution to industrial development in Tanzania?					
		Students			Lecturers		
		Yes	No	Total	Yes	No	Total
Menti on the events	The SUGECO sector perform in various fields like an incubation Centre	26	24	40	4	3	7
	Exhibitions done during Sokoine memorial days, in nanenane, Sabasaba and during other prepared events	17	6	23	4	3	7
	A number of SUA graduates are now experts in various fields	15	2	17			
					1	0	1
Total		58	32	90	9	6	15
What kinds of industries does your university feed into?	Textile industries	14	19	23	2	1	3
	Food and beverages industries	14	1	15	3	2	5
	Agricultural Industries	14	7	21	3	1	4
	Forest and Animal industries	6	1	7	0	1	1
	Dairy processing factories	10	4	14	1	1	2
Total		58	32	90	9	6	15

Source: Field data (2019)

The table 4.7 shows that 67 out of 105 respondents agreed to be aware of practical events that suggest the contribution of SUA into industrial development. In addition, the practical activities that contribute to industrial development include the SUGECO sector performance in various fields like an incubation Centre, exhibitions done during memorial days like Sokoine Memorial Week, exhibitions done in nanenane, sabasaba and others. Currently there is a number of SUA graduates who are experts in various fields and industries. Likewise, the university provides human resources that are needed in various industries such as the textile industries, food and beverages industries, agricultural Industries, forest and animal industries and dairy processing factories. In sum the study contends that SUA exhibit practices which contribute to the development of industries in the country.

In line with the findings of the descriptive statistics, key informants were in agreement that the Sokoine University of Agriculture manifests clearly behaviours which prove its involvement in industrialization processes in the country. One administrative staff who was the first interviewee said;

“The University provides training to students, and community members, produce different raw materials and goods for consumptions which are essential for industrial development.” (25/6/2019)

In addition one administrative staff who was the fourth interviewee mentioned that SUA deals with research on agricultural activities which provide much yield hence provides raw materials for industries. He said;

“Researchers are inventing new seeds, pest management and controlling, weed controlling that intend at improving the outputs of agricultural products hence assuring raw materials to be used in industries.” (10/7/2019).

In addition the university owns some small factories and plantations which provide chances for students to acquire practical knowledge and skills to be useful for industrial development it was said by one of the key informants who was the second interviewee as he mentioned that:

The university has farm which can be acted as a firm as it has some stock houses and machines for producing animal foods for the university and other consumers. Also there is a bread production factory which is being used as an area for practical teaching as well as selling the product of some bread to SUA community members. (26/6/2019).

In sum the findings of the study pertaining to perception are that, respondents are knowledgeable about the industrial movement and the position of SUA in the movement. SUA provide training to students on industrial operations, conducts researches and provide raw materials. With regards to attitudes, the study found that respondent has positive attitude towards SUA contribution on industrialisation, with some reservations which portray failure of the industrialisation to meet the expectation of the stakeholders.

4.4 Skills and competencies imparted to students at SUA which are geared to industrial development

The second specific objective of the study identified the essential skills and competencies imparted to students at SUA. The skills and competencies provided are in view of equipping learners for industrial manpower resources and professionalism.

4.4.1 Essential industrial related skills attained at SUA

Through questionnaires respondents were asked to affirm whether they are being provided with essential industrial related skills. The descriptive statistical analysis was carried out to test frequencies, percentages and means, and the results are portrayed in the table 4.8.

Table 4.8: Acquired industrial related skills at SUA (n=105)

Descriptive statistics					
Variables	Yes		No		Mean
	F	%	F	%	
ICT literacy skills	95	90.5	10	9.5	1.0476
Machine Operation skills	78	74.3	27	25.7	1.0476
Communication skills	101	96.2	4	3.8	1.1048
Business skills	93	88.6	12	11.4	1.1429
Mathematics skills	95	90.5	10	9.5	1.1714
Statistical computation skills	100	95.2	5	4.8	1.3143
Project evaluation skills	93	88.6	12	11.4	1.3238
Leadership skills	89	84.7	16	15.2	1.4190

Source: Field data (2019) Key: 1=Yes, 2=No

The table 4.8 shows that all of the eight skills are attained at Sokoine University of Agriculture. The table shows that the mean of responses ranges from 1.0476 to 1.4190 which supports the propositions that the skills are provided at the university. To mention the skills basing on the level of acceptance include communication skills by (96.2%), statistical computation skills (95.5%), ICT literacy skills (90.5%), Mathematical skills (90.5%), business skills (88.6%), project evaluation skills (88.6%), leadership skills (84.7%) and machine operation skills (74.3%).

4.4.2 Industrial based competencies acquired by students at SUA

The study went further to request respondents to mention types of competencies that are obtained from the selected undergraduate degree programmes. The list of responses was provided and the results are presented in the figure 4.4.

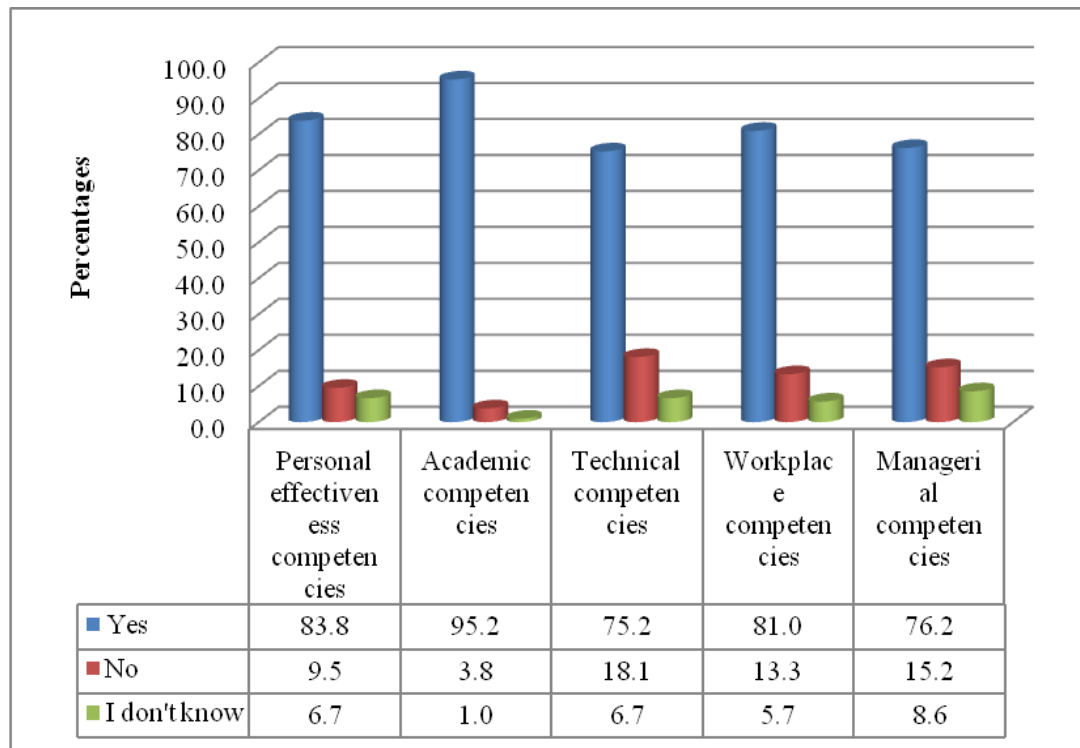


Figure 4.4: Industrial related competencies attained at SUA (n=105)

Source: Field data (2019)

The figure 4.4 shows that respondents contended that the industrial related competencies offered to students at SUA includes; academic competencies by (95.2%), personal effectiveness competencies by (83.8%), workplace competencies by (81.0%), managerial competencies by (76.2%) and technical competencies by (75.2%). Congruent to the descriptive results the key informants affirmed that the SUA imparts many skills and competencies that are related to industrialization. Among the skills that were informed in the course of interview conversation are production skills, machine operations and maintenance skills.

4.4.3 Ability of learners to apply the acquired skills and competencies

The study demanded respondents to provide their view points on the levels of knowledge of some acquired skills. A likert scale of five ordinals was used to facilitate the assessment. The descriptive statistical analysis was employed to measure frequencies and percentages of responses as presented in figure 4.5.

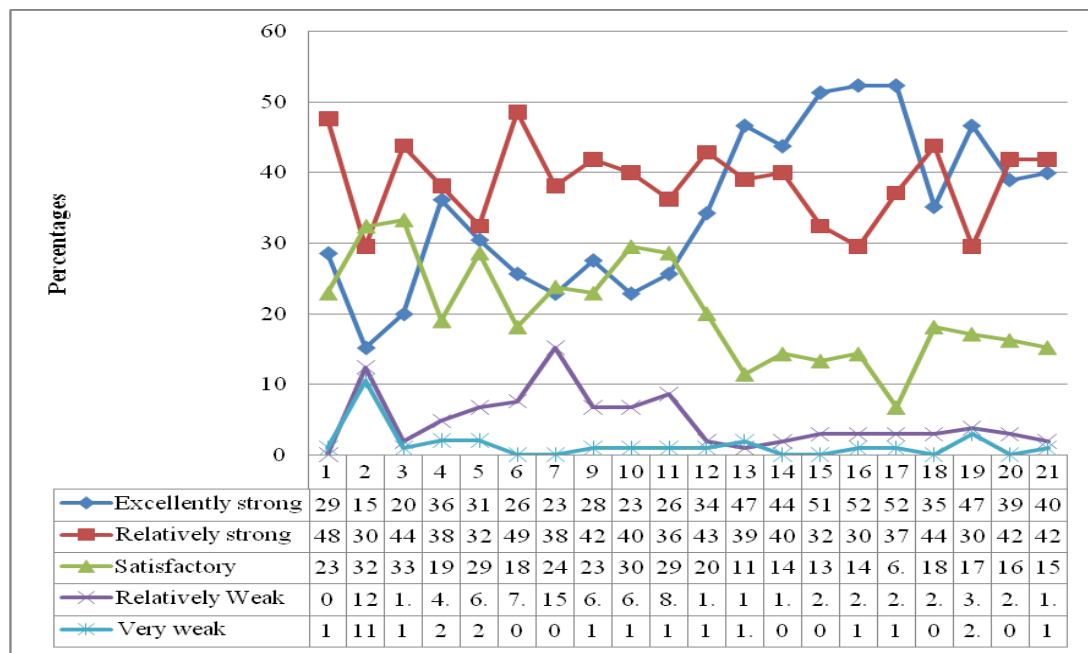


Figure 4.5: Ability of learners to practice acquired industrial skills and competencies

Source: Field data (2019)

Key indications for the figure 4.5

No	Key	No	Key
1.	Knowledge level of computer use	12.	Innovativeness /Creativity
2.	Ability to operate required machines	13.	Entrepreneurial thinking
3.	Understanding the application of statistical computations	14.	Decision making
4.	The capacity to influence decision or ideas	15.	Problem solving
5.	Knowledge of project evaluation tools	16.	Informing/effective communication
6.	Level Language proficiency and stylistics	17.	supporting others
7.	Ability to use economic principles and theories in trade	18.	Delegating ability
8.	Ability to undertake complex mathematical calculations	19.	Networking
9.	Ability to work with tools and technology	20.	monitoring work
10.	Level of structuring and coordination	21.	Developing and mentoring
11.	Ability to check and examine systems		

From the outset of the figure 4.5 there is evidence that majority of respondents are excellent at knowledge of project evaluation tools, entrepreneurial thinking, decision making, problem solving, effective communication, supporting others and networking. In addition, others have relatively strong ability in knowledge level of computer use, understanding the application of statistical computations, the capacity to influence decision or ideas, level language proficiency and stylistics, ability to work with tools and technology, level of structuring and coordination, ability to check and examine systems, innovativeness or creativity, delegating ability, monitoring work as well as developing and mentoring. While few have satisfactory ability on dealing with operation of required machines and undertaking complex mathematical calculations.

4.5 Strategies applied by SUA to provide skills and competences to students so as to enhance industrial development strategies in the country

The third objective determined the strategies applied by SUA in enhancing industrial development by providing skills and competences to the students. The indicator variables for the strategies include the knowledge of respondents on the existence of any empirical strategies at SUA, enhanced university-industry partnership, increased teaching and learning quality, enhanced practical abilities for graduates and University support to creativity and innovations.

4.5.1 Knowledge of strategies that SUA undertake to impart to students the industrial related skills and competences

Different measures are undertaken by SUA that respond to industrialization. Respondents were required to tell whether they know any of the strategies that SUA undertake to impart knowledge and skills to the students so as to enhance industrial development in Tanzania. Table4.9 presents descriptive statistical results

**Table 4.9: Strategies undertaken by SUA to enhance industrial development
(n=105)**

Questions	Response	N	%
Do you know any strategy that SUA undertake to provide the industrial related skills and competences to students so as to influence industrial development?	Yes	73	69.5
	No	29	27.6
	I don't know	3	2.9
Total		105	100.0
What Strategy?	Improved teaching and training on professional issues	36	34.3
	Involve in practical activities like field practices, involve students in raw materials production and foods	16	15.2
	Buy machines for production of milk, bread and flour	13	12.4
	Form different projects like RIPAT-SUA,SUGECO	13	12.4
	Conduct exhibitions, seminars and workshops and construction of modern laboratories for practical trainings	9	8.6
	Introduce farms, teaching by demonstrations, and sending students for trainings in different countries worldwide.	9	8.6
	Updating curriculum and frequent visits to industrial plants.	9	8.6
	Total	105	100.0

Source: Field data (2019)

The table 4.9 shows that 69.5% of respondents are aware about the strategies that SUA undertake to influence industrial development. Among the notable strategies include improved teaching and training on professional issues, use of practical activities like field practices, preparation of raw materials production and foods, installation of machines for production of milk processing and bread and flour manufacturing, from different projects, conduct different exhibitions, seminars, workshops, construction of laboratories, introduction of farms, teaching by demonstration and sending students for training in different countries worldwide as well as updating curriculum and frequent visits to industrial plants.

4.5.2 Enhanced university-industry partnership

The other aspect of measuring the university strategies in contributing to national industrial development through skills and competences provided to students was to examine the nature of partnership between SUA and industries. Respondents were asked three closed questions which sought to unveil the partnership level. The first question was to uncover the existence of University-industry partnership, presence of industrial related projects and existence of projects funded by an industry. The three questions were descriptively cross-tabulated against the open question that demanded respondents to mention the industries they know to be in collaboration with SUA in terms of partnership particularly in running some projects as presented in table 4.10.

Table 4.10: SUA-Industry partnership

Which industry exactly?		Is SUA in partnership with any industry			Do you think the projects carried in the university are industrial related?			Do you know of any project funded by any industry?		
		Yes	No	Total	Yes	No	Total	Yes	No	Total
	Textile Industries:21st C. Textile industry, TTPL	10	11	21	15	6	21	19	2	21
	Sugar Manufacturing industry: ILOVO SC. Kagera sugar, KSCL, Mtibwa sugar company	14	15	29	22	7	29	22	7	29
	Food processing industries: Bakhresa, Shambani product, Azam company LTD,	25	16	41	30	11	41	40	1	41
	Oil refining and processing industries: Kahama Oil, SANIKU oil refining company and Murzah Oil	3	3	6	4	2	6	4	2	6
	Other industries: Architectures and designers industry, SIDO,TCCI-Moshi & Morogoro,	3	5	8	5	3	8	0	8	8
Total		55	50	105	76	29	105	85	20	105

Source: Field Data (2019)

The table 4.10 shows the frequency of respondents who either agree or disagree to the question on the three columns. With regard to the existence of partnership between university and industry 55 out of 105 respondents agreed to the question and 50 out of 105 respondents disagreed. The difference between the supporters and opponents was very minute. This implies that the respondents know little or are not well informed about the partnership.

On the presence of industrial related projects 76 out of 105 respondents affirmed for its existence while 29 out of 105 respondents refused on the existence of industrial related projects. Likewise the study found that 85 out 105 respondents accepted that SUA has some projects funded by some industries where as 20 respondents refuted the question. The study contends that the partnership of SUA with different industries is mainly through sending their students for field practical as it sends the students to food processing industries, Sugar Manufacturing industry, Textile industries, Architectures and designers industry and Oil refining and processing industries.

Connected to the results provided in the descriptive analysis, the narrative findings inform that SUA collaborates with different industries though the nature of partnership is not strong and relatively informal. The university bases on sending students for field practices and demonstrative teaching, this is a very weak form of partnership. While expressing about the university industrial partnership, one administrative who was the first interviewee said;

It is very sad that SUA is mainly sending students in industries for practical training in industries rather than relying strongly on providing advisory and consultancy services as well as conducting researches on how to improve the industrial sector. (25/6/2019)

However the results showed that SUA is in partnership with different research institutions or Non-Governmental Organizations like PASS, Morogoro Municipal Council especially in building a bus stop at the university land and Tanzania Forestry Services in forestry and wood making firms at Olmotonyi. This was proved during an interview session with the fourth interviewee as he said;

We are in partnership with PASS whereby there is an incubation centre introduced at SUA. This centre assembles graduates from SUA so as to train them practically on agronomic processes of growing crops in green houses for one year. (10/7/2019).

He also said;

“Currently there is a bus and Lorries stand construction activities at the university area with the cooperation with Morogoro Municipal Council.” (10/7/2019).

From these finding is worth to say that SUA’s partnership with industries is weak compared to that of other organisations as there were no respondent who clearly mentioned the industry in which SUA is in partnership with.

4.5.3 Increased teaching and learning quality

The aspect of teaching and learning quality demanded respondents to provide their assessment about the link between academic inputs of the curricular content and the industrial demands. The study assumed that the quality teaching and learning would be reflected to the industrial demands so as to meet the industrial needs. The table 4.11 presents the relationship that exists between academic inputs and industrial demands.

Table 4.11: Existing relationship between academic inputs and industrial demands

Questions		Scale of responses	N	%
Is there any relationship between academic inputs and industrial demands?		Yes	88	83.8
		No	17	30.5
		Total	105	100.0
Questions		Scale of responses	N	%
What is the relationship?		Construction of theoretical knowledge on industrial activities and production of quality products.	40	38.1
		Prepare expertise in agricultural industries, provide raw materials for processing, and make tools for industrial machines.	32	30.5
		Build innovations, machine operations skills, promote entrepreneurship on students.	33	31.4
		Total	105	100.0

Source: Field data (2019)

Table 4.11 shows that 83.8% of respondents conceived that there is a relationship between academic inputs and industrial demands, while 30.5% were of the view that the academic inputs do not relate with the industrial demands. The dominance of the affirmation that the academic inputs provided at SUA relate with the industrial demands gave implication to the second open question about the nature of relationship. The perceived relationship between academic inputs and industrial demands was further expressed 38.1% of respondents who conceived that it contributes to construction of theoretical knowledge on industrial activities and production of quality products, 31.4% of respondents held that the academic inputs build innovations, machine operations skills, promote entrepreneurship on students while 30.5% of respondents conceived the inputs are useful for preparation expertise in agricultural industries, provision of raw materials for processing, make tools for industrial machines.

4.5.4 Linkage between university courses and industrial activities

The study sought to on whether there is any linkage between the actual university courses and the industrial activities. Table 4.12 presents impressive picture. 93.3% of respondents agreed that there exist linkage between academic courses and industrial activities, 3.8% denied the presence of the linkage and 2.9% did not know whether there is any linkage. Respondents went further to provide evidence on the linkage in such that 39.0 of respondents held the linkage on quality assurance, safety and security, 27.6% of respondents were of the view that product development through packaging, storage and safety distribution, 21.0% of respondents conceived the linkage was on processing and handling of products, 7.7% of respondents found the linkage on the operation of industrial machine and finally 4.8% of respondents held that the linkage was on learning about microbiology for food products.

Table 4.12: Linkage between course and industrial activities

Question	Scale of Responses	N	%
Does your course link to any industrial activities	Yes	98	93.3
	No	4	3.8
	I don't know	3	2.9
Total		105	100.0
		N	%
What is the linkage?	Quality assurance, safety and security	41	39.0
	Product development through packaging, storage and safety distribution	29	27.6
	Processing and handling of products	22	21.0
	Operation of industrial machines	8	7.7
	Microbiologists for food products	5	4.8
Total		105	100.0

Source: Field Data (2019)

Furthermore one administrative staff who was the fourth interviewee shared in detail on the linkage between academic subjects and industrial activities as he showed that the university has three ways of making students learn practically on how to work in industry which are laboratory workshops training, and field practical and excursions as elaborated in the descriptions below,

The University have three ways of making students learn practically on how to work in industries. Firstly is through laboratories and workshops available at the university which becomes model of industries hence students get industrial environment within the university, Secondly ... students attend field practical trainings in industries and thirdly students get time for field excursion in industries to learn what is going on in the industries. (10/7/2019).

The three approaches are strategies which do not only assure interlink between theory and practices but also provide exposure to learners on machine operations, maintenance and regulations. In the other hand the knowledge acquired facilitate learners to get clear understanding of the industrial demands when they are still in the university.

4.5.5 Enhanced practical abilities for students

In the course of unveiling the strategy for improving practical abilities of students, the researcher sought worth of interrogating respondents if the university offers chances for them to perform field practices in some industries located across the country. Responses for the queries are elaborated in the table 4.13.

Table 4.13: Industries where SUA students conduct field practical (n=105)

		N	%
Do students at SUA perform their practical experiences in any industry?	Yes	77	73.3
	No	22	21.0
	I don't know	6	5.7
	Total	105	100.0
		N	%
Name the industry	Textile Industries: 21st C. Textile industry, TTPL	36	34.3
	Sugar Manufacturing industry: ILOVO Sugar Company, Kagera sugar, Kilombero Sugar Company Limited, Mtibwa Sugar company	17	16.2
	Food processing industries: Bakhresa, Shambani product, Azam company Limited.	16	15.2
	Oil refining and processing industries: Kahama Oil, SANIKU oil refining company and Murzah Oil	8	7.6
	Fruits products and soft drinks manufacturing: Coca-Cola, Bonite bottlers LTD, Matunda Mema in Kagera, Pepsi, Azania,	10	9.5
	Tobacco processing industries: Alliance Tobacco.	2	1.9
	Dairy processing industries: Tanga Fresh, ASAS	8	7.6
	Fishing and meat processing industries: Kuku poa, TANFEED, Musoma Fish, Nile -Perch	2	1.9
	Tea processing Industry: Wakulima tea company, Chai Bora company, Dabaga's LTD	5	4.8
	Breweries processing industries: Tanzania Breweries LTD, Banana Arusha,	1	1.0
	Total	105	100.0

Source: Field Data (2019)

The table 4.13 shows that 73.3% of respondents agreed that students perform their field practices in certain industries. Respondents went further to provide kinds and names of industries where the field practical are normally done. A good number of respondents (34.3%) perform practical in Textile industries like the Twenty first Century textile industry, and Tanzania Textile and Polyester limited (TTPL), 16.2% of respondents affirmed to perform practical in Sugar Manufacturing industries like ILOVO Sugar Company, Kagera sugar, Kilombero Sugar Company Limited and

Mtibwa Sugar Company. 15.2% of respondents did field practical in food processing industries such as Bakhresa, Shambani product, Azam Company Limited. 9.5% of respondents perform their practical in fruits products and soft drinks manufacturing like coca cola, Bonite bottlers Ltd., Matunda Mema in Kagera, Pepsi and Azania. Other industries where students from SUA are sent for field practical include Oil refining and processing industries like Kahama Oil, SANIKU oil refining company and Murzah Oil, the Dairy processing industries such as Tanga Fresh, Dar Fresh, ASAS, Tea processing Industry like the Wakulima Tea Company, Chai Bora company and Dabaga's LTD, the tobacco processing industries like Alliance Tobacco, Fishing and meat processing industries for instance Kuku Poa, TANFEED, Musoma Fish, Nile – Perch and finally the breweries processing industries such as Tanzania Breweries LTD and Banana Arusha.

Congruent to what respondents from questionnaire methods annotated in their responses, the key informants provided details information about the question of practical experience for students. One administrative staff who was the third interviewee shared the following in line with provision of field experience for undergraduate students.

At the end of every second semester of the academic year students attend field practical trainings. Here students are being sent to more practical production than that of the laboratories which could be more academic. Through field practical training students are sent to the areas related to their fields of specialization. (30/6/2019).

The most important point to note is that the field practical are done in industries which related to the field of specialization of the learner so as to get real experience of how things are done. There is a mention of some industries which are for sugar production, bio-processing and animal processing industries. All of these industries are present in different part of the country and thus SUA profit of their existence to create practical knowledge to learners so as to make them become experts in their field of specialization.

4.5.6 University support to creativity and innovations of the stakeholders on industrial matters

The study asked respondents to share their opinions as to whether SUA recognize or support innovations of students and lectures on industrial related matters. The responses of the study are described in the figure 4.6.

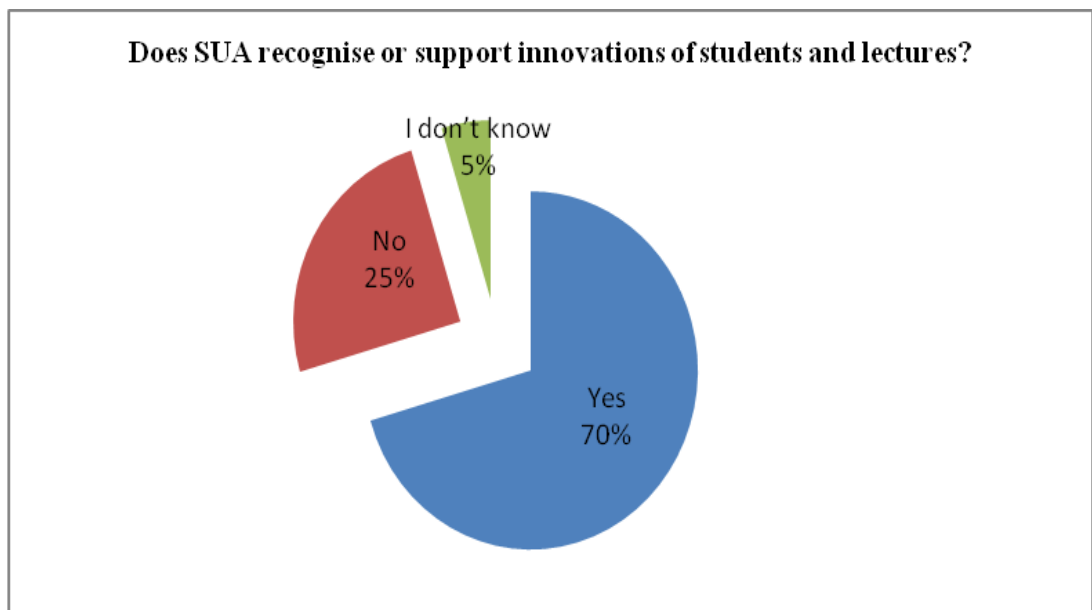


Figure 4.6: SUA Recognizes innovations of students and lectures

Source: Field data (2019)

The figure 4.6 portrays that 70% of respondents agreed that SUA recognizes and support creativities and innovations of stakeholders while 25% of respondents denied the proposition that SUA recognizes creativeness and innovations of SUA stakeholders and 5% of respondents did not know the right answer.

Together with the strong affirmations that SUA recognizes creativity and innovation of its stakeholders; the study required respondents to describe the means used by SUA on that aspect. Figure 4.7 provides the summary of responses.

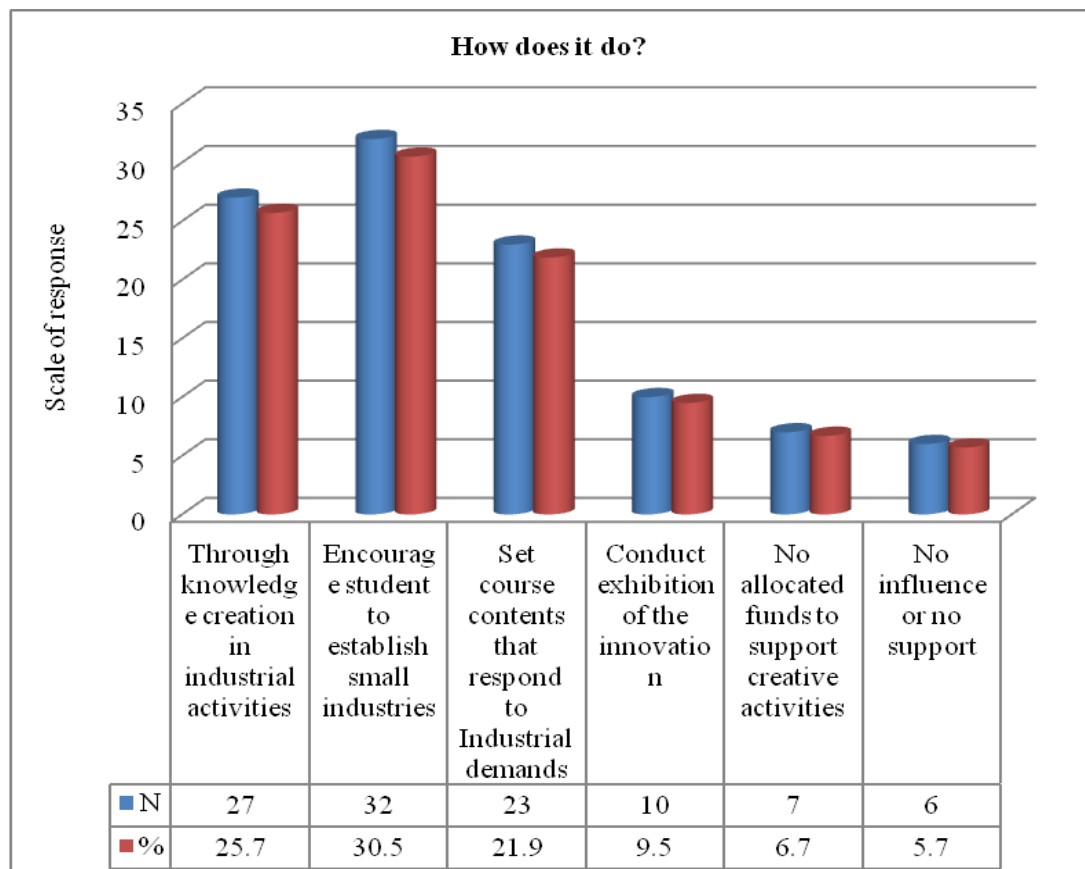


Figure 4.7: SUA Mechanisms to recognize and support creativeness/innovations

Source: Field data (2019)

The figure 4.7 shows that SUA has different mechanisms to recognize and support the creativity and innovations of its stakeholders. Among them, 30.5% of respondents said SUA encourages students to establish small industries, 25.7% of respondents showed that SUA dispense knowledge in industrial activities, other mechanism is to set course contents that responds to industrial demands as perceived by 21.9% of respondents and 9.5% of respondents were of the view that SUA conduct exhibition and innovations programmes. However, there was a small group of respondents who had different views contrary to the proponents. There is 6.7% of respondent who pointed that there are no allocated funds to support creative activities at SUA and 5.7% of respondents mentioned that SUA has no support or influence on innovations and creativeness of its stakeholders.

4.6 Opportunities and Challenges that SUA face in contributing to Industrial Development Strategies in Tanzania

The fourth objective of the study was to determine opportunities and challenges allied to SUA in its efforts to contribute for country industrial development. The study sought for numerical and narrative data to unveil opportunities and challenges.

4.6.1 Opportunities that SUA has in promoting industrial development

SUA is disposed with potential opportunities in promoting industrial development in the country. Respondents confirmed the existence of the plausible opportunities that SUA possesses in view of promoting the industrialization movement of the country as shown in the figure 4.8.

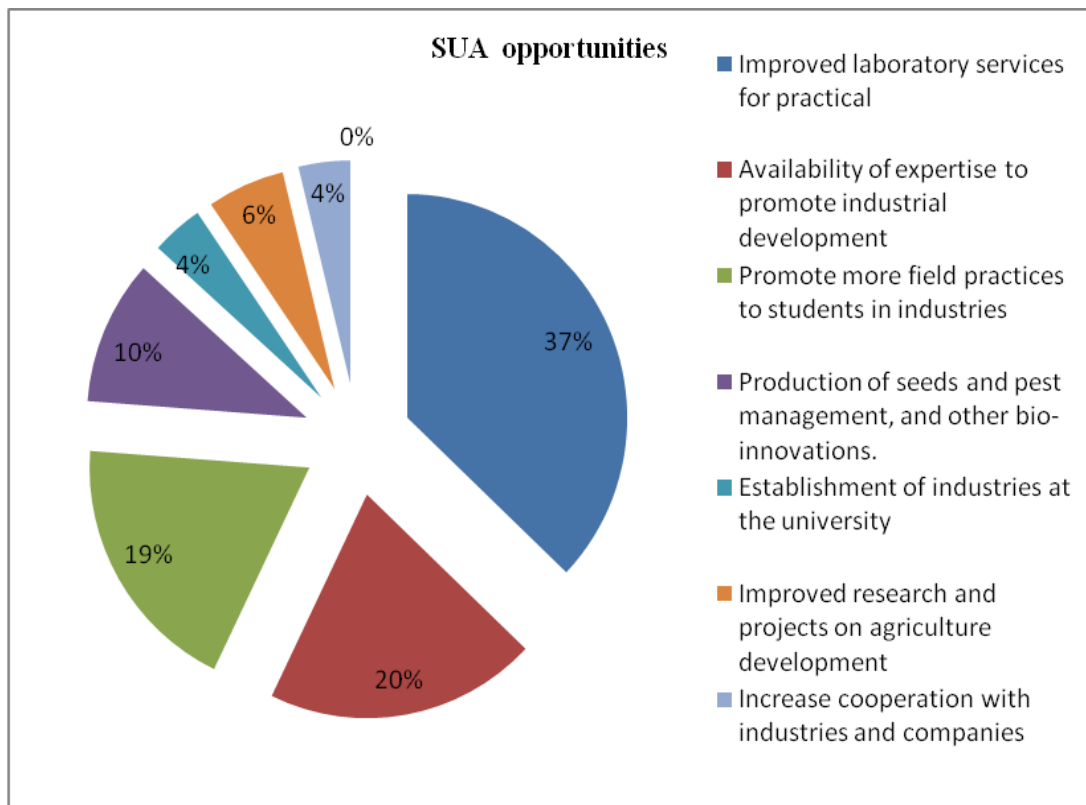


Figure 4.8: Chances that SUA has in promoting industrial development

Source: Field data (2019)

From figure 4.8, 37% of respondents mentioned the opportunity was the improved laboratory services for practical, 20% of respondents viewed that SUA has availability of expertise to promote industrial development, 19% of respondents

opined that SUA promotes more field practices to students in industries, 10% of respondents opined that SUA has the opportunity to produce seeds and pests management and other bio-innovations, 6% of respondents informed that SUA has chances to improve research and projects on agriculture, 4% of respondents said that SUA establish industries at the university compound and other 4% of respondents opined that SUA has opportunity to increase cooperation with industries and companies.

In support of the descriptive results, the key informants informed that SUA outstands the opportunity to become the first university that largely contribute on industrial development movement in the country. Several reasons were provided by administrative staff during interview as evidences to the chances that SUA has in the move of industrialization of the nation. Among the strong points which were mentioned during interview sessions are:

- ✓ Introduction of new courses: The University has introduced certain courses that train students to become golden human resource ever needed in the field of information technology, records management, forest, farming and animal keeping and food processing so as to go together with the industrialized Tanzania.
- ✓ Ownership of new machines: SUA owns machines for training and preparing students to become good industrial workers.
- ✓ Increasing cooperation with industries: SUA send students to different industries for practical training hence strengthen their knowledge and skills on industrial matters.
- ✓ Publicity of the university: As one of the strongest and largest universities in Tanzania and East Africa which deal with agriculture; SUA is expanding its relationship with other institutions worldwide especially on research, exchanging programmes, and other innovative activities.
- ✓ Opportunity to consultation services: SUA gets opportunities to provide consultation services in different institutions and companies that own industries or macro-processing factories inside and outside the country. Under the Collage of Agriculture SUA provides consultancy services on

industrial matters and other services at its special centre known as Bureau for Agricultural Consultancy and Advisory Service(BACAS)

- ✓ Establishment of formal collaboration with other institutions: SUA has signed contracts of collaborations with several institutions for the sake of sharing knowledge, technology transfer and personal development. Some students are sent in different institutions worldwide for their field practices and trainings there after get access to employment. In practices the cooperation is undertaken by signing memorandum of understanding with other institution.

4.6.2 Challenges that limits SUA from contributing effectively on industrialization in the country

The study went further to identify the existing challenges that limit the effectiveness of SUA on contributing to industrial development in the country. Respondents were asked open question to tell the possible challenges sought to tamper the effort of the university towards industrialisation. The figure 4.9 provides descriptive results of the responses given.

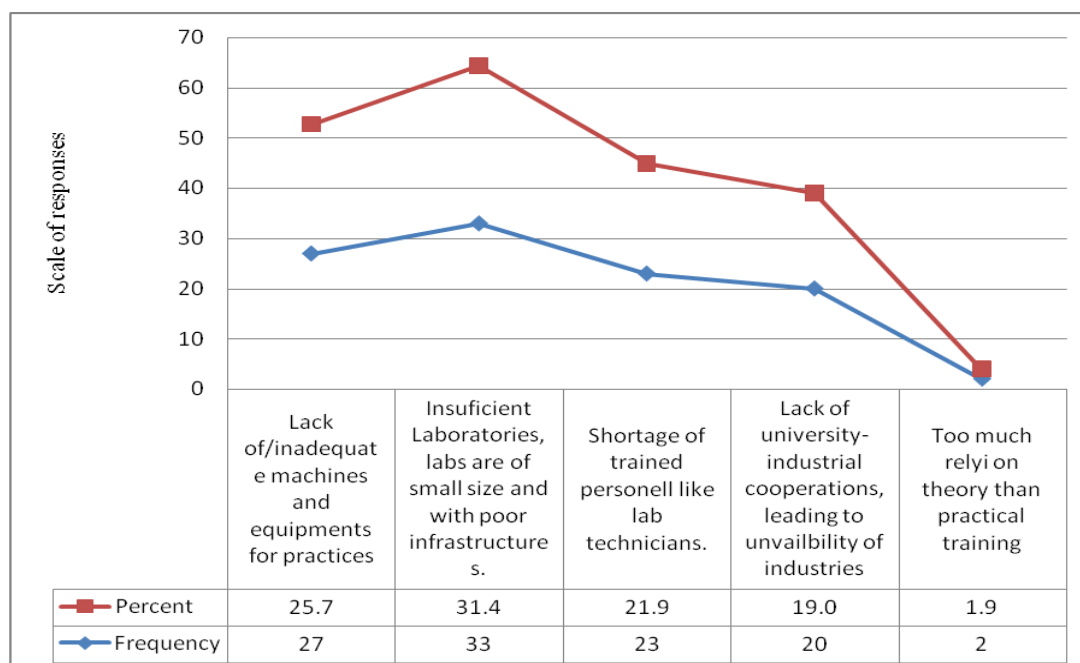


Figure 4.9: Challenges facing SUA in contributing to industrial development
Source: Field data (2019)

The figure 4.9 shows that among the obstacles hampering the efforts of SUA in promoting industrial development in the country are insufficient and small size laboratories with poor infrastructure as it was mentioned by 31.4 % of respondents , 25.7% of respondents mentioned the lack of or inadequate machines and equipment for practices, 21.9% of respondents viewed that shortage of trained personnel like laboratory technicians, 19% of respondents mentioned the lack of university-industrial cooperation and 1.9% of respondents held that there is too much reliance on theory than practical training.

4.7 Summary of the chapter

The study has four specific objectives that have been attempted in this chapter. With respect to the first objective which wanted to identify the stakeholders' perception on the roles played by the university on promoting industrial development; the study found that SUA is well positioned in playing different roles which promote industrial development. These roles are building practical skills to students by field practices, farming activities, productions and extension services, training on agricultural activities, conducting researches, workshops and seminars, enhancement of creativeness, innovations and providing expertise as well as providing consultation services on matters related to industrial development. The study found that there are several skills provided to students at SUA that contribute to industrial development in the country. These skills are related to academic, professional and managerial skills. In addition the competencies that are provided at SUA seem to have immense contributions to national industrialization.

In third objective the researcher found that there are different strategies which add on the weight that SUA provided skills and competencies favouring industrial development. These strategies include improved teaching and learning, enhanced practical experience of students, support and recognize different innovations done by SUA students and lectures through exhibitions and SUA memorial days as well as enhanced university- industry partnership. However, the study found that SUA has got the some challenges which hinder its promotion of industrial development in the country. Among the mentioned challenges are: relying on old technology poorly

developed the partnership industries since the kind of partnership is only through sending students for field practices, SUA has no collaboration with any industry research projects and industrial experts are not part of the participants in curricula developments at SUA. The study found that through promoting industrial development SUA has got several opportunities which are ownership of new machines, introduction of new courses, increasing cooperation with industries worldwide, publicity of the university, as well as getting an opportunity to provide consultancy services.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

The chapter presents a discussion of the findings attained from the study and the interpretation drawn by the researcher based on the findings. The discussion follows the sequence of the specific objectives. The findings have been summarized alongside the objectives of the study and the demographic information has been used to foster some discussion in the course of explaining the findings.

5.2 Perception of stakeholders on the position of SUA on industrial development

The first objective of the study was to identify the perception of SUA stakeholders on the university's roles on industrial development strategies in the country. This objective wanted to explore more about the stakeholders' knowledge, attitudes and how do they consider as the roles SUA play in promoting the current industrial development movements in Tanzania.

The study found that SUA stakeholders are very aware and have positive perception about the roles the university undertakes to promote industrial development. Some of the most important roles which were mostly mentioned are creation of knowledge, build of practical skills on agriculture and animal sciences, enhancing creativity and innovations, provision of extension services through training on agriculture and conducting research projects, sending students in industries for field practices, preparation of workshops and seminars which are strongly insisting on promoting industrial development in the country. There was a mention of different exhibition which SUA perform in different occasions like nanenane sabasaba and during memorial days like Karume, Sokoine and Nyerere whereby the main them is on promoting industrial development in the country.

These findings shows that SUA is participating in the current industrial development movements which is intended to transform the nation to the middle income economy hence combat the poverty situation prevailing in the country. This concurs with the

study by Popescu (2014), which portrays that universities are becoming source of development through conducting research, education provision and consultancy activities on several social and economic arenas. With this respect the mentioned roles about SUA on promoting industrial development, marks that the university is among the sources of developing the industrial sector in the country.

5.3 Industrial related skills and competencies imparted to students at SUA

The study wanted to identify the industrial related skills and competences provided to students at SUA which are geared to the development of the industrial sector in the country.

5.3.1 Industrial related skills imparted to students at SUA

The study found that there are eight industrial skills which are highly provided to students at SUA. These are ICT literacy skills, machine operation skills, statistical computation skills, mathematical skills, project evaluation skills, communication skills, business skills and leadership skills. The findings portrays although these skills are provided at SUA, there is difference in the percentage of its provision. This is because the study found that SUA provides communication skills, statistical computation skills, and ICT literacy skills for more than 90% and others skills like machine operation skills, mathematical skills and project evaluation skills are being provided for about 75% only. This difference could affect the university's position in fully promoting industrial development as all these skills are strongly needed for the development of the industrial sector.

According to Chikumba (2012), industrial skills are both soft and hard skills which an employee should have in order to perform the required works in industries. Computation skills, machine operation skills and ICT skills were mentioned as hard skills while communication, leadership and management skills as soft skills. Despite the fact that at SUA there is difference in the percentage of the provision of these skills; the university provides all necessary skills needed for the industrial sector. However the university is needed to add efforts in providing technical skills as they are so crucial in industrial development in the present and future time. Jakarta (2017), mentions equipment maintenance and repair, equipment operation and

control as well as quality control as some of the technical skills important for the industrial sector.

5.3.2 Industrial related competencies imparted to students at SUA

The study found that SUA provides academic competences, personal competences, workplace competences, managerial competences and technical competencies. The study found that managerial and technical competences were provided for less than 80% compared to academic competence which has been shown to be provided for 95.2%. Furthermore the study found that many students at SUA have a relatively strong and satisfactory ability of applying the acquired skills and competences.

From these findings it is true that by concentrating much on academic competences SUA is in a good position of promoting industrial development in the country as Gzelczak, Kosacka, & Werner-Lewandowska (2017) show that the most important required competence in new technology areas are professional competences. Furthermore as the findings shows that other competences are provided for 80%, it also makes SUA to be at a good position in promoting industrial development in the country through competences it provides.

In spite the fact that SUA is at a good position in promoting industrial development through the competences it provides to students still there is a need for the university to provide more knowledge competences to the students. Kamis & Bakar (2014) show that knowledge competence is very important as its aspect involves the latest trends, business strategies, fashion business, knowledge to build ones brand, branches of fashion, and the basic knowledge about the fashion together with knowledge of fabric. Although they were talking about the clothing industry, these competences are crucial to all industries especially manufacturing industries in Tanzania. Therefore SUA should make sure that it increases the provision of knowledge competences.

5.4 Strategies Employed by SUA to impart industrial related skills and competencies

The major strategies that were found to be employed by SUA to promote industrial development in the country are: the improved teaching and training on professional carrier, use of practical activities like field practices and frequent visits to industrial plants, preparation of raw materials production and foods, installation of machines for production of milk processing and bread and flour manufacturing, establishment of different farming and livestock keeping projects, conduct different exhibitions, seminars, workshops and the process of updating the university curriculum so as to meet the current national development vision 2025.

With reference to the Theory of the Planned Behaviour by Ajzen (1991) which suggests about the intention of engaging in a behaviour at a specific time and place as well as motivation in a conscious plan or decision to perform a certain behaviour; it is true that the strategies which SUA employ makes a university at a pick of promoting industrial development strategies in the country as all the strategies have an intention of making the university at a pioneer in engaging into national development strategies together with promoting industrial development.

Barro (2001), shows that the behaviour will be performed as the person will decide intentionally to perform certain behaviour, the SUACSP (2016 p.9) expresses that SUA strives to maintain its mandate to offer services according to current political environment which support the development of national economy. Therefore the strategies applied by SUA to contribute on industrial development supports the TPB. These strategies should be maintained and improved by the university stakeholders so as to make the university a pioneer in industrial development strategies in the country.

5.5 Opportunities and challenges that SUA face in its role of contributing to industrial development in the country

With reference to the findings, there are many opportunities that SUA have as it is engaging in promoting industrial development in the country. The opportunities mentioned are introduction of new courses and new degree programmes, ownership of new machines, increasing cooperation with industries, publicity of the university as well as increase of consultation services and cooperation with other learning institutions.

By having this large number of opportunities it is clear that if SUA should use them fully as they will increase its participation and involvement in national development movements through industrialization. According to Chatterton & Goddard (2000) and Goddard (2005), the universities have chances to create knowledge, produce human capital and initiate social capital and technological innovations. With this respect SUA should use the opportunities it has to make the industrial development movement succeed.

Some challenges which were being told as hindrances to SUA's movements in promoting industrial development of the country are lack of capital, using old technology, shortage of trained personnel, poor infrastructures, lack of strong cooperation with industries as well as the presence of small size and insufficient laboratories. These prevailing challenges should be used by the university as a call to improve its system so that it could be a real centre for industrialization as it has been shown in its charter that SUA has a great role in national development and its mission, vision and priorities are aligned to the Tanzania Development Mission 2025 (SUA 2016).

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The chapter presents the summary of the study, conclusion, policy implications and recommendations. In addition the chapter describes the observed limitations of the study and suggests areas for further study.

6.2 Summary of the study

This study intended to explore the role of SUA to industrial development in Tanzania through competencies and skills imparted to the undergraduate students. With reference to the specific objectives and research questions, the findings of the study prove that the gap on the relevance of skills and competences provided by the Tanzanian universities to industrial sector has been filled as they are provided at SUA.

The study identified the perception of the SUA stakeholders about the university position on the current industrial developments in the country; determine the strategies applied by SUA in enhancing industrial development in the country; and found out kinds of skills and competencies imparted to students at SUA which are reliable for industrial development as well as identified the opportunities and challenges that SUA face when promoting industrial development in the country.

The TPB was employed to analyse concepts and the position of SUA towards industrial development in the country. It has been found that without prior plans of doing well in supporting the industrial sector, SUA would have done nothing in engaging to the process of promoting industrial development in Tanzania. Therefore its stated plans of supporting the development strategies in Tanzania makes SUA flourish in promoting the industrial sector in Tanzania hence join hands the poverty reduction movements in the country.

The study used a mixed approach and the convergent parallel design to undertake the plan and analysis of the study findings. Data were collected by the use of questionnaires, interviews and documentary review methods. The purposive sampling design facilitated the selection of degree programmes, lectures and administrative staffs while quota sampling techniques was used to select university students. The content analysis method was used to analyses qualitative data whereas the descriptive statistical analysis method was employed in analysing quantitative data.

The study found that SUA plays different roles in promoting industrial development in the country. The academic roles were creation of knowledge through teaching, training and workshops, and conducting research on industrial matters. Other roles involve consultation services, building practical skills on agriculture through provision of extension services and the creation of innovative and creative human capital. Respondents had positive and optimistic attitudes towards the observed roles of SUA in development of industry. SUA prepares quality human capital, conduct research on agricultural and animals sciences, and improves knowledge extension and technological transfer to the community and industries.

The study found that by putting itself in a position of promoting industrial development in the country SUA observe the following opportunities; introducing improved laboratory services for practical training, owning machines/small factories for training, publicity of the university inside and outside the country, provision of research and consultations services in different institutions and companies that own industries or macro-processing factories, establishment of formal collaboration with different research institutes, sending students in different industries for practical training and increased cooperation with industries and companies, possession of courses in agriculture that train students to become golden industrial human resource, and improved research and projects on agriculture.

The observed limitations were shortage of funds, shortage of trained personnel like laboratory technicians, too much reliance on theory than practical training, spending little time during field practical, little knowledge on emerging technologies, lack of strong university- industrial cooperation, poor and informal university- industrial partnership leading to unavailability of industries for practical experience, budget constraints(economic difficulties) due to lack of funds, inadequate machines and equipment for practical training and insufficient and small size laboratories with poor infrastructure and shortage of trained personnel like laboratory technicians. These challenges hinders the fully participation of the university in industrial development activities.

6.3 Conclusion

The study draws the following conclusions with regard to the observed findings and discussion. SUA contributes to industrial development through the provision of relevant skills and competencies. The acquired strategies implemented by SUA have an added advantage for the university to enhance its opportunity to promote industrial strategies in the country. However, the university faces great challenges of finance difficulties and relying on old technology rather than emerging technologies which hinders the university's efforts on promoting industrialisation. SUA should take steps in improving its roles of promoting industrial development through searching and adopting emerging technologies as well as finding several sources of fund for promoting industrial sector in Tanzania.

Moreover the university should expand and improve its partnership with large and small industries so as to improve its participation in industrial development matters. The University should conduct many researches on industrial matters as well as providing advisory and consultancy services on industries inside and outside the country.

6.4 Policy Implication

The analysis of the findings and discussion provided the study with some policy implications that are to be addressed to, in order to bring best results for universities to effectively contribute on country industrialisation strategies. There is a need of introducing a policy framework that could guide the development of university curricula that are born from industry-university partnerships. The need for the universities to have appropriate curricula contents that suits the demands of the industrial development could be mitigated if industrial shareholder have opportunity to provided their contribution in university learning methodologies.

There is a need for policy intervention in the country to strengthen a tie of partnership between universities and industries in the country. Industries should have to be given chances to sponsor university research projects that could have sound impact on industrial development in the country. Weak partnership between universities and industries limits the process of industrialization in the country as the universities will not understand of the real industrial needs hence provide knowledge and skills which are irrelevant to the industrial development.

6.5 Recommendations

Basing on the study findings and conclusion the study suggests the following recommendations specifically to SUA, other universities, industries and the government. The strategies undertaken by SUA in promoting industrialisation are worth praise and should be sustainable. The university should not cease to review its curricula contents to suit the demands of the current technology in particular in agricultural sector.

SUA is called to extend its functions like consultations and training to the surrounding local community as to impart the knowledge on entrepreneurship in the field of agriculture and animal keeping. This would lead to gain a strong support by different shareholders in either funding or participating in production of goods and commodities needed by the growing industries.

Universities all over the country should investigate the skills and competences that are provided to students in order to find out its relevance in promoting industrial development strategies in the country. By doing, this university in Tanzania will faster the industrial development in Tanzania hence combat poverty to the nation and its people.

The Tanzanian government should strongly and actively support the initiatives that SUA undertake to implement the industrialisation programmes through funding, review of policy frameworks, and moral encouragement. Otherwise the government is urged to have wide focus on the issue of industrialisation thereby supporting and motivating small industries through preparing means of funding the projects, reduce tax burden and managerial capacity building.

With regard to industries, there is strong need for the industries established within the country to establish links with universities so as to promote universities in their projects related to production and human capital development. Industries were found to have established weak relationships with universities; it is high time for the industries to see that the partnership is no longer a matter of ambition but obligation for the country to grow into middle income economy.

6.6 Limitation of the study and suggested areas for further research

The study adhered to scientific methods of research from its plan to the development of research report. However, there are some little weakens that the study could have in presenting its findings due to some subjectivity of the research. Another observed limitation was the scope of the study area whereby SUA was considered in the conduct of the study; it would be worth for a study to assess the role of the all universities in the country. This would be useful in comparing and discussing the roles played by the individual university and come with a solution on what should be done to the universities to make them fully participate in national development strategies. Another study is worth to be done which could comprise of different universities as to find out the relevance of the skills and competences provided in developing the industrial sector.

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APPENDICES

APPENDIX I

INTERVIEW GUIDE FOR ADMINISTRATIVE STAFFS

The interview starts by self-presentation, introduction of the study purpose and then presents some mode of conversation. Request will be made to take a sound record from the respondents. The following questions will guide the conversation.

1. What is your position at Sokoine University of Agriculture?
2. What is your work experience?
3. Have you ever heard about the country's movement to the middle income economy with high level of industrialization?
4. What do you say about it?
5. How do you find the country's strategies towards reaching middle income economy? What are your views about this movement?
6. Do you think SUA is participating in the countries movement to middle income economy by 2025? What activities which proves that it is participating?
7. Do you know any strategy that SUA have which proves that it promote industrial development movements in the country?
8. Are staffs and students aware about the university's strategies? How?
9. Do you think SUA provides necessary skills to students for the industrial development? What skills?
10. Does SUA own any industry/industries? Name the industry and its location?
11. Does SUA send its students in various industries for practical? Which industries?
12. Does SUA find employments for its graduates in industries? Explain in brief.
13. Does SUA have partnership with any industry in the country? What are those industries? How is the collaboration?

14. Are there any benefits do the university get in promoting industrial development strategies in the country? What are those benefits?
15. Are there any challenges that the university get in promoting industrial development strategies?
16. What else should be done in your opinion to make SUA a champion university in promoting industrial development?

Thank you very much for your good cooperation

APPENDIX II

QUESTIONNAIRE SHEET FOR LECTURERS

RESEARCH TITLE: *THE ROLE OF UNIVERSITIES IN PROMOTING INDUSTRIAL DEVELOPMENT IN TANZANIA: THE CASE OF SOKOINE UNIVERSITY OF AGRICULTURE*

Dear respondent, I am glad that you have accepted to fill in this sheet of questionnaires. I am gratefully requesting you to participate in this study by responding to the questions accordingly. The study needs to explore on the role of Sokoine University of Agriculture (SUA) in promoting industrial development in Tanzania. I beg that you feel free to answer the questions basing on your understanding and personal experience. I assure you that the study is academic and your response will be confidential and strictly used only in the purposes of this study. Thank you.

Part I: Demographic information

1. To what age group do you belong? **Tick the Right group**

- (i) 26 – 35 ()
- (ii) 36 – 45 ()
- (iii) 45+ ()

2. Sex **(Put a tick)**

- i). Male ()
- ii.) Female ()

3. In which Department do you belong? **(Name the department)**

.....

4. For how long have you worked with SUA **(Mention the period and your experience)**

.....

.....

5. What is your education level? **(Mention)**

.....

6. What courses do you teach in this semester? To which degree programme **(Mention)**

.....

.....

Part II: Perceptions of SUA stakeholders on the position of the university on responding to industrial development movements in the country

7. In your opinion, does SUA play any role towards industrial development? **YES/ NO.** (Please circle the right response). **Briefly explain your answer**

.....

.....

8. How far do the courses taught at SUA and other activities performed have a contribution to industrial development movements in the country? **Briefly explain your answer**

.....

.....

9. Do you know of any practical event that marks the university contribution to industrial development in Tanzania? **YES/ NO.** (Please circle the right response). **Briefly explain your answer**

.....

.....

Part III: Industrial related skills and competencies provided to students at SUA

10. Do you prepare students to be useful agents for industrial development? **YES/NO** (Please circle the right response). **Briefly explain your answer**

.....

.....

11. What kind of industries does your programme feed into? **Answer Briefly.**

.....
.....

12. Is there any follow up to graduates after their graduation? **YES/NO** (please circle the right response) **How?**

.....
.....

13. What about the modality of the practical training? Is there any policy on practical training?

.....
.....

14. Are the following forms parts of the skills you provide to the students? **Tick the right answer**

	Yes	No	I don't know
ICT literacy skills			
Machine operation skills			
Statistical computations skills			
Mathematics skills			
Project evaluation skills			
Communication skills			
Business skills			
Leadership skills			

15. Are the following form parts of the competencies that you provide to students in your course programmes? **Tick the appropriate one**

	Yes	No	I don't know
Personal effectiveness competencies			
Academic competencies			
Workplace competencies			
Technical competencies			
Managerial competencies			

16. How do you find the skills of your students basing on the following criteria?

Tick the right answer

1=excellent, 2=good, 3=satisfactory 4=bad, 5=very bad

	1	2	3	4	5
Knowledge level of computer use					
Ability to operate required machines					
Understanding the application of statistical computations					
The capacity to influence decision or ideas					
Knowledge of project evaluation tools					
Ability to use economic principles and theories in trade					
Ability to undertake complex mathematical calculations					

17. What rank of competencies do you assign your students in the third and fourth years (if applicable) basing on the following criteria? **Tick the right answer**

1=Very strong 2= relatively strong 3=satisfactory 4=weak, 5=very weak

	1	2	3	4	5
Ability to work with tools and technology					
Level of structuring and coordination					
Ability to check and examine systems					
Innovativeness /Creativity					
Entrepreneurial thinking					
Decision making					
Problem solving					
Informing/effective communication					
Supporting others					
Delegating ability					
Networking					
Work Monitoring					
Developing and mentoring					

18. Do you find any concordance between university curriculum content and industrial demand? **YES/NO** (please circle the right response) **briefly explain your answer**

.....

19. Do you know of any project in the university being funded by any industry?
YES/NO (please circle the right response) **Name the industry/industries.**

.....

20. Do you think the projects carried out in the university are industrial related?
YES/NO (please circle the right response) **briefly explain your answer**

.....

.....

21. Is SUA in partnership with any industry? **YES/NO** (please circle the right response)

Name the industry/industries and the nature of that partnership

.....

.....

22. Do students at SUA perform their practical in industries? **YES/ NO.** (Please circle the right response)

23. How influential is SUA in making its students engage in industrial activities?
(Circle the answer) **Very high/ high/ moderate/ low/ very low. Briefly explain your answer**

.....

.....

24. Does SUA recognise/ support innovations of students or lectures? **YES/NO**
(Circle the answer) **How?**

.....

.....

Part IV: Opportunities and challenges that SUA face in promoting industrial development in the country

25. What do you think that are opportunities that SUA have in ushering industrial development? **Briefly explain**

.....

.....

25. What challenges does SUA face in promoting industrial development in the country? **Show them**

.....
.....

26. What else do you think could be generally done by SUA in promoting industrial development in the country?

.....
.....

Thank you very much for your good cooperation

APPENDIX III

Questionnaires for students

RESEARCH TITLE: *THE ROLE OF UNIVERSITIES IN PROMOTING INDUSTRIAL DEVELOPMENT IN TANZANIA: THE CASE OF SOKOINE UNIVERSITY OF AGRICULTURE*

Dear respondent, I am glad you have accepted to fill in this sheet of questionnaires. I am gratefully requesting you to participate in this study by responding to the following questionnaires accordingly. The study needs to explore on the role of Sokoine University of Agriculture (SUA) in promoting industrial development in Tanzania. I beg that you feel free to answer the questions basing on your understanding and personal experience. I assure you that the study is academic and your response will be confidential and strictly used only in the purposes of this study.

Part I: Demographic information

1. To what age group do you belong? **Tick the right place**

i). 19 – 25 ()

(ii) 26 – 35 ()

(iii) 36 – 45 ()

2. Sex **Tick the right place**

i). Male ()

ii.) Female ()

3. Academic year. **Tick the right place**

i. third year ()

ii. fourth year ()

4. What degree programme do you study? **(Mention)**

.....

Part II: Perceptions of SUA stakeholders on the position of the university in responding to industrial development movements in the country

5. Do you think SUA has any role to play in promoting industrial development in the country? **Yes /No. (circle the right answer)** If yes what role(s)? /if no what should be done?

.....
.....

6. Is there any policy you know that calls universities to promote industrial development? **Yes /No. (Circle the right answer) Briefly explain your answer**

.....

7. In your opinion, is there any relationship between academic inputs and industrial demands? **Yes /No. (circle the right answer)**

Briefly explain your answer

.....
.....

8. Does your course link to any industrial activities? **Yes /No. (circle the right answer) Briefly explain your answer**

.....
.....

9. What do you say about the country's movement to industrialization and the participation of SUA towards this movement?

.....
.....

Part III: Industrial related skills and competencies provided at SUA

10. Say whether the following are the essential skills that you gain from your degree programme? **(put a tick where appropriate)**

	Yes	No	I don't know
ICT literacy skills			
Machine operation skills			
Statistical computations skills			
Mathematical skills			
Project evaluation skills			
Communication skills			
Business skills			
Leadership skills			

11. Say whether the following are the essential competencies that you gain from your degree programme? **(put a tick where appropriate)**

	Yes	No	I don't know
Personal effectiveness competencies			
Academic competencies			
Workplace competencies			
Technical competencies			
Managerial competencies			

12. How well are you positioned with the following competences? **(put a tick where appropriate)**

1=excellent, 2=good, 3=satisfactory. 4=bad. 5=very bad

	1	2	3	4	5
Knowledge level of computer use					
Ability to operate required machines					
Understanding the application of statistical computations					
The capacity to influence decision or ideas					
Knowledge of project evaluation tools					
Language proficiency and stylistics					
Ability to use economic principles and theories in trade					
Ability to undertake complex mathematical calculations					

13. On what level of competencies do you assign yourself basing on the following criteria? **(put a tick where appropriate)**

1=Very strong 2= relatively strong 3=satisfactory 4=weak, 5=very weak

	1	2	3	4	5
Ability to work with tools and technology					
Level of structuring and coordination					
Ability to check and examine systems					
Innovativeness /Creativity					
Entrepreneurial thinking					
Decision making					
Problem solving					
Informing/effective communication					
Supporting others					
Delegation					
Networking					
monitoring work					
Developing and mentoring					

Part IV: Strategies applied by SUA in promoting industrial development

14. Do you know any strategy that SUA undertake to influence industrial development? **Yes /No. (Circle the right answer) Mention them.**

.....

15. Do you find any relationship between what you study at university and the industrial demands? **Yes /No. (Circle the right answer) What is that relationship?**

.....

16. Does students at SUA perform their practical experiences in any industry?
Yes /No. (Circle the right answer) Name the industry/industries.

.....

18. Is SUA influential in making you engage in industrial activities? **Yes /No. (Circle the right answer) Show how**

.....

Part V: Opportunities and challenges that face SUA in promoting industrial development in the country

19. Mention any advantages that SUA have in promoting industrial development?

.....
.....

20. Pinpoint any difficulties that hinder SUA from promoting industrial development?

.....
.....

21. What else do you think is to be done for SUA to be a champion for enhancing industrial development in the country?

.....
.....

Thank you very much for your good cooperation