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UNIVERSITY OF SUSSEX

**Title: The Production of Skills for the Agricultural Sector in Tanzania: The Alignment
of the Provision of Technical, Vocational Education and Training with the Demand for
Workforce Skills and Knowledge for Rice Production.**

**Thesis submitted
for
Degree of Doctor of Education**

**Keiko Takei
January, 29, 2016**

PREFACE

I would like to thank a great number of people who have helped in some way with this research. First, I would like to thank the many graduates from Technical Vocational Education Training (TVET), the TVET lecturers and administrators as well as the TVET employers in the agricultural sector in Tanzania. They all gave so much of their time to answer my research questions, and they were generous in allowing me to visit them in the field. Without them, there would have been no fieldwork and, consequently, no study.

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UNIVERSITY OF SUSSEX**KEIKO TAKEI****DOCTOR OF EDUCATION**

Title: The Production of Skills for the Agricultural Sector in Tanzania: The Alignment of Technical, Vocational Education and Training with the Demand for Workforce Skills and Knowledge for Rice Production.

SUMMARY

The general objective of this study is to identify skills required by employers relevant to the agricultural sector especially in cash crop rice farming and to explore how to increase the contribution of new entrants to the labour market leading to increased production, socio-economic development and the reduction of income-poverty in Tanzania. Productivity gains in the agriculture sector have been modest and have had a limited effect on economic growth in Tanzania. Although the country has considerable agricultural potential, making the most of this depends on the availability of a labour force that has the skills to support a shift to greater productivity. This study profiles, analyses and examines the reality of skills provision and the emerging opportunities to find out how skills development and employability should be improved.

The research questions focus on (i) identifying the existing skills gaps between employers' needs and employees' capabilities; (ii) identifying the skills which TVET programs impart to enhance performance in the agriculture subsector; and (iii) identifying the

skills required by employers and analysing the employability of TVET graduates entering work in the agricultural sector, especially for paddy production. The study concludes by outlining policy implications for improving TVET programs for workforce development.

Among the key research findings was the identification of the high degree of irrelevance of most TVET courses for the targeted labour market as overall 89 % of employers claim that the skills possessed by graduates were not applicable to their intended jobs. Moreover, there is a gap in perception between employers and employees about the value of their training.

Serious concerns need to be addressed. This can be done by creating an effective system of knowledge dissemination and training building on the current cascade training system involving both the TVET institutions and the visitation of extension workers in the field responsible for enhancing the transfer of modern farming practices. Findings also indicate that very few TVET graduates who enter the agriculture sector have actually studied agriculture, and only seven percent out of the entire TVET graduating cohort have studied the agricultural track.

These research findings, drawn largely from a case study analysis as well as analysis of secondary sources, were formed during my professional experience working in the TVET sub-sector in Tanzania. The findings lead to the conclusion that the nature and structure of the curriculum as well as the teaching methodology mean the skills of the TVET graduates are inadequate to meet the demand from the labour market, especially in the paddy production sector. In addition, the study findings lead to a number of critical policy options to reduce skills gaps by refining the curriculum and pedagogy to ensure it is more demand driven and by ensuring that a mechanism is created linking supply and demand.

Critical policy options include the need for a clearer and more systemic occupational analysis of the skills needed in paddy production -- such as the analysis provided in the Developing A Curriculum (DACUM) approach in order to ensure that the TVET curriculum

is in alignment with the demanded occupational skills. To enhance the scientific and technological foundation of TVET, a strong focus will be required on high-order literacy and numeracy skills. The study also suggests that to establish a “knock-on effect”, youth who obtain skills from TVET institutions also need to be provided with appropriate leadership training during their TVET programs in preparation for disseminating knowledge and skills to other farmers in the field and leading change in agricultural practice. The training system needs to be more closely linked with employers and work places where knowledge and skill can be utilised. (599 words)

ABBREVIATIONS

AEO: African Economic Outlook

ADEA: Association for the Development of Education in Africa

ANFEDP: Adult and Non Formal Education Development Programs

ASA: Agriculture Seeds Agency

CAADP: Comprehensive Africa Agriculture Development Program

CBET: Competence Based Education and Training

CBT: Competency Based Training

CSEE: Certificate for Secondary Education Examination

DACUM: Developing a Curriculum

EFA: Education for All

ESDP: Education Sector Development Program

FDI: Foreign Direct Investment

FEDP: Folk Education Development Program

FYDP: Five-Year Development Plan

GDP: Gross Domestic Product

GER: Gross Enrolment Ratios

GMR: Global Monitoring Report

GPI: Gender Parity Index

HEDP: Higher Education Development Program

ICT: Information Communication Technology

IDACA: Institute for the Development of Agricultural Cooperation in Asia

IGC: International Growth Centre

ILO: International Labour Organisation

IMF: International Monetary Fund

IRRI: International Rice Research Institute

JA: Japan Agriculture

JICA: Japan International Cooperation Agency

KBET: Knowledge-based approach to technical and vocational education and training

LG: Learning Group

LGAs: Local Government Authorities

LMI: Labour Market Information

LMIS: Labour Market Information System

M&S: Math and Science

MDGs: Millennium Development Goals

MMIC: Model Medium Income Country

MoEVT: Ministry of Education Vocational Training

NACTE: National Council for Technical Education

NCTE: National Council for Technical Education

NEPAD: New Partnership for African Development

NER: Net Enrolment Ratios

NRDS: National Rice Development Strategy

NSGRP: National Strategy for Growth and Reduction of Poverty

PEDP: Primary Education Development Program

POPC: President's Office, Planning Commission

PPG: Pro-Poor Growth

PPP: Public Private Partnership

PSLE: Primary School Leaving Examination

PTR: Pupil – Teacher – Ratio

R & D: Research and Development

SDGs: Sustainable Development Goals

SEDP: Secondary Education Development Program

SSA: Sub Saharan Africa

SVSDAIS: Strategy for Vocational Skills Development in the Agricultural Informal Sector

TET: Technical Education and Training

TEVTDP: Technical Vocational Education and Training

TIMSS: Trends in International Mathematics and Science Study

TVET: Technical Vocational Education Training

UNESCO: United Nations Educational, Scientific and Cultural Organisation

UNEVOC: UNESCO's specialized Centre for technical and vocational education and training (TVET)

UNICEF: United Nations Children's Fund

UNIDO: United Nations Industrial Development Organization

UPE: Universal Primary Education

VET: Vocational Education and Training

VETA: Vocational Education and Training Authority

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CHAPTER 1: INTRODUCTION

Introduction to this chapter

The objective of this research is to explore and understand how the TVET system in Tanzania has developed, why skill gaps continue to persist in the labour market, why demand for TVET remains weak, and what policy options are available to address these problems. The research is focused particularly on agriculture and cash cropping since this sector is one of the largest employers but suffers from low productivity and shortages of skilled human capital.

The role of technical and vocational education and of human capital in promoting the performance and growth of economies is increasingly gaining recognition. Several studies of development have pointed to human capital as the single most important engine of growth in most developing countries over the past three decades (Adams, 2007, African Development Bank, 2013a, Johanson and Adams, 2004, Juma and Yee-Cheong, 2005, and UNESCO, 2002). In Tanzania, TVET plays a substantial role in the country's social and economic growth (Tanzania Education Sector Analysis, 2012) as it serves to meet the needs of the labour market by supplying a workforce with knowledge and skills that can improve production and productivity. Traditionally, however, TVET has been fragmented and delivered by different providers at various qualification levels in Tanzania. Nowadays, TVET institutions, both public and private, need to offer programs that provide relevant knowledge, practical skills and appropriate attitudes to increase the recipients' chances of gainful employment in a particular trade or occupational area for social growth and to enhance national economic development.

The Government of Tanzania in collaboration with development partners and civil society organisations has implemented a number of initiatives to promote and improve TVET provision in the country. These include; upgrading teaching and learning infrastructures, building institutional capacity and enhancing quality control in training provision. These

measures indicate recognition of the fact that while the country is in dire need of craftspeople, technicians and engineers/technologists, training programmes lack relevance to the reality found in the workplace (African Development Bank, 2012). There are some complaints from employers who are dissatisfied with the skills acquired by TVET graduates as well as their inability to apply these skills to the world of work. Therefore, it is important to examine the development of TVET in Tanzania, evaluate its form and process and gather insights into its impact on the supply of new entrants into the workforce with skills relevant to development.

1.1. Rationale and Problem

Effective TVET training requires that students have the ability to apply basic skills to new and more complex problems, which is essential for bridging the skill gap between what is currently available in the labour market and what is needed for development. This ability requires “higher-order” literacy and numeracy skills and higher-order thinking skills, which would enable students to use reading as a tool for learning new information, ideas, attitudes and values. In fact, investing in primary education is crucial for enhancing literacy and numeracy. However, basic literacy and numeracy are clearly by themselves not sufficient for development. While important, these basic skills provide an insufficient foundation for further learning such as that provided by TVET skills development. Students would be enabled to use text as a means of going beyond acquiring language and knowledge through listening and direct experience to developing skills of application and synthesis (Lockheed and Verspoor, 1991, p.10). Thinking skills, e.g., the ability for comprehending and processing information, logical reasoning and cognitive problem-solving, are an essential complement to basic literacy and numeracy. If students go into the TVET system without higher order literacy and numeracy skills as well as a lack of reasoning skills, the input from the TVET system will not enable them to benefit from the skills development provided by the system. Insufficient literacy and numeracy skills will adversely affect the internal efficiency of the system. The result would be wastage related to the low achievement rather than an efficient system that is

without any waste of student-years, without dropouts or repeaters and which efficiently allocates and utilizes resources (Abdulkareem, Fasasi et Akinnubi, 2011. p. 28).

In Tanzania, TVET institutions have been offering programs that are supposed to provide relevant knowledge, practical skills and attitudes to enable students to secure employment and to support the social and economic development of the country. However, there is a gap between the skills formed from TVET and the skills demanded from firms and other employers. National policy, which is intended to ensure that TVET curriculum is designed specifically to meet employers' needs, has the objective of reducing the current gap between the skills acquired by labour market entrants and those fitting employer's needs. This gap exists both in terms of the numbers of people entering the labour market with particular capabilities and in terms of the quality and relevance of the skills that are required. More investment in primary education is needed for students to acquire the basic skills necessary to develop "higher-order" literacy and numeracy (Abdul Kareem, Fasasi et Akinnubi, 2011) and to develop their reasoning skills at higher cognitive levels. Programs that build on this foundation in TVET institutions are also needed.

For national development, the Tanzanian economy needs a variety of vocational skills to support the different economic sectors. Understanding the skills needs of the different sectors is important. It is particularly critical to understand the role and impact of vocational training in the agricultural sector, which is one of the major productive sectors contributing to economic growth development. Although graduates in the agricultural sector should have been equipped with relevant skills in agricultural development, employers often argue that they are not able to recruit employees with the right skills. Furthermore, there is a lack of reliable data, which is one main contributor to the current limited understanding of the role of vocational training in agriculture (VETA, 2013a).

Many young people in Tanzania do not have access to formal training institutions such as Vocational Education Training (VET) and/or Technical Education Training (TET). The reasons for this include their failure to obtain the entry qualifications needed and their lack of

resources to remain enrolled and complete courses. In addition, considerable social and personal biases exist that prevent people from accessing VET and TET institutes. These institutes are generally regarded as a second best option to be taken up only after a student fails to attend secondary school (African Development Bank, 2013a, p.6).

In reality, many young people learn skills through informal routes at informal small enterprises. However, their lack of formal training limits their chances for better and more productive employment (ILO, 2010). Traditionally, training for the informal sector has been provided within the sector itself. Skills acquisition may take many forms, ranging from ad hoc and unsystematic learning on the job to more formal apprenticeships. However, in all events, the training is generally received within the context of the daily production activities of the firm or small-scale, family-run, enterprise in both the formal and informal sector (Ziderman, 2003, p.154). About half of informal sector workers have either no education or have only primary education. It is important to understand that less than five percent of these informal sector workers have post-secondary education (ADEA, 2012, p.12).

It is worth noting that in the last 40 years, the government of Tanzania has invested significantly in TVET. The major objective of the government's investment has been to use the vocational training infrastructure to build the capacities required to promote national development. Yet, despite the government's significant investment, the expected outcomes have not been realised. Some of the reasons for these disappointing results are that facilities are inadequate and that the TVET materials being used such as textbooks, workbooks and teachers' guides as well as the pedagogy itself are not relevant to the labour and development needs of the country. Imbalances persist between the supply and demand sides of the labour market. So far, TVET programmes have failed to address actual competency needs in the economy, and most programmes are of low quality and based mainly on theory rather than practical and relevant training (African Development Bank, 2012). According to Afeti and Adubra, in recent years the competency-based training (CBT) approach has been acknowledged as a quality-improvement training methodology, which may fill the gap(2012).

The most recent literature and debates surrounding the topic of vocational training for development predominantly stress the importance of vocational skills in promoting socio-economic and environmental growth. However, there is but limited focus on the specific nature of skills gaps and the extent to which these gaps may be increasing due to the rise of new production technologies in different sectors of development (World Bank Institute, 2009). The current literature (ADEEA, 2012) is often overly concerned only with developing an appropriate curriculum for generic technical skills within the traditional skills sectors. It rarely has concern for the nexus between skills relevance, employability and development in particular sub sectors, especially those where changes in technology are important.

Lack of appropriate skills development has been identified as one of the main bottlenecks in reducing the gap between labour market supply and demand: between the TVET providers and the labour market (African Development Bank, 2012). Therefore, the lack of skills development is also a bottleneck for improving employability and, thus, for improving economic growth and poverty reduction efforts in many developing countries.

In Tanzania, the government has used its major development framework, MKUKUTA (National Strategy for Growth and Reduction of Poverty II. NSGRP II, 2010), to establish skills development as part of its strategy for increasing the employability of youth, reducing income poverty and increasing productivity, factors that are all important in ensuring sustainable economic growth (MoFEA, 2010). The decision to focus on skills development is informed by increasing unemployment figures, particularly among the young people who are unemployed school leavers. The decision is also informed by the negative perceptions that such young people have towards agriculture, one of the core development sectors in Tanzania. The low level of employability of university and college graduates in agriculture is due as much to the low prestige given to working in agriculture as to the lack of requisite skills or mismatch between the skills graduates possess and the demands of the market (ILO, 2010). Moreover, information asymmetries in labour markets can send the wrong signals both to firms looking for employees and to individuals seeking employment. Although there might

be several reasons for the mismatches, when such information asymmetries exist, differences between the demand for education made by households and the demand made by firms can create a skills mismatch. The skills mismatch in labour markets can, in turn, manifest itself as (i) unemployment or underemployment of an educated labour force; (ii) a shortage of skilled labour resulting from inadequate education, and (iii) migration (Fasih, 2008, pp 37-38).

The problem of relevance is exacerbated by the fact that training providers are often uninformed about the employment trends of their graduates. The lack of information in tracking students graduating from their institutions results in providers not knowing the proportion of TVET graduates who remain unemployed because of a lack of relevant skills. This is prevalent in the agricultural sector, which is one of the major sources of Tanzanian economic growth (MoEVT and VETA, 2012).

Policymakers need to know the kind of skills provided by vocational training in Tanzania. They also need to know the relevance of these skills to employment in the agricultural sector since policy and strategy could assist in strengthening the TVET system so that it is more relevant and labour-market driven. Developing a curriculum, which has a field-based component involving the application of knowledge, is one instance of the ways that policymakers can ensure the relevance of acquired skills. For their part, skills providers who have access to this knowledge will then be able to clearly understand the measures needed to bridge the gap between training outputs and employers' needs in the agricultural sector and to improve the match between training and employment. This will facilitate economic growth by facilitating not only ordinal production (such as an agricultural commodity - paddy) but also by promoting innovation for commercial enterprises in cash crop farming by developing skills such as entrepreneurship and business and marketing skills.

1.2. Objectives

Building on the description of the context and to address the specific performance problems mentioned above, the general objective of this study is to determine relevant skills required by employers in the agricultural sector, especially in cash crop farming (paddy). The study will also analyse ways to increase the employees' ability to contribute to socio-economic development and the reduction of income-poverty in Tanzania. The main purpose of the research, therefore, is to address a number of research questions related to the skills gap in the agricultural sector – and paddy production in particular – between the supply and demand for relevant skills and competences. Although the main purpose of this study is not to seek specific policy options to rectify the problems in the TVET programmes, the clarifications that are involved in answering the research questions will inevitably provide a number of options that could be considered in future policy and strategic interventions.

1.3. Research questions

This study will analyse and examine the reality of skills provision and the opportunities to find out how skills development and employability can be improved. Increased productivity in the agriculture sector is not making a strong contribution to economic growth in Tanzania, although the country has the potential and resources to boost growth (World Bank, 2012, p.28). Agricultural investment is not sufficient to underpin growth unless it also ensures that available labour has the knowledge and skills to support more efficient production and processing of agricultural commodities. Employers and training agencies work together to enhance competences.

As the economy of Tanzania grows significantly, the demand for skilled personnel is also growing. In this context, a key issue is to identify the gaps between existing skills and those new and emerging skills that satisfy the demands of employers. In order to achieve

this objective, four research questions have been identified. These questions were developed in consultation with key stakeholders and after reviewing relevant literature. These questions are:

- 1. What are the skills required by employers in the agricultural sector, especially in relation to cash crops?**
- 2. What are the skills that TVET graduates acquire from training in TVET institutions especially in cash crop farming?**
- 3. To what extent do the skills acquired match the skills identified by employers as needed in cash crop agriculture and what are the gaps?**
- 4. What are the policy implications arising from employers' needs, trainees' skills, and the skill gaps for the development of the TVET system?**

The research uses a mixture of methods. These include (i) literature review, (ii) analysis of data from both the national labour market survey (secondary data analysis) and the case study of cash crop farming in the agricultural subsector for paddy crops in Morogoro, (iii) field visits and interviews to enhance the qualitative assessment, and (iv) knowledge gained from my own professional experience as a development professional working in TVET in Tanzania.

Thus this research uses both qualitative and quantitative methods, and takes an empirical approach towards analysing vocational training in the agriculture sector, especially cash crop farming in paddy fields. Questionnaires were used to collect first-hand information from employers and employees who have been beneficiaries of vocational training in Tanzania, especially in the cash crop farming agriculture subsector. Questionnaires were used to form employment measurements and indicators through 1) the TVET Labour Market

National Survey in Tanzania, 2) the TVET Labour Market Regional Survey in Morogoro, and 3) Field Visits and Group Meetings for qualitative assessment in Morogoro and case studies of agricultural companies.

1.4. Positioning of the Researcher

Understanding the impact of investment in TVET requires a mixture of theoretical and practical approaches. My approach has been influenced by my experience in my current post - Task Manager of the Tanzania TVET operation project from the African Development Bank—and this has shaped this research since 2012. The title of the ADB-supported project I manage is “Support to Technical Vocational Education and Training and Teacher Education”. The major aim of this project is to contribute to increased access to and improved quality of technical vocational education and training and to build capacity for secondary teacher education. When I designed the project together with the government, I realized that there was neither much in-depth analysis nor convincing data for the government to move confidently to improve the relevant TVET institutions. Curricula were neither efficient in producing relevant skills in graduates of TVET institutions nor in bridging the skills gap. This professional experience motivated me to start working on this topic in my doctoral thesis and to identify key areas and to explore this matter further.

I therefore developed the research plan to build on my professional experience and preliminary observations so that it was possible to build up a more evidence-based picture of the nature and cause of the problems in increasing the relevance and effectiveness of TVET. I drew on a range of data collection methods commonly used in social science research and these included: surveys of employers, trainers and trainees; semi structured interviews with the same groups; and focused interviews with key stakeholders. I also undertook site visits to colleges and work places to understand more about the knowledge and skills TVET was promoting. All this was done to help analyse and examine the reality of skills provision and

the opportunities in TVET. The data collected and the methods of analysis are described in more detail in chapter 4.

1.5. Chapter disposition

Chapter 1 introduces the theoretical background, problem statement and research objective. It discusses the scope and purpose of this research and also outlines the objectives and research questions addressed by this research. The objective of this study is to determine the relevant skills required by employers in the agricultural sector especially in cash crop farming (paddy), and to analyse how to increase the employees' ability to contribute to socio-economic development and the reduction of income-poverty in Tanzania.

Chapter 2 develops a historical perspective on the evolution of TVET internationally and in Africa. The chapter discusses the challenges of investment in TVET and addresses the importance of capacity development for the TVET sector to serve the immediate development needs of both the "local" community and the nation in sectors prioritised within government development plans. There is a need to develop coordinated approaches that foster the appropriate knowledge and skills within and throughout TVET education and training systems when the TVET policies and strategies are developed.

Chapter 3 discusses the overall context of the education sector in Tanzania and develops a detailed assessment of the role of TVET and its linkage with the agriculture sector. This discussion is directed towards unearthing myths and encouraging open debates on education in Tanzania on topics such as those outlining the evolution of the TVET system (what worked and what failed) as well as identifying key issues for research and gaps in the literature. It also aims to offer a better understanding of the status of vocational training graduates and their employment activities in the cash crop farming subsector in Tanzania. The focus of the research discussed here is on exploring the dynamic processes of vocational training and their impact on the development of the workforce in the agricultural sector with

a special reference made to paddy farming.

Chapter 4 discusses the research methods and data collection. This chapter reviews the research questions raised in the beginning of this thesis as a reminder. In addition, the chapter introduces the research methodology. This chapter discusses the methods of data collection that served as the main focus: 1) the TVET Labour Market National Survey in Tanzania, 2) the TVET Labour Market Regional Survey in Morogoro, and 3) Field Visits and Group Meetings for qualitative assessment in Morogoro and case studies of agricultural companies. The chapter also describes the path the author has taken to organise data sources and to arrive at the results, all of which are introduced and explained in Chapter 5.

Chapter 5 shows the results as well as the analysis of the TVET labour market survey in Tanzania and the regional survey in Morogoro. Moreover, it demonstrates the result of the qualitative interviews, field visit and case studies, all of which are supplemental to national and regional labour market surveys. The chapter addresses the research questions raised in this research. This involves checking whether the TVET system in Tanzania has adequate and empirically generated information.

Chapter 6 discusses the findings of this research to show the implications of the results for TVET and education development in Tanzania. The chapter outlines and expounds on what is possible and what is not possible to conclude from the available data, and it refers back to the limitations of this study.

Chapter 6 also summarises the conclusions of this research as well as its implications, leading to some recommendations that could improve the quantity and quality of the capabilities of the TVET-based human capital entering the labour market in Tanzania. Moreover, it drew attention to contribution of thesis to new knowledge as well. It further points out the limitations of current research, makes suggestions for future research and draws lessons for Tanzania's external assistance and for the African Development Bank.

CHAPTER 2: A HISTORICAL PERSPECTIVE ON THE EVOLUTION OF TVET

Introduction to this chapter

Policymakers increasingly recognise the critical role that education plays in reducing poverty, increasing productivity, enhancing competitiveness and sustaining economic growth. Investment in TVET is an essential part of development, which has an impact on all aspects of economic, social and political life (UNIDO, 2010, p.4). In particular, it is widely believed that investment and increased participation in TVET can transform production and productivity by enhancing the capacity to utilize critical thinking skills, problem solving, calculated risk taking and experimentation skills, all of which are needed to accelerate economic growth and development (World Bank, 2009). TVET investment is particularly important in Africa where enrolment growth in tertiary institutions has outpaced financing capabilities, which may be generating educated unemployment amongst those without the knowledge and skills that have utility, and which may hamper development if more demand-led programmes are not available (African Development Bank, 2012).

This chapter develops a historical perspective on the evolution of TVET internationally and in Africa. It discusses the challenges of investment in TVET and addresses the importance of capacity development for the TVET sector to serve the immediate development needs of both the “local” community and more generally the nation and international markets in sectors prioritised within government development plans. There is a need to develop coordinated approaches that foster the appropriate knowledge and skills within and throughout TVET education and training systems. TVET has to be located in context, and in space and time, and make use of culturally based knowledge and experience.

2.1. TVET in international perspective

2.1.1. Historical perspectives of attempts to make TVET more relevant to the labour market

Two of the greatest challenges facing developing countries, particularly as they attempt to emerge from the recent financial and economic crisis, are i) their capacity to compete economically within an interconnected global knowledge economy and ii) their ability to make consistent progress in achieving the Post-Millennium Development Goals (MDGs) and EFA goals, which include the ambition to ensure that all youth and young adults have adequate access to skill-based education and training. The importance of education and human capital in promoting the performance and growth of economies is not generally contested. Education is an essential tool for human development and the eradication of poverty- an investment not only in individual development but also in social and economic development (Smith, 2006, p.29).

One strand of the economics of education was developed by Mark Blaug (1972) and states that the accumulation of knowledge and skills lies at the heart of development. Moreover, other neoclassical economists such as Theodore Schultz (1902-1998) and Gary Becker (1930-2014) support the idea of human capital theory, holding the view that education and health care are the keys to improving human capital and ultimately increasing the economic outputs of the nation (Becker, 1993). Jac Fitz-enz quoted Schultz's description of human capital as follows: "Consider all human abilities to be either innate or acquired. Every person is born with a particular set of genes, which determines his innate ability. Attributes of acquired population quality, which are valuable and can be augmented by appropriate investment, will be treated as human capital."

Accordingly, investment in education was seen as what is now called a key “driver of change”. Echoing the well-known analytic findings of Denison (Denison, 1962) and Schultz (Schultz, 1961), Lewin (2008) wrote, the “residual”, that is, that part of growth not explained

by changes in land, labour and capital, is actually tangible and represents a return on investment in knowledge and skills. Both Denison and Schultz analysed that accumulation of one's human capital on education and training investment largely affects the growth of an individual's wage, a firm's productivity and a nation's economy (Denison, 1962 and Schultz, 1961).

What can really have an impact on a countries' economic and social transformation is the way in which the application of skills and specific Technical and Vocational Education and Training (TVET) can be used to create skilled and innovative people, support new job creation and lead to the empowerment of individuals and communities.

Such application will lead to transformational human capital development within the global environment (GEMS Education Solutions, 2013, p. 2). Juma (2009, p.1) also believes that stimulating Africa's economic growth will require each country "to create the mechanisms and build the human resources needed to harness the knowledge and put it to effective use". Indeed, achieving development goals will necessitate that countries build a systemic capacity, not only restricted to TVET, to design and implement educational development that enhances skills and capabilities. In the context of increasing competition in global and regional markets, one critical factor for developing competitiveness in the productive sector is a country's capacity for development within TVET and in providing the skills, competencies and attitudes required to promote innovation in the labour market.

2.1.2.The impact of global institutions' investments in the 60s, 70s, 80s and 90s in TVET and the switch to basic education

2.1.2.1. Demand for TVET in the 60s

King and Palmer (2010) argue that development agencies, multilateral and bilateral organizations have all been very influential in skills development in many countries during

the pre-colonial and post-colonial periods. These bodies continue to play a huge role in TVET, including developing the skills for poverty eradication and the skills for security (pp.24-25). In early 1960s (the era of political independence for many African countries) technical and vocational schools, institutes and universities were perceived as vehicles of technical knowledge transfer. ‘Trade schools’ were developed to offer industrial and agricultural skills training (p.26).

2.1.2.2. Less investment for TVET in the 70s-90s

In the 1970s and 1980s, much of the support provided by international organisations, especially the World Bank tertiary education projects, was piecemeal and with a narrow focus on the establishment of new programs or discrete quality improvement measures for existing teaching and research activities (World Bank, 2002, pp. xxiv-xxv). The Bank was hardly able to offer the sustainable comprehensive support for tertiary education required for successful reform and effective institution building (World Bank, 2002, p. xxv).

By 1990 confidence in investments in TVET was ebbing away as more than 20 years of support on a large scale appeared to have made little difference to African economic growth. Too many programmes failed to demonstrate that their graduates were employable, that they had the skills that were in demand, and that failures on the demand side from students could be overcome. As a result of the failure of investing in TVET during the 1970s and 1980s, within the World Bank a more rigorous economic justification became required for TVET programs, and the objects of assistance changed from costly heavy equipment and buildings to relatively inexpensive investments in policy and institutional development (Johanson and Adams, 2004, p.22), as shown in the figure below:

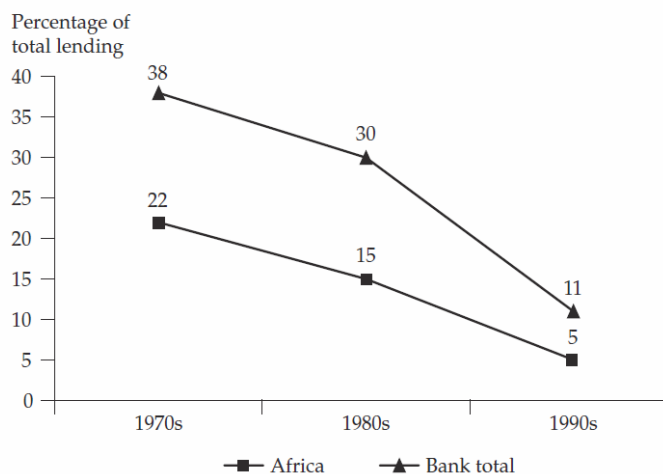


Figure 1: TVET Lending as a Percentage of Total Education Lending (Source: Johanson, 2002)

In 1980s and 1990s there was significant change in TVET. TVET and the model of its provision were highly castigated as overly driven by supply rather than labour market demand, and dependent on state institutions insensitive to changes in technologies of production. At the same time structural adjustment programs affected many developing countries and significantly reduced government expenditure on social services including education and training. This reduced education access, especially for the poor (King and Palmer, 2010, pp. 33-34).

In 1990, the Jomtien Declaration went beyond the idea of Universal Primary Education (UPE) by using the term “basic education”, comprising that form of education that serves as a foundation for the improvement of key aspects of life such as birth-rates, infant mortality, agricultural productivity, life-expectancy, housing quality, availability of clean water, employment opportunities and political participation.

Together with the Jomtien Declaration in 1990, the World Bank and other organisations started investing in basic education because this was seen as an essential tool for breaking the convergence of disadvantage (Hughes, 2005, p. 255). They included a skill-

based goal in the education-for-all goals (EFA) but not specifically a TVET goal because of the disillusionment with previous experience by the late 1980s. The focus shifted towards a rights-based approach, which emphasised the need of every child to have basic competencies, rather than investment in more specific knowledge and skills related to livelihoods and jobs. Since 1990, the targeted actions of a number of countries and their development partners have helped reduce by half the number of out-of-school children around the world by providing basic education to increase access. Still, 61 million children today are not in school (World Bank, 2013, p.1) – and there is abundant evidence that learning outcomes in many developing countries are alarmingly low. According to Matsumura (2000),

“Basic Education denotes the minimum skills and knowledge needed in order to be able to make a full contribution to one’s local environment and to be in control of one’s life. In an increasingly interdependent world, the contents, and therefore the very notion of the ‘quality’ of basic education, are evolving. It can no longer be reduced to learning reading, writing and arithmetic. It must also teach individuals to be, to do, to learn and to live together.”

Also, Mingat and Tan (1988) found that labour market growth was particularly high in cases where a country’s educational system was well-developed, especially the basic education aspect of the system.

Work on the “Asian miracle” in the World Bank also led to a more nuanced understanding of the importance of the kind of TVET which was relevant and close to employers’ needs and which needed to be more demand driven. This work also highlighted the importance of skill-based training in so-called modernizing environments rather than in environments where general educational levels were very low and the economic base unresponsive to high levels of knowledge and skill in the short term (World Bank, 1993). For instance, “Asian Miracle” studies showed that the Human Capital development policy, which strengthened the limited public funding of post-secondary education, focused on technical skills, particularly in vocationally and technologically sophisticated disciplines, resulting in a

broad, technically inclined human capital base well-suited to rapid economic development (World Bank, 1993, p.15). TVET could complement and accelerate growth providing modernising conditions existed to make use of the benefits of increased capabilities in the workforce.

While traditional TVET fell out of favour in the 1990s, investment continued in extension services directed towards the agricultural sector. These were seen to support increased productivity resulting from increased mechanisation, commercial fertilizers, new hybrid seeds and other technologies. Providing knowledge and skills through extension programmes appeared to be an effective way of demonstrating improved cultivation practices to villagers (National Institute of Food and Agriculture, 2014). Hence, the pace of change in the organisation, functions, strategies and approaches of agricultural extension has been accelerating (Gwyn, and Garforth, 1997), leading to renewed interest in TVET linked to extension and field-based curricula. Hence, an internal review of the implementation experience with tertiary education projects undertaken in 1992 and an assessment of recent and on-going interventions in this subsector have offered critical insights into more productive ways of supporting TVET reform and its development.

2.1.2.3. Historical Lessons for TVET reform

There are a few vital lessons emerging from past and current TVET projects. These include: 1) comprehensive reform can be more effective than piecemeal approaches, 2) attention to the political and economic aspects of reform is vital, 3) reliance on positive incentives to promote change can be pivotal. Examples of these projects included, inter alia, Brazil's Technician Training Project, Jordan's Training and Employment Support Project (TEP), Ghana's Vocational Skills and Informal Sector Support Project (World Bank, 2002, p. xxv).

2.1.3. Renewed emphasis on TVET with development after 2000

2.1.3.1. Revival of interest in TVET

The 1999-2009 decade has seen a revival for TVET. With much focus on the need for high quality skills for international competitiveness and in order to foster domestic investment as well as to increase productivity; the role of TVET has been re-emphasized (King and Palmer, 2010, p.36). This is despite the fact that TVET was not incorporated explicitly in the MDGs (37).

King and Palmer (2010) also note that the most crucial lesson for TVET planners is to recognize and appreciate that history and context matter a lot. Therefore, planners need to consider differences in history, culture and tradition of TVET before recommending policy reforms and initiatives. Additionally, TVET planners in charge of development of policies and plans at regional or national level are challenged to understand the local meaning or understanding of 'skills,' 'competency,' and 'technical knowledge' (King and Palmer, 2010, pp. 40-41).

McGrath (2012b) also observes that the current decade has seen critical revival of the VET debate. Although VET has received a lot attention in policy and academic development in OECD countries; there is only limited research and theoretical exploration in the South (p. 623).

2.1.3.2. Skills Development for Employability in TVET

At the 2003 UNESCO General Conference, there was a shift in dealing with Education for All (EFA) from issues of general literacy and UPE to specific aspects of EFA, post-primary education such as TVET, skills development for employability, effective citizenship and functional literacy for the world of work (UNEVOC, 2003). With work becoming more

technologically based and more diverse, thus reducing the opportunities for unskilled work, TVET became a key subject for educational investments (Hughes, 2005, p.255). Moreover, the recent post-2015 development agenda, as outlined in the Sustainable Development Goals (SDGs), supports improvement in the quality of education and especially strengthens the importance of adequate TVET systems to provide young people with the skills to seize economic opportunities and find decent jobs (UNESCO and UNICEF, 2013 p.9). Specifically, SDG 4 has three targets related to TVET set to be achieved by 2030 namely: 1) to ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university, 2) to substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship, and 3) to eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, and children in vulnerable situations. Moreover, SDGs strengthen the skills development for farmers to help them to innovate and adapt to changing agricultural markets by strengthening their participation in decision-making processes, placing importance on helping small producers voice their concerns and interests and increasing their negotiating power to influence policy making processes (International Labour Organization, 2014, p.6). This clearly shows that there is a strong shift towards TVET in support of sustainable development.

2.1.3.3. New interest in TVET policy as part of the post 2015 agenda after lack of development under the MDGs

McGrath (2012b) also notes that academic orthodoxy in the international education and development discourse has trivialized the contribution of VET. The failure of MDGs to capture VET has led to a perception of VET as insignificant for development (p. 623). Given the new interest in VET policies for development and the new visions for education development of the Sustainable Development Goals (SDGs), the need to seriously consider and incorporate VET as part of post-2015 agenda was critical (p. 624).

Before determining the type of policies whose design and implementation will promote TVET within education systems, a refinement in the traditional perception of policy implementation is needed to determine the types of implementation valued as important in the context of developing countries. For instance, while school science in most countries replicates the experiments of scientific inventors, scientific transfer may require a “secure understanding of basic concepts and their application, systemic approaches, incremental improvement of mature technologies and the development of diagnostic and maintenance skills, rather than those of curiosity-driven creative exploration” (Lewin, 2000).

2.1.3.4. Changes in the employability rate for TVET graduates

In fact, generally, the employability of people with vocational training is lower compared to people with academic education (Hanushek, Woessmann, & Zhang, 2011, p.13). The persons completing general education are more likely to be employed compared to persons completing vocational education by the age of 50. Hanushek et al (2011) also assert that individuals who have fully completed secondary education tend to have identical employment with those who have completed vocational training. Also, it has been stressed that 37% of people with general education are likely to have had a career training compared to 30% of people with VET (Hanushek, Woessmann, & Zhang, 2011, p.24). However, it should be noted that although the employment rate of those with vocational education is low, young people finishing vocational education have a higher employability rate (Hanushek, Woessmann, & Zhang, 2011, p.19).

Hanushek et al also argue that the current policy debate about education is myopic. VET has been promoted so as to enhance the transition from school to work. However, they note that VET can result in disadvantages in the future since a worker with vocational education has a weaker adaptability to technological and structural changes. Additionally, workers with vocational education, especially those in developing countries, have limited early-retirement benefits (Hanushek, Woessmann, & Zhang, 2011, p.17).

Moreover, it is crucial to encourage the larger firms to hire TVET graduates. According to Kahyarara, G., and Teal, F (2008), who seek to understand why there is a higher preference for academic education compared to VET, high levels of academic education have far higher returns compared to vocational education (pp. 2236-2237). The authors also observed that the returns are also determined by the size of the firms: the larger the firms, the higher the returns. There is also a tendency of low wage firms to employ people with just the minimum vocational or technical education (p.2234). Kahyarara et al also found out that the firms which offer on-the-job training pay more (pp.2234-2235), perhaps indicating that this form of provision is more effective than college-based TVET.

2.1.3.5. Importance of ensuring the quality of TVET –a demand-driven system with production of relevant skills

King and Palmer have also evaluated the relationship between skills and economic growth (p.62, 2010). They conclude that the mere provision of TVET will not avert unemployment or reduce poverty, but ensuring high quality, relevant, and value-added TVET will help transform the economy and society of a given country.

Arguably much TVET in developing countries is supply driven and is mainly dictated by its providers (suppliers). King and Palmer call for demand-driven approaches where the content of TVET is determined by the demands of the employers. It is believed that this will increase the employability rate (pp.70-71, 2010). King and Palmer also recommend reforms to encourage the portability of relevant skills especially in developing countries (p.78, 2010). Additionally, they call for more budget allocation for TVET which is usually financially neglected (p.81, 2010). They also suggest potential resource-mobilization schemes, such as training levies and taxes on company payrolls, cost-sharing with users and institutional income-generation activities.

2.2. Perspectives on TVET in Africa

2.2.1. Importance of TVET in Africa

Over the last decade in Africa, TVET has been recognised as one of the main drivers of human capital development and economic growth (World Bank, 2009) alongside enhanced basic education that generates knowledge and skills more broadly. Developing employable skills for youth is regarded as a crucial pre-requisite for enabling them to gain profitable employment and sustainable livelihoods. Although African economies are growing, unemployment levels are not declining and this implies that something must be done to cut the levels of unemployment.

2.2.1.1. Youth and unemployment in Africa

In fact, youth unemployment is a major concern for governments in Africa. An estimated 95 million young men and women out of a total youth population of about 200 million in sub-Saharan Africa are illiterate and are either unemployed or in low-paid jobs (Garcia and Fares, 2008). Over 20% of young people are unemployed, and one main contributing factor to this is that they lack the relevant skills to gain productive employment (AEO, 2010). Every year, between 7 to 10 million young Africans enter the labour market with inadequate skills, which leads to low productivity, poverty-level incomes and high unemployment levels (AfDB, 2013). For instance, in Kenya, around 800,000 young people enter the job market every year (Adam, 2011), yet most of them are not well educated or trained. In the case of Tanzania, unemployment is becoming a concern. Nearly 2.4 million people are unemployed and most of them are young (African Economic Outlook, 2012, p.2). This not only indicates the inefficiency of Africa's education and training systems, but it also strengthens the concern for national security. Uneducated and unemployed youth tend to be recruited into armed movements and criminal gangs as well as engage in illicit activities such as drug trafficking and even cyber-crime.

Hence, the quality and relevance of training as well as employability are crucial issues in Africa and may be a reason for the country's persistently high levels of unemployment (World Bank, 2009). According to the International Monetary Fund (IMF, 2012), high GDP growth rates on the continent have been driven largely by the agriculture, mining and oil sectors. These sectors require specialized technical skills that education and training systems in many African countries are unable to supply. Yet they are needed if the added value is to move directly up the supply chain. In fact, there has been a rapid expansion of enrolment in primary and lower-secondary education in most countries, fuelled in part by the success of the Education for All (EFA) process, without a corresponding expansion of opportunities for upper secondary school education or a similar increase in participation in TVET.

2.2.1.2. Importance of “high order literacy and numeracy” as a foundation of TVET

EFA has resulted in a large youth population who do not have much of a chance to continue their education beyond primary or lower secondary school and who lack the skill sets attractive to employers. They may also lack the capabilities necessary to be successfully self-employed. Africa is the only region that so sharply experiences the need to balance the trade-off between achieving skills development with TVET and providing universal basic education (Johanson and Adams 2004). This shows that the importance of providing basic education, which produces “high order literacy and numeracy,” to lay the foundation for skill development in TVET. This foundation will make youth more efficient in becoming skilled labourers, labourers with skills that are efficient and relevant in responding to the needs of their labour market. Education and training systems, therefore, will need to respond to the demand for TVET opportunities. Of course, they also need to respond to economic concerns linked to youth employability and the dominance of the informal economy in most countries (World Bank, 2008).

2.2.1.3. Increase the capacity of TVET for more productivity and employability in Agriculture sector

The capacity of training institutions to provide skilled workers that meet the needs of businesses is a major challenge which will require employers to be actively involved in designing and delivering the training curriculum. The relevance of training programs and, hence, the employability of graduates of the training system depends on there being a strong symbiotic relationship between training providers and the key players and actors in the labour market (World Bank, 2009).

African countries have been focusing on strengthening and developing the policies and strategies influencing their TVET institutions, skills development programs and training programmes. This is crucial, if Africa wants to equip its youth with employable skills. TVET should not only increase productivity but also enhance and diversify employability in the agricultural sector. The agricultural sector provides employment for more than 65% of the population in many African countries, a figure that represents about 500 million people, mainly rural dwellers (Beaujeu et al. 2011). Much of this (self) employment is small-scale and technologically backward with low productivity. The sector would, therefore, benefit greatly from there being high levels of knowledge and skills in the general population as well as there being a portion of people who specifically acquire relevant TVET.

2.2.1.4. What is the most efficient TVET policy?

McGrath (2012a) laments that there is little or no evidence that indicate that the current policy toolkit works. He argues the current international policy toolkit principles are based on globalization discourse and do not reflect the national contexts. The assumption is that most countries in which toolkits are applied do not have enough national capacity though the reality

of many developing countries may be very different from the developed countries where many TVET models originate. Therefore, the toolkit may only work in theory or in the country of origin (pp. 619-620). He argues that policy toolkits are compromised by numerous concerns about policy travel that fail to capture the local realities of labour markets, production systems and social context. McGrath (2012a) sees the need to move beyond a narrow theoretical orthodoxy to creative theorization. He recommends professionals in the field of sociology should be part of the policy process since they can locate and understand how VET policies are developed, interpreted and resisted. He also notes that it is very important to understand the VET debate during the post-colonial era as well as within historical and developmental contexts (p.620) which is especially applicable in Africa. Political economy approaches are valuable and can address some of the limitations of VET policy which is simply economic. This helps in understanding how social, political and economic traits have hindered or enhanced skills systems in a given country (McGrath, 2012a, p.620). With this in mind chapter 3 elaborates on the history of TVET in Tanzania in order to support more in-depth analysis of TVET policy implementation.

2.2.1.5. Importance of evidence based practice for TVET

McGrath (2012a) also suggest that “evidence based practice is a discursive move aimed at overcoming opposition, building upon their reflections on the shallowness of evidence on which such best practices are usually built” (p.621). McGrath (2012a) points out that there are serious epistemological and ideological issues with the evidential return. He recognizes the lack of economists’ commitment to VET work which has resulted in VET being side-lined in almost every major development agenda (pp. 621-622), especially in Africa.

2.2.2. The issues in Africa

2.2.2.1. Lack of budget contribution

TVET in most African countries suffers from inadequate financing, poor management, a shortage of TVET professionals, issues of assessment, inadequate technology and inefficient organisation of TVET institutions and training (AfDB, 2013). Investment in the TVET sector is very low in most African countries compared with investment in other education sectors such as basic and secondary education. Governments throughout Africa are engaged in the provision and financing of skills development in many forms and varieties of technical and vocational training programs (AfDB, 2013), but presumably on a relatively small scale and without much coordination. The challenge is in making such programs responsive to market needs and efficient in the use of available resources. The TVET sector in Africa has been struggling to show its value addition to the national education system, as made obvious by increased investment budget allocation (AfDB, 2013). In addition, it has become difficult for Tanzania to overcome TVET problems because of the lack of quality assurance of TVET, to which national attention has not been focused so far. This is an issue to which the research will return after the exploration of some of the consequences of poor quality assurance.

The post school education and training system faces several other constraints, which prevent them from playing their expected key role in skills development. These constraints arise from rapid enrolment growth in institutions, which has outpaced financing capabilities. In 2010, Global Monitoring Report (GMR) showed that this has led to a significant deterioration of the academic staff to students ratio in Africa which has resulted in a number of undesirable outcomes. First, it has resulted in severe crises in staffing (Kelleher, 2008, p.3), a brain drain, poor working conditions and insufficient output from post-graduate programs; second, it has led to students' poor performance on international assessments of mathematics

and science (TIMSS, 2003); third, there have been low numbers of graduates in science and technology (UNESCO, 2009); fourth, there has been a very small share of world researchers from Africa (UNESCO, 2009), and fifth, there has been a stagnant formal employment sector, a large and growing informal sector, high population growth and an increasing number of poorly educated and unskilled job-seeking school leavers (UNESCO, 2010).

The shortage of trained TVET professionals, policy planners and employment sector analysts at the national and institutional levels negatively affects the entire skills development system (VETA, 2010, p27). TVET programs lack flexibility, relevance and responsiveness in relating to the formal sector due to the inability of training providers, government ministries and agencies to effectively match training to labour market demands and to the needs of local entrepreneurs and small businesses (VETA, 2010, p.27). Moreover, the management of public TVET institutions is highly centralised. Therefore, the institutions have limited decision-making autonomy in many areas of their operations such as staff recruitment, staff discipline, resource mobilisation and utilisation and even admission requirements (Arusha Technical College, 2012).

2.2.2.2. Inadequate curriculum and TVET administration

In most African countries, the Ministry of Education or one of its agencies has the responsibility of implementing the TVET delivery and management structure, including teacher postings, transfers, promotions and salaries. Public technical and vocational training schools enjoy very limited academic autonomy. In most countries, the TVET curriculum is centralised and nationally prescribed. Often, the teachers lack the expertise needed to design new curricula or to develop and teach, on their own initiative, courses that respond directly to market demand. Heads of public institutions lack the authority to hire and fire, effectively reducing their ability to assume firm management control over their institutions. The lack of institutional autonomy further contributes to the mismatch of skills supply to demand (Arusha Technical College, 2012, p.25). For graduates to acquire effective work-related skills, they

must obtain a sound basic education. Vocational training is important in reducing skills gaps if it builds upon a solid basic education foundation. Moreover, Foster (1965) suggests that schools do, in fact, substantially influence attitudes towards employment and self-employment and that this is connected in some way to the vocational options in schools. However, this is only true if TVET curriculum and pedagogy have been improved, such that the design curricula and training packages that respond to market needs and that are field based will be practically oriented and applied.

2.2.2.3. Fundamental challenges of TVET in Africa –importance of human development

McGrath (2012b) also argues that the current approach to VET in Africa is based on an out-dated model of development and that the academic critique of VET in developing countries is archaic (p. 624). Even though VET has gained recognition as a policy tool, most development economists are less than interested in it (p.625). He also notes that VET policy reforms continue to be based on public providers despite the fact that market based approaches are often regarded as the most appropriate (p.625).

Recognizing that most of the formal VET is provided by formal institutions, attempts have been made to transform public provision so as to increase efficiency and autonomous operation at public provider institutions. This has led to development of a VET toolkit globally with five key principles: systemic governance reforms; qualification frameworks; quality assurance systems; new funding mechanisms; and, managed autonomy for public providers (McGrath, 2012b, p.625).

McGrath (2012b) argues that the assumption of employability as key goal of VET is too individualistic and short term; rather the goal/s should focus on lifelong processes. Despite the influence of neo-liberalism, VET is mainly delivered by public institutions and thus the complexity of forms of delivery may be overlooked. He critiques the current VET for being centered on formal learning while disregarding the importance of learning. He argues the

current VET is unsustainable since it does not incorporate current global challenges such as climate change and environmental degradation which require “skills for green jobs.” There is no evidence that reforms have had any positive impact on economic competitiveness or social inclusion (McGrath, 2012b, p.625). Moreover, McGrath (2012b) believes that the current VET approach is based on “productivism” which according him is inadequate to address the fundamental challenges facing VET due to its narrow view of development, work and humanity. He proposes a new imagination of future VET that mirrors the rise of alternative development theories (p.629). He also notes that human rights and human development approaches have played a noble role in re-affirming the relevance of educational access. He argues that the human development discipline has the potential for advancing humanistic accounts that are far less reductive and universal compared to the productive account (p. 630).

2.2.2.4. Absence of modern teaching and learning facilities

A further issue is that the absence of modern teaching and learning facilities, as well as training equipment, leads to a generally low quality of TVET graduates. The low quality of graduates is often blamed on inadequate and obsolete training equipment used by both teachers and principals, which majorly precludes the delivery of quality training. TVET teachers need to be both pedagogically and technologically qualified (AfDB, 2013). But equally important is that, sometimes, the technology placed in TVET institutions in Africa may be a long way from the techniques used in actual production and can, therefore, lead to the acquisition of skills that cannot be utilised when using production technologies actually employed by small scale agriculturalists.

2.2.2.5. Lack of teacher incentives and teacher training for TVET and the CBT approach

However, the system does not offer any incentive or reward for teachers to upgrade their practical skills since teacher recruitment and promotions are based on academic

qualifications and length of service rather than on the strength of professional and practical skills in Tanzania (AfDB, 2013). Generally, in Africa, this lack of investment in teachers and trainers of TVET can eventually lead to a low quality of learning outcomes (AfDB, 2013). Teaching in most TVET institutions has, therefore, become based more on the transmission of theory than on the transmission of practical and relevant skills (VETA, 2012a). For instance, in Uganda, it is estimated that 90% of teachers in the private TVET sector have not had any pedagogical training. Also, in a recent survey in Kenya, about two-thirds of TVET teachers confessed that they were more comfortable teaching theory than practice (Ferej et al, 2011). Hence, if they have not had pedagogic training, they may not be very effective. If they do not possess practical skills, it's likely that they will, for this reason, emphasise theory, which they probably do not understand very deeply.

In addition, the competency based training (CBT) approach, which is based on how much students are able to understand and to do instead of how long they study and how many credits they earn, has been acknowledged as a quality-improvement training methodology. Many countries in Africa have started piloting the CBT methodology in their TVET training systems (AfDB, 2013). The key challenges associated with the implementation of the CBT methodology include the development and registration of occupational standards and qualifications, the accreditation of TVET providers, as well as issues of quality and assessment and system verification to determine the overall performance of the TVET system. The capacity of TVET teachers and professionals to deliver training in the CBT mode is also considered a major challenge in Africa. The skills assessment and validation system is theory-dominated, and the integration of different learning pathways within the TVET systems of Africa is limited (AfDB, 2013).

2.2.2.6. International Comparisons

Some selected comparisons with other African countries are relevant. Comparing and contrasting TVET in Rwanda and Tanzania, in Zimbabwe, in Mozambique and in Ghana, illustrates some practical successes and failures.

-Rwanda and Tanzania-

Rwanda and Tanzania are ranked amongst poorest counties in the world and have both embarked upon structural adjustment reforms to their economy since the 1980s. Agriculture is the backbone of their economies. (Tikly et al, 2003, p.2). In both Rwanda and Tanzania VET education is characterized by low enrolment and lack of quality, coherence and relevance (Tikly et al, 2003, p 31). The research recommends the adoption of a “skills formation” approach, which takes into account economic, political and cultural aspects rather than mere acquisition of skills as a “technical issue” (Tikly et al, 2003, pp.5-7).

Tikly explains that the teaching of crucial traditional skills and values in both countries has been threatened by the rapid spread of globalization. These skills and values were passed from one generation to another via story narration, poetry, dance and songs. This oral transmission of knowledge and information was first disrupted during colonization and now is being endangered by globalization. The migration of people from outside, bringing with them different cultures and values, leads to the erosion of some values, practices and knowledge (2003, pp. 27-28).

Today, religious organizations and churches are crucial providers of education and skill training in both countries. It also important to note that universal primary education is yet to be achieved in either country. Furthermore, there is limited access to general, technical and vocational secondary education. Additionally, the proportion of students enrolled in secondary education is still low. Although tertiary education was largely expanded after independence in both countries it has received less priority since the 1980s (Tikly et al, 2003,

pp.28-29). In the case of Rwanda, the situation was worsened by the genocide in 1994 that set everything back at least a generation.

In Rwanda, VET is provided by several ministries but there is no agency with overall authority. Secondary education is divided between academic, teaching training and technical/vocational streams (Tikly et al, 2003, pp.34-35). In Tanzania, VETA is mandated with the coordination of VET offered by several ministries (Tikly et al, 2003, p. 35). The enrolment rate in VET training centers is very low due to concerns about the relevance and quality of the education.

-Zimbabwe-

In Zimbabwe, rapidly increasing numbers of school leavers that did not match the yearly availability of jobs in Zimbabwe meant that many graduates remained unemployed. The Government of Zimbabwe introduced a new educational strategy whose overall objective was to "transform" the Secondary school curriculum from its allegedly academic orientation to one that has a more technical and vocational bias (Bennell and Nyankonda, 2012). This, according to the government in 1986, "was to enable children to acquire skills that were not only "practical" and encourage self-employment but are also recognised in the world of work (Bennell and Nyankonda, 1992, p. 2). This vocationalisation of the school curriculum attracted a lot of doubts and skeptics pointed out that empirical evidence from numerous developing countries showed unambiguously that school-based vocationalisation policies had not attained the set goals (Bennell and Nyankonda, 1992, p. 3). In addition, hard empirical data, which could be used to assess the potential effectiveness of vocationalisation in the country, was not available (Bennell and Nyankonda, 1992, p.5). Bennell and Nyankonda further point out that their surveys show that Zimbabwe's only fully fledged secondary technical school was neither effective nor efficient in training a core group of artisans during the 1980s. Therefore, the vocationalisation of bigger parts of the curriculum by introducing formal courses would likely have been a costly failure. This is because introducing vocationalisation into an already crowded curriculum and timetable, recruiting and retaining qualified instructors, and

acquiring the basic equipment and materials would face enormous problems (Bennell and Nyankonda, 1992, p.13).

-Ghana-

In Ghana, King and Martin (2002) found out that students in the vocational and technical track have much stronger preference (46%) for self-employment (2002, p.19). The career aspirations also differed with stream; for instance, in the agricultural stream students selected these diverse careers as their first choice; agricultural economist; agricultural scientist; agricultural engineer; horticulturalist; landscape architect; soil scientist; veterinary officer; landscape architect; livestock farmer; poultry, vegetable and fruit specialists; large scale animal and livestock farmer; and large scale fruit farmer (King & Martin, 2002., p.19).

In a comparison of idealistic career options and realistic expectations, although 30% of students selected self-employment as their first choice of work only 14% end up self-employed (King & Martin, 2002, p.19). And even this 14% is partly comprised of students who aspired to other employment. King and Martin observed that there is a mismatch between aspirations and expectations, and noted that it is greatest for students aspiring to be self-employed (King & Martin, 2002. p.20). This is probably because self-employment requires capital, experience and some connections.

-Mozambique-

Billetoft (2005) presents the findings of a recent study on the cost effectiveness, internal efficiency and cost structure of technical and vocational education training (TVE) in Mozambique. The study focused particularly on understanding the labour market outcomes of investment in TVE and found, contrary to many expectations, a high labour-market absorption of graduates (along with a large number of graduates continuing on to higher levels). The Billetoft (2005) study finds a small percentage of the graduates that they traced were unemployed. They credited this distinct experience in Mozambique—‘positively different from that of most sub-Saharan countries’—firstly, to the recent growth of

Mozambique's economy and, secondly, to the narrowness of Mozambique's educational pyramid which allows only a small percentage of students to enter secondary school.

Compared to other Africa countries, Mozambique has created separate TVE schools that run parallel to the purely academic secondary stream in a dual system. TVE in Mozambique comprises three levels—elementary, basic and intermediate— enrolling Grade 5 completers, Grade 7 completers and Grade 10 completers respectively and all offer courses of between three and four years duration. Nevertheless, taken together, all of the TVE institutions run by the Ministry of Education only provide educational opportunities for 1% of Mozambique's youth aged between 15 and 20. Public general education is only available for another 5 or 6% of this age group, making for an extremely narrow educational pyramid, despite the limited involvement of other ministries and industry in TVE provision. Billetoft finds that many students appear to enter TVE as a second choice while waiting to enter the general education system, with the result that they have low motivation. Large class-sizes and the 'limited pedagogical competence' of teachers contribute to problems of low internal efficiency. However, 'the fact that many employers find the competencies of the graduates acceptable' does bode well for the relevance of TVE, despite acknowledgements that this too could be improved. Addressing problems, such as weak management capacity, centralistic planning routines and the lack of equipment and materials, would allow more students to take advantage of TVE's positive labour market outcomes in Mozambique.

2.2.2.7. Importance to capture local context for effective TVET policy implication

McGrath (2011) explores whether the renewed focus on VET in Africa is doomed to fail or indeed whether there are some possibilities of new approaches to overwrite the critiqued research orthodoxy. He notes the limited amount of relevant literature feeding into VET in Africa (p.35). As a result he advocates a new wave of VET policy reforms in Africa (p.36).

McGrath highlights the dangers of “travelling” policies taken from advanced countries into Africa: they are more likely to fail since they do not capture the local contexts (p.36).

In his summary of the history of VET in Africa, McGrath observes that the education systems have been hugely influenced by colonial systems (McGrath, 2011, p.35). By borrowing from literature, he noted that missionaries and many pan-Africans believed that academic education was crucial for knowledge generation and this led to the establishment of industrial schools. Therefore as the policies for academic education grew exponentially during the pre- and post-independence eras, those of VET were largely ignored (McGrath, 2011, p.37). King and Palmer (2010) indeed highlighted that Foster’s arguments about the vocational school fallacy of education were ignored or rejected in 1960s. It should be noted that although VET was largely ignored, some governments and donor agencies continued to support it. Nevertheless, the financial support to the sector decreased drastically (McGrath, 2011, p.38).

The focus on EFA targets has renewed the interest of many African governments in thinking critically and evaluating the importance of VET. This was accelerated by UNESCO after the proposal was passed to make VET one of thematic priorities of education. However, McGrath argues that even with the new focus and interest, the revisiting of VET is likely to fail if the current critiques about it are not fully addressed (McGrath, 2011, p.38). There is a huge gap between policy and practice in VET. A common assumption is that successful VET policies in one country will yield the same result in another country. International and national VET policies are usually based on a toolkit whose effectiveness and relevance has been seriously questioned (McGrath, & Lugg, 2012, p.696).

McGrath laments that many policy makers and implementers subscribe to from “the vocational school fallacy” and conclude that academic schooling is always a more rational choice than vocation schooling. This is not necessarily true and begs the question of why it should be if the VET is of good quality and relevant. The low status of vocational education may be as much a sociological effect as an economic one. Other critiques of VET policy

include: colonial and historical influence and bias in VET; the poor quality of staff and students; out-dated curricula and equipment; and the weak nexus between firms and schools reducing employability rates (McGrath, 2011, p.39).

African VET systems have been greatly influenced by international models and this has hindered development of home-grown approaches. There is a risk that the new external interest in VET in Africa will create further influence (McGrath, 2011, p.40-41).

Indeed, the VET debate in Africa has always centered on the need to get learners to workers or improve their productivity in self- and informal employment. However, for the past 30 years, the debate in OECD countries has centered on employability for employees (McGrath, 2011, p.43). Nonetheless, as suggested by McGrath et al (2010) the focus on employability is too myopic. They suggest that employability ought to be seen “as tripartite, with the conventional approach being understood alongside a stress on the importance of contexts and the interplay of agency and structure; and an emphasis on the positive role that educational institutions play in facilitating employability.” Therefore, justification of VET should go beyond employability. There is need to assess how VET feeds into human development (McGrath, 2011, p.43-44).

2.3. Chapter summary – a critique of the literature on skills gap

In sum, this chapter presented several key lessons, some of which were also aligned with the research questions of this thesis. The literature shows that Africa’s economic growth will require countries “to create the mechanisms on how TVET feeds into human development and to harness the knowledge as well as the production of skills and put them into effective use for economic growth”. Hence, as McGrath mentions (2011), TVET is regarded as an essential tool for human development and the eradication of poverty.

The following points are aligned with the key research questions of this thesis.

- (i) Identifying the existing skills gaps between employers' needs and employees' capabilities,

According to the literature review, skills gaps appear for several reasons. Generally, TVET in most African countries suffer from inadequate financing, poor management, a shortage of TVET professionals, issues related to assessment and quality, inadequate technology and inefficient organisation of TVET institutions and training. There is, however, an increasing awareness in almost all African countries of the need to design curricula and training packages that respond to market needs and that are field based.

- (ii) Identifying the skills that TVET institutions impart through their training programs and that students need to perform jobs in the agriculture sub sector,

In order for the TVET system to produce demand-driven skills, the system needs 1) a more effective diagnosis and identification of skill needs, 2) comprehensive reform that is more effective than piecemeal approaches with regard to human development, 3) attention to the political and economic aspects of reform aligned with the local context, and 4) reliance on positive incentives to promote change.

- (iii) Identifying the skills required by employers by analysing and evaluating the employability of TVET graduates in the agricultural sector, especially in the cash crop farming subsector of paddy,

When we analyse and evaluate the employability of TVET graduates, it is crucial to examine whether the skills and the specific technical, vocational education and training are adequate to create skilled and innovative people who can adjust to the environment, support new job creation and lead to the empowerment of individuals and communities. The review suggests that TVET graduates need to improve their skills in order to be more field oriented and to have strong “higher-order” literacy, numeracy and logical reasoning skills.

In summary, the information in this chapter connects with the key TVET issues, based on the data and information that exists in the current literature. The next chapter will include analysis of existing government education policies and it will give an understanding of their link with TVET, placing specific focus on cash crop farming in the agricultural sector.

CHAPTER 3: THE CASE OF TANZANIA AND THE DEVELOPMENT OF TVET

Introduction to this chapter

Improving the quality and relevance of training is an important challenge for TVET in Tanzania. The Government of Tanzania strongly emphasises enhancing human capital through developing knowledge and skills, improving competences and personality attributes and improving efficiencies in TVET. Specifically, the government insists on improving the capacity of technical and vocational education and training at a national level. Its aim is to produce a critical mass of people adequately equipped with the requisite knowledge and skills to solve the problem of low-productivity, meet societal challenges related to development and attain competitiveness at regional and global levels (United Republic of Tanzania, 2012).

This chapter discusses the overall context of the education sector in Tanzania and develops a detailed assessment of the role of TVET and its linkage with the agriculture sector. This is directed towards unearthing myths and encouraging open debates on education in Tanzania by outlining the evolution of the TVET system (what worked and what failed), identifying key issues for research and identifying gaps in the literature. It also aims to lend better understanding to the status of vocational training graduates and their employment activities in the cash crop farming subsector in Tanzania. This research focuses on exploring the dynamic processes of vocational training and its impact on the development of the workforce in the agricultural sector with a special reference to paddy farming.

This chapter is organized in 3 parts. The first part gives an outline of the education sector in Tanzania including the different sub-sectors, and policies. Part 2 provides a detailed review of TVET in Tanzania. Part 3 links occupational analysis to TVET curriculum design, through the concept of scaffolding and a summary of the major challenges in vocational and technical education in Tanzania as presented in the literature.

Tanzania faces various constraints in the area of skills development. Improving the country's formal education system is a key entry point to addressing this challenge. There has been a recent decline in pass rates in secondary education, which has raised concerns about the quality and capability of new entrants to the job market. Although some of the skills needed for growth and competitiveness can be anticipated, others cannot. Building appropriate skills in a setting where specific skills needs are unpredictable is challenging, but the most promising approach for meeting this challenge has four elements according to recent work by the World Bank. The first is to concentrate on building generic skills –“high-order literacy and numeracy” in basic and secondary education, which are essential in providing the basis for further learning. The second is to provide more flexibility to graduates of TVET programs by consolidating specialisations into broader families of occupations with broader application prospects. The third is to make secondary, TVET and higher education programmes more demand-driven, and to improve the information that parents and students use to choose among educational options. The fourth is to develop a range of opportunities for adult retraining and learning (World Bank, 2009, p.p. 79-80).

Today's proliferation of skills and vocational training programmes in Tanzania is the result of a nationwide realisation that, in order for the country to sustain its human resources base it must invest in a knowledge-based economy (Kingombe, 2011, p.72). Strengthening the education system, especially the TVET system, is seen in Tanzania as a crucial means of increasing the quality of skills development in the country, and it will be a major factor influencing the performance of Tanzania's economy especially if it wants to attain “inclusive growth” (African Development Bank, 2012, p.4). The agriculture sector has contributed to growth in GDP. It still remains the largest employer, engaging more than three quarters of the workforce, although a large portion of the employment in this sector comes from the informal sector (UNESCO and MoEVT, 2011, p.259).

Innovation in agriculture is a powerful means of addressing relatively low production and adding value. Moreover, inclusive growth – addressing the needs of rural areas in

particular – necessitates that there is high growth, which comes from increasing productivity and fostering innovation in agriculture. Higher agricultural productivity is, therefore, a precondition for inclusive growth and development, and higher yields in agricultural production are a means of raising incomes and reducing poverty, either directly through enhanced smallholder incomes or indirectly through increased employment and wages (Larsen, Kim and Theus, 2009, p.3). For these reasons it is important to review recent developments in the Tanzanian education system.

3.1. The education sector in Tanzania

3.1.1. National education development and education sub-sectors

Tanzania Development Vision 2025 guides economic and social development plans for Tanzania up to the year 2025 (United Republic of Tanzania, President’s Office, Planning Commission, 2012, p.7). In realising its aspiration, Vision 2025 advocates that Tanzania should become, among other things, a nation “with high education attainment at all levels, a nation which produces the appropriate quantity and quality of educated people who are sufficiently equipped with the requisite knowledge and skills needed to solve the problems of society, meet the challenges of development and attain competitiveness at regional and global levels...” (United Republic of Tanzania, 2010, p.67). The foundation for improving youth employment opportunities exists in Tanzania in the form of primary, secondary, Technical and Vocational Education and Training and tertiary education. Progress has been made this decade in improving quality. The need for TVET for development in Tanzania is defined by the following:

- a) “Tanzania’s economy is rapidly growing but needs to grow further in order to provide more employment opportunities to the youth;
- b) The agricultural sector has the potential to contribute more to national economic development, if skills in agricultural production are instilled in schools;

- c) TVET remains one of the major avenues by which youth and especially primary and secondary dropouts could be trained to promote development. Promoting TVET is expected to reduce the level of unemployment in different sectors and especially in the agricultural sector; and
- d) For Tanzania to meet her aspirations as outlined in Development Vision 2025, TVET will need to be improved so that it focuses on producing graduates who have the relevant skills needed by the labour market as well as the development environment.”

(United Republic of Tanzania, 2010 and African Development Bank, 2013b, p.5)

The education sector in Tanzania is comprised mainly of two education components – formal and non-formal education. The structure of formal education is composed of a 2 – 7 – 4 – 2 – 3 structure. Children aged 5-6 years have access to 2 years of pre-primary education with no examinations for promotion purpose. Next, children aged 7-13 years have 7 years of primary education (STD I-VII), which is becoming universal and compulsory to all children in this age range. The results achieved by students in completing primary education are used to guide student selection in the subsequent level of formal education – secondary education or vocational education. Formal secondary education consists of two subsequent cycles. First, students aged 14-17 undergo a four year programme of Ordinary Level (O-Level) secondary education (Form I-IV). Selected youths aged 18-19 years undergo a subsequent two years of Advanced Level (A-Level) secondary education (Form V-VI). Form IV and Form VI examinations mark the completion of secondary education cycles. The results of these exams are used to select students for further formal education as well as non-formal education and training (African Development Bank, 2012, p.5). Figure 2 shows Tanzania’s education system including the TVET institutional pathways (African Development Bank, 2012, p.5).

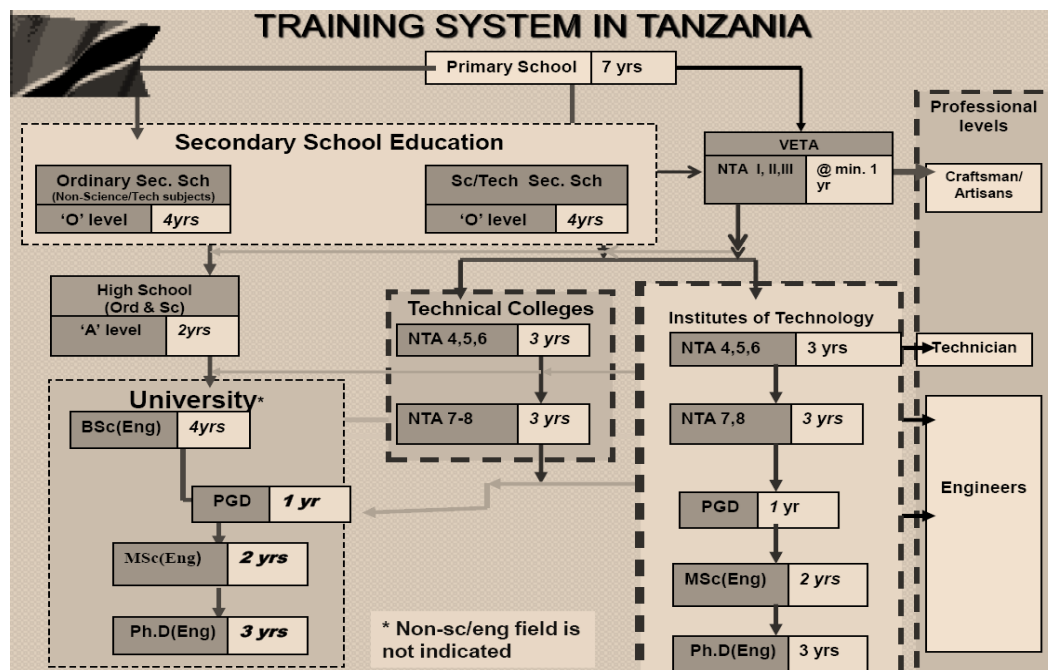


Figure 2: Current Tanzania Education System (Source: Arusha Technical College, 2012)

Figure 3 shows the Enrolment in the Education Sector by level.

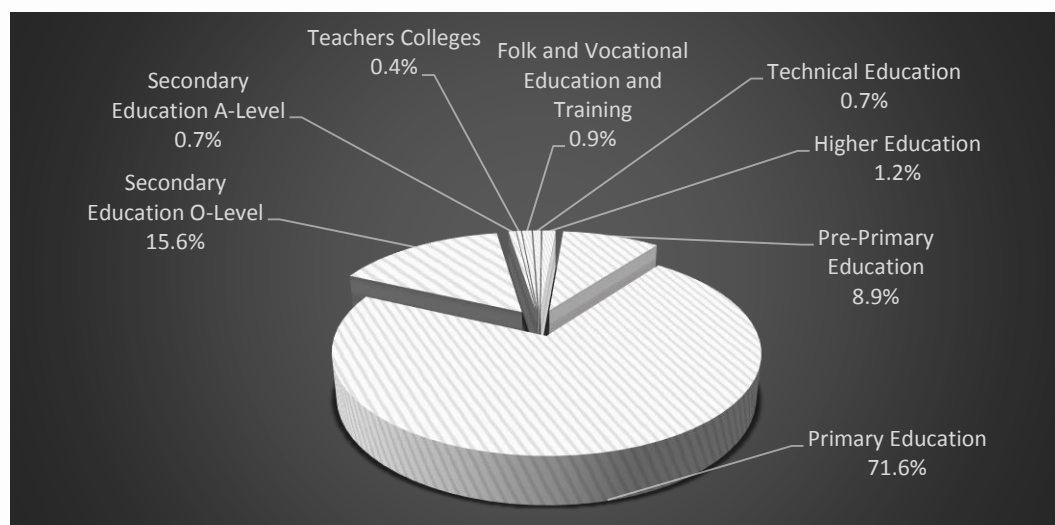


Figure 3: Enrolment in Education Sector by Level, 2012 (MoEVT, 2012, p.181)

i. Primary Education

Primary education is compulsory and consists of a seven-year cycle, officially enrolling children aged seven to 13 years. Primary education has been fee-free since 2002 (UNESCO and Ministry of Education Vocational Training, 2011, p.80).

In 2012, primary education experienced enrolments of 8,247,172 at 16,331 schools. Girls and boys are equally enrolled with a Gender Parity Index (GPI) of 1.01. The teacher to student ratio is 1:46, but in some regions in Tanzania it reaches 1:52 (African Development Bank, 2013b, p.2). In 2012, the NER was 92 per cent, indicating a downward decline in recent years, as the NER in 2008 was 97 per cent. There is no clear explanation for this decline; however, it might be due to having fewer over-age children within the cycle. It may also reflect demographic transition. The Ministry of Education is currently conducting an analysis to investigate the reasons for the decline in enrolment (United Republic of Tanzania Government of Tanzania, 2012).

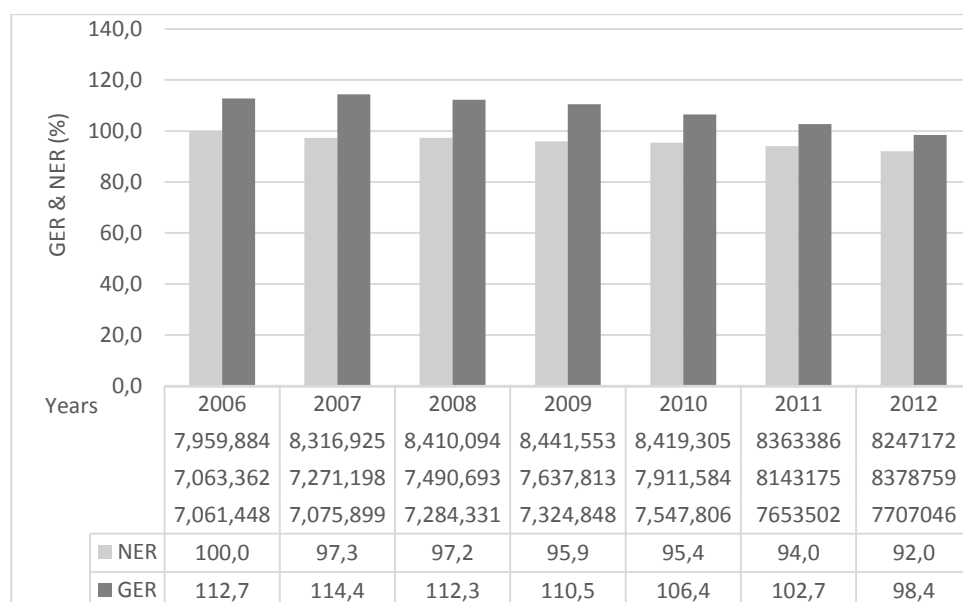


Figure 4: Gross and Net Enrolment Ratios (GER and NER) in Percentage for Primary Schools, 2006-2012 (MoEVT, 2012, p.27)

At the end of the primary cycle, the Standard VII Primary School Leaving Examination (PSLE) is administered and provides the basis for admission to the next level of education (MoEVT, 2011, p.27). The following graph shows the primary school leaving examination results, 2006-2010.

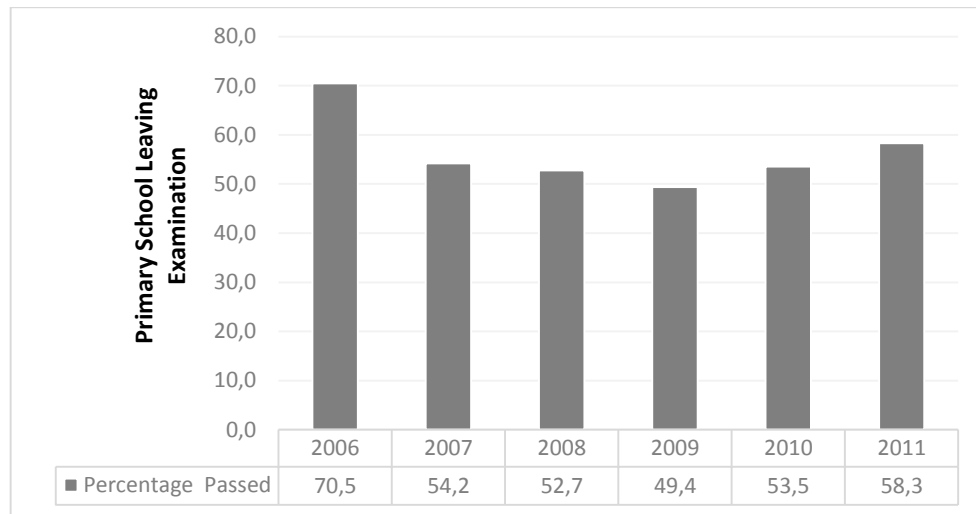


Figure 5: Primary School Leaving Examination (PSLE) Results, 2006- 2010
(MoEVT, 2012, p. 40)

Between 2001 and 2006, the percentage of children passing the PSLE was 70.5% in 2006. However, the pass rate dropped to 54.2% in 2007, and it dropped further to 49.4% in 2009, improving slightly to 53.5% in 2010 (MoEVT, 2011). Over the past decade, the major focus of the education sector has been on promoting and increasing access to education and promoting equity in access to education across geographical areas and groups with special requirements and gender (Kassile, 2014, p.4). The Pupil-Teacher-Ratio (PTR) was considered important since a large PTR reflects an inability of teachers to provide the desired level of attention to all individual students in need of teachers' assistance, and this may have an impact on students' overall performance (Kassile, 2014, p.5). The PTR has been used to measure the

quality of education with a higher PTR, which means “overcrowded classrooms” being associated with poor performance, high truancy, and high rates of juvenile crime.

ii. Secondary Education

Secondary Education comprises two cycles: Ordinary Level (O-Level) and Advanced Level (A-Level). With the growing numbers of primary school leavers, Tanzania has been trying to expand O-Level secondary education since 2004 (UNESCO and Ministry of Education Vocational Training, 2011, p.80). Secondary education has also experienced substantial changes in recent years. Enrolments increased by 54% from 1,222,403 in 2008 to 1,884,272 in 2012. The Gross Enrolment Ratio (GER) increased from 36.2 per cent in 2008 to 51.4 per cent in 2012, while the NER moved from 24.4 per cent in 2008 to 36.2 per cent in 2012. The GPI has improved during the period from 0.80 in 2008 to 0.86 in 2012.

The rapid increase in secondary education enrolment has had the positive impact of providing many primary school completers the opportunity to proceed to the secondary level. However, budgetary constraints prevented full provision of the commensurate resources in terms of adequate numbers of qualified teachers, adequate learning materials and quality infrastructure. Consequently, pass rates in the Certificate for Secondary Education Examination (CSEE) have been very poor in recent years. In 2011, only 10% of secondary school completers passed the CSEE at Division I-III and the total pass rate for all divisions (I-IV) was 53.6%. In 2012, the results were even lower. Only 5.92% passed at Division I-III and the total pass rate for all divisions (I-IV) was 40%. Thus, in a state of limited resources and competing education priorities, the efficacy of rapid expansion of secondary education should be carefully evaluated. The aim should be to provide sustainable quality secondary education in the long term (African Development Bank, 2013b, p.5). Below is the summary of gross net enrolment ratios for secondary education for 2007-2011.

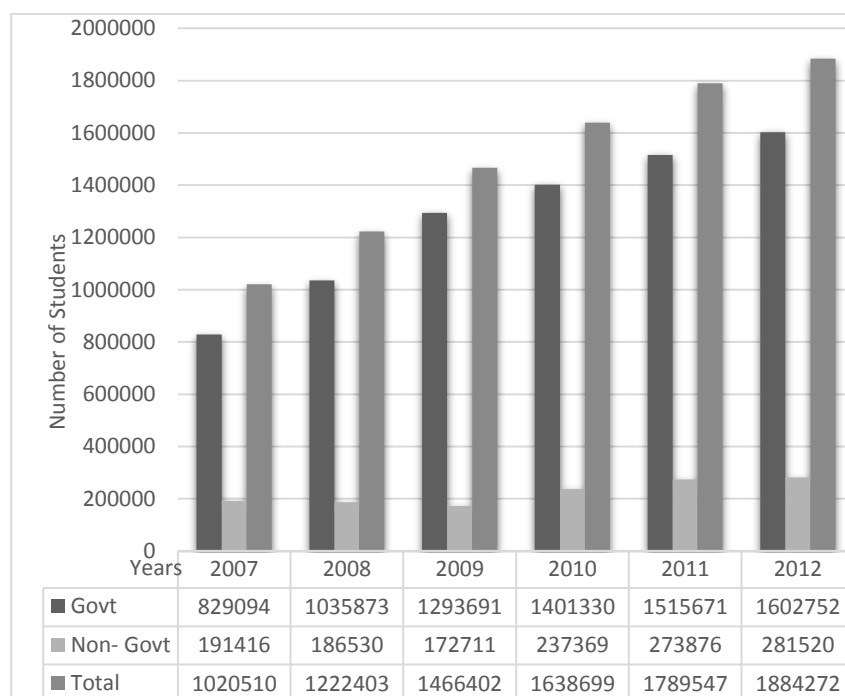


Figure 6: Total Enrolment in Government and Non-Government Secondary Schools, 2007-2012 (MoEVT, 2012, p. 73)

iii. Technical Vocational Education and Training

TVET comprises Technical Education and Training (TET) and Vocational Education and Training (VET). TET provides post-secondary education opportunities in non-university situations for secondary education graduates. In 2012, enrolment at TET programs was 112,447 and is therefore much smaller than the secondary schools system. About 47 per cent of those who enrolled were female, and 19.4 per cent were enrolled in non-government institutions. VET institutions provide vocational education and training for those who complete primary education and are interested in obtaining occupational skills that will enable them to participate in the labour market. In 2012, enrolment at VET programs was 121,348 with about 47% being female. Despite high overall female enrolment rates, there is a gender imbalance in science- and technology-related TVET programs. Female participation in this area was only 11-19 per cent in 2012. In addition, TVET institutions tend to be concentrated

in urban areas, which limits the participation of the rural school age population in TVET. Tertiary education is offered at a diverse number of post-secondary government and non-government institutions, including universities, technical colleges and teacher-training colleges. Enrolments at the tertiary level have increased significantly in recent years, but they are still low. In 2012, the total enrolment was 322,189 (41.4 per cent female). The breakdown of enrolment between these institutions was (i) 166,484 (36 per cent female) in universities; (ii) 112,447 (47 per cent female) in technical colleges; and (iii) 43,258 (43.7 per cent female) in teachers colleges. The low level of female participation in universities is a consequence of the girls' poor performance on the secondary leaving examinations (African Development Bank, 2013b, p.3). To increase the number of girls in universities, incentives are being provided to increase the number of girls enrolled in secondary A-level programs, and assistance is being provided to girls to improve their performance in secondary school completion exams (United Republic of Tanzania, 2009, p.52).

iv. University Education

Higher Education has been part of the MoEVT mandate since 2008. This cycle is organised into two levels – university and non-university. Non-university level institutions include those which offer courses of up to three years leading to a technical bachelor's degree, whereas university level institutions include those which offer courses leading mainly to standard bachelor's degrees and higher qualifications (UNESCO and Ministry of Education Vocational Training, 2011, p.80).

As part of higher education, university education is provided to students after they complete A-Level secondary school and attain the Advanced Certificate of Secondary Education Examination. Candidates with equivalent qualifications are also eligible for admission into university education. The official attending age for undergraduate degree programmes in universities is 20-24 years (African Development Bank, 2012, p.5). The following chart shows the enrolment trend in university institutions from 2005/06 - 2010/11. From 2006 to 2012, there was an increase in enrolment from 45,501 students in 2006/2007 to

166,484 in 2011/12, an increase to which established higher learning institutions significantly contributed (MoEVT, 2012, p.158). This general enrolment does not however tell much about the contribution of this rapid growth by professional courses and TVET.

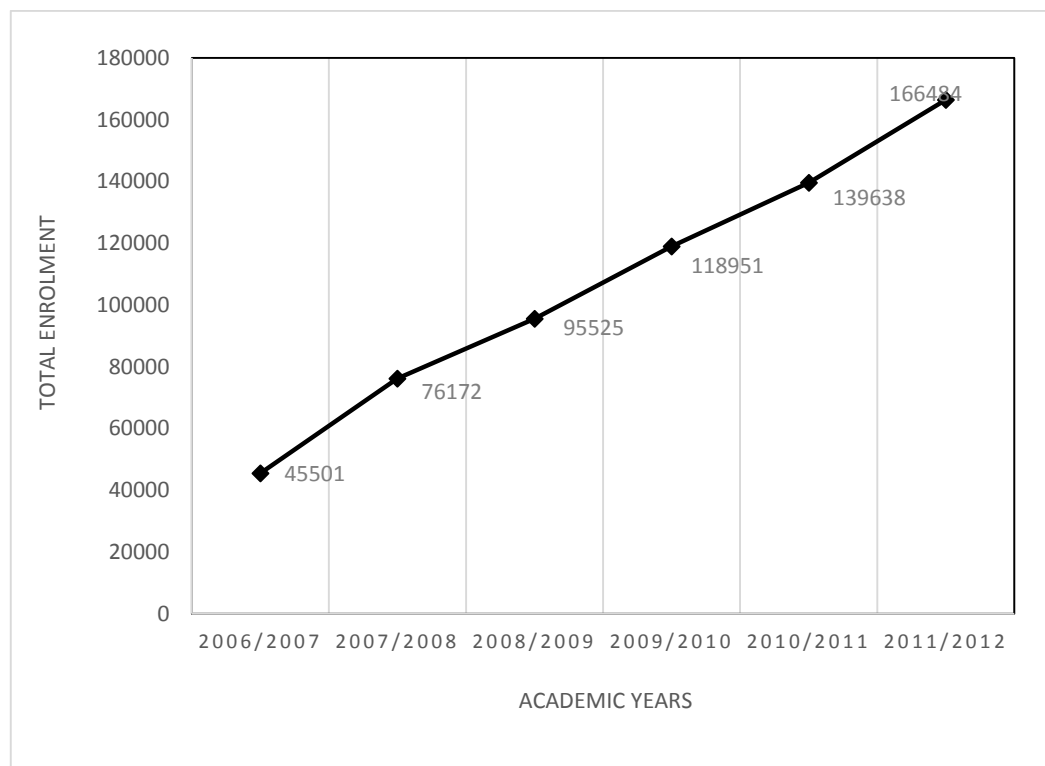


Figure 7: Total Enrolment in Government and Non-Government University Students, 2006-2012 (MoEVT, 2012, p. 158)

3.1.2. Educational policies –the education sector development programme

The Education Sector Development Program (ESDP) was developed in 1997 and revised in 2001 and 2008 (United Republic of Tanzania, 2008). The aim of ESDP was to translate the objectives of education policy into a comprehensive action plan to guide the allocation of resources and the overall development of education (MoEVT, 2010, p. 3). The

current ESDP covers the period 2008 to 2017, and has the objective of increasing access to quality, equitable education at all levels. For more effective implementation of the ESDP, several sub-sector development programs have been developed (United Republic of Tanzania, 2008). These include the Primary Education Development Program (PEDP), first launched in 2002, the Secondary Education Development Program (SEDP), launched in 2004 (MoEVT, 2010, p.1), the Folk Education Development Program (FEDP), launched in 2008, the Higher Education Development Program (HEDP), launched in 2010, the Adult and Non-Formal Education Development Programs (ANFEDP), launched in 2012, and the Technical Vocational Education and Training (TEVTDP), launched in 2013 (African Development Bank, 2013b, p.5).

The main objectives of ESDP, issued in 2008, include improving the micro- and macro-management of educational institutions so as to have functioning institutions, improving the delivery of outputs and outcomes by upgrading learning and teaching processes and ensuring access to quality learning programmes so as to increase demand for and usefulness of those learning programmes (United Republic of Tanzania, 2008, p.6). To meet its objectives, ESDP has formulated four strategic directions for improvement that need to be addressed by all the education sub-sectors including TVET. These are improvements in: i) capabilities and values; ii) providing conducive teaching and learning environments; iii) micro-macro efficient management, and iv) enhanced education provision in order to increase enrolment at all levels (United Republic of Tanzania, 2008, p.46).

One key element of the Education Sector Development Program was the planning of strategic reforms within the institutions. Decentralisation was a key element of this reform. While the Central Government maintained its focus on policy formulation, provision of regulatory frameworks and monitoring and evaluation, local government authorities (LGAs) had increasingly extensive community involvement and this needed to be implemented into the programs. In addition, an enabling environment was fostered for the private sector.

Although progress has been made, the sheer number of actors has presented major challenges for the implementation of reform (African Development Bank, 2013b, p.5).

To implement ESDP more effectively, several sub-programmes have been launched to provide support for the major education sub-sectors. Specifically, the Primary Education Development Programme (PEDP) was first launched in 2002, the Secondary Education Development Programme (SEDP) in 2004, Folk Education Development Programme in 2008, and most recently, the Higher Education Development Programme in 2010. Although sub-programmes have been launched to support all the major education sub-sectors, there is no programme as yet to guide Technical and Vocational Education and Training (TVET), despite its central position in achieving national economic growth and poverty reduction. Because of TVET's important position, the MoEVT has argued for a Technical and Vocational Education and Training Development Programme (TVETDP) (MoEVT, 2013b, p.3). Supporting education subsystems other than TVET is beneficial to TVET; the success of TVET depends on the success of the other education subsystems, which do already have clear provisions to support their development. Based on this effort, TVET enrolment has been growing because it has been enrolling greater numbers of the students who completed the primary level and secondary level.

TVET also needs to adjust in order to meet expectations that arise with rapid technological changes and the ever-dynamic socio-economic environment. In that vein, more deliberate emphasis may need to be placed on aligning TVET programmes with labour market demands and promoting flexibility in TVET's role in improving access, equity, relevance and quality. If the major issues affecting education-labour market linkages originate in the demand side of the labour market, further expansion of education is unwarranted unless demand side issues are first addressed. For example, subsidies in tertiary education need to be accompanied by efforts aiming at creating an environment conducive to investment. Otherwise, countries will find their population emigrating for better opportunities, and

governments will need to continue subsidising education to compensate for weak effective demand (Fasih, 2008, p.5).

3.1.3. Education financing

In Tanzania, education is financed by the government, communities and the private sector. However, it is difficult to track all education expenditure, as there are multiple ministries, other government agencies and non-government entities involved in the provision of education. Despite the problems in tracking all the expenditure on education that comes from various sources, the main objectives in education financing are clearly defined. First, the last ten years have seen a substantial increase in the amount of resources allocated to education. The government of Tanzania recognized that it needed to invest in education as a means of improving the knowledge and skills of its people which would in turn lead to more gainful employment and higher productivity and, therefore, poverty reduction (Mkenda, Beatrice Kalinda, 2005, p.19). With this government funding, efficient and priority-based expenditures should be ensured to improve the impact of education on development.

In the case of Tanzania, TVET suffers from financial constraints which cause time slippage related to agreeing to plans, signing off on agreements and disbursing tranches of funding, which eventually leads students to under-achieve and disburse below the on-track line (Lewin, 2008a, p.10) (see Figure 8). In fact, higher education accounts for nearly twice as much as all secondary schooling and five times as much as TVET.

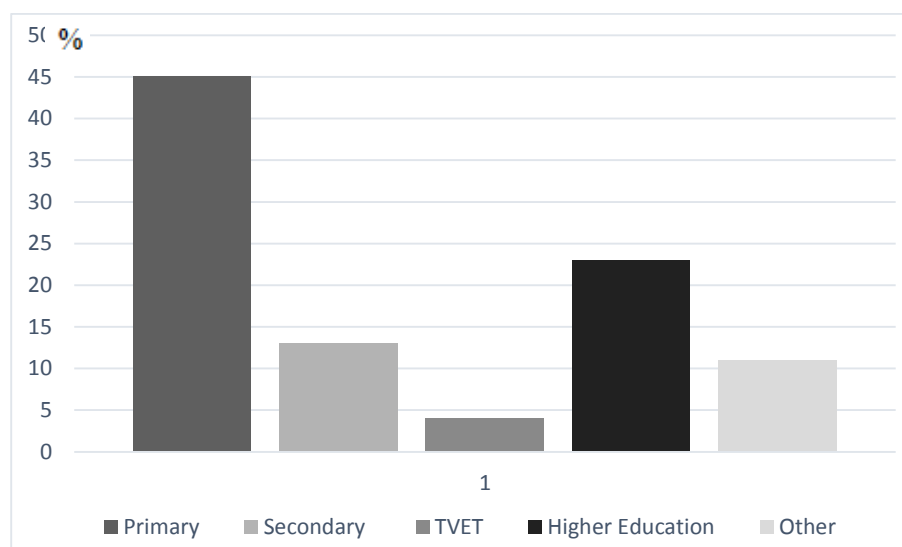


Figure 8: Distribution of Actual Public Education Expenditure by Subsector
(MoEVT and VETA 2012)

In fact, the total cost of attending primary school is approximately \$40.00 per year and the total cost of attending secondary school is as much as \$400 to \$800 per year for public school. Moreover, if the student is placed in a secondary school in another village or city, there is an additional cost for boarding and travel, which can bring up the price up to \$900 or more (Elimu Africa – Education Africa, 2014). The cost per TVET student is approximately US\$800 for level I; US\$1,600 for level I and II; and US\$2,400 for Level I, II, and III. These costs are far in excess of what students from poor families can afford. Hence, agricultural TVET courses need to be made cheaper for the majority of students. Also, the government needs to pay attention to allocating appropriate scholarships for those students from poor families who are willing to enrol in TVET agricultural programmes. However, the costs presented here represent an average because in some of the TVET courses, like Tailoring or Electrical Installation, the cost is considerably lower than the average. But in other TVET courses, like Welding and Fabrication or Fitter Mechanics, in which training materials are very expensive, the cost is much higher than the average (VETA, 2013). The result of the high cost of such courses is of course the exclusion of students from poor families.

As the case of Tanzania makes clear, the efficacy of the training fund may depend on the framework of governance and control within which it functions (Ziderman, 2001, p.p.68-69). Based on the positive relationship between resources and education quality, Hanushek and Woessmann stated in 2007 that “The overall finding is that simple resource policies – reducing class sizes, increasing teacher salaries, spending more on schools, and so forth – have little consistent impact on student performance when the institutional structure is not changed.” Also, according to Ziderman, in 2001, the center of the issue of how training funds can be used efficiently depends on how and for what purposes government control is used. For example, funds are used more efficiently if the government uses these funds for economic objectives rather than political needs (p.70). No connection has yet been made between national economic development strategies and the type, quality and number of tertiary graduates needed to implement them. For this reason, insufficient headway has been made toward defining development objectives for TVET, identifying the policy actions necessary to achieve these aims, imposing a time frame for their implementation and monitoring progress (World Bank, 2009, p.xxv).

3.1.4.Role of education in linking schools to the labour market

The role of education needs to be seen in a broader macroeconomic context to ensure that education contributes to the growth of a country’s economy. From the perspective of economic policy, interest in education is, in general, linked to its potential to increase earnings and reduce poverty (Fasih, 2008, p.9).

Tanzania is hailed as a success for its ability to increase primary school enrolment rates, which rose from a Net Enrolment Rate of 66% to a peak of 97% in 2007 and 2008, before declining to 94% in 2011. Total enrolment in higher education institutions has more than doubled from about 55,300 students in 2005/06 to 139,600 students in 2011/12. The result is that just less than 800,000 individuals annually enter the labour market from the education sector at different levels (African Development Bank, 2013b, p.p. 2-3).

Moreover, a number of dropouts also enter the labour market. According to Figure 9 below, “Education Pyramid for Tanzania, 2009”, only 55% and 6% are accessing lower secondary level and TVET secondary level respectively; the dropout rate of lower secondary level was 36% in 2009 (UNESCO and MoEVT, 2011, p.9). Youth unemployment, at 8.8%, is almost twice the national unemployment rate and disproportionately affects urban youth and young women, in particular. In fact, a small proportion of individuals declare that they are available but are not looking for employment due to their low expectation of finding a job (Kondylis, F. and Manacorda, M, 2006, p.28). Youth unemployment and underemployment are two of the most prominent challenges facing Tanzania (African Development Bank, 2012, p.1).

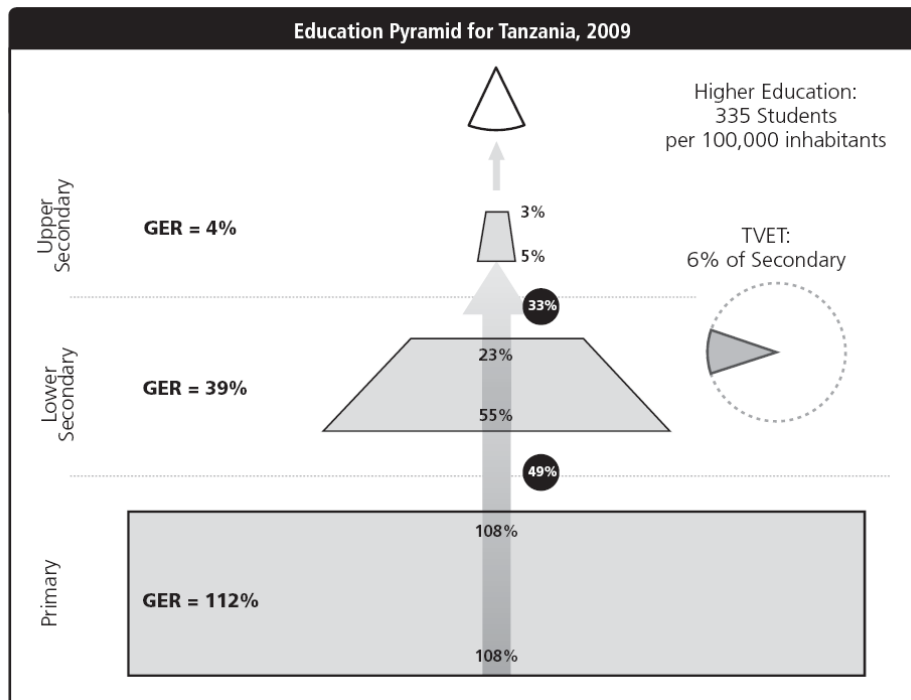


Figure 9: Education Pyramid (UNESCO and MoEVT, 2011, p.9)

This again shows that TVET continues to provide a very small proportion of total output, and it is therefore critical that TVET is demand-led and provides skills and knowledge that are of value in the labour market. Well-functioning labour markets result from the

effective selection of and competition of competent employees, and they lead to a higher level of output, employment and incomes. Inadequate or inaccurate information disseminated by the government concerning local labour market demand will result in employers and training providers making the bad decisions that characterise poorly functioning labour markets and that will ultimately undermine productivity and welfare. To gain a comprehensive picture of the linkages that exist between education and the labour market, supply-side analysis needs to be complemented with demand-side analysis (Fasih, 2008, p. 4), especially for Tanzania.

Unemployment and underemployment can result from there being a mismatch between workers and jobs. Such a mismatch can result in decreases in productivity, output and, hence, incomes for both employers and employees. This is especially true in the agriculture sector where, although it has a high absorption rate for the employed, output of human capital in general is small due to the low popularity of agriculture among TVET students compared to other TVET programmes such as engineering and business management. Moreover, TVET agricultural skills often are mismatched with the demand needs which leads to low agricultural output. As indicated in table 1 below, from the tertiary and higher education level, only 53.3% of graduates gain employment in the public sector and only 27.2 % are employed in the private sector. Also, it is likely that the agriculture sector employs a greater proportion of tertiary level graduates than A-level graduates.

Table 1: Employment Status of the Labour Force (25-35 Years), by level of Education, 2006
(Source: UNESCO and MoEVT, 2011, p. 204)

	No Schooling	Primary	Secondary		Tertiary/ Higher	Total
			O-Level	A-Level		
<i>Labour Force</i>	97.6	98.4	98.1	95.7	100.0	98.2
<i>Employed</i>	97.3	97.5	96.2	88.0	100.0	97.3
Public Sector – Salaried	0.2	0.7	16.8	37.5	53.3	2.1
Private Sector – Salaried	2.1	8.8	21.6	33.6	27.2	8.8
Self-Employed or Family Business	14.6	24.5	37.7	13.2	4.0	23.6
Agriculture& Other	80.4	63.5	20.1	3.7	15.5	62.8
Unemployed	0.3	0.9	1.9	7.7	0.0	0.9
Inactive	2.5	1.6	1.9	4.3	0.0	1.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
Memo Item:						
Thousands of Individuals	915	3,950	369	43	10	5,286

Enrolments in TVET are projected to grow rapidly as shown in Figures 10 and 11 below. Although these projections seem somewhat unrealistic and not financially viable, according to the government's ESDP projections for the period of 2008-2017 for the TVET sector, it is clear that there is an intention to develop TVET so it can play a key role in expanding access and improving the quality of human capital entering the labour market. In fact, since 2000 to 2005, the number of TVET enrolments has grown almost three times.

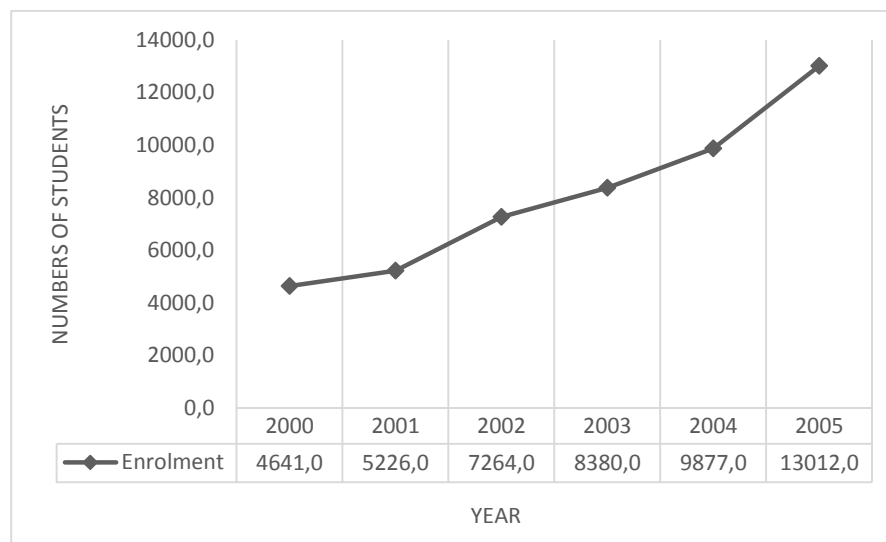


Figure 10: TVET Enrolment from 2006-2018 (Source: MoEVT, 2011)

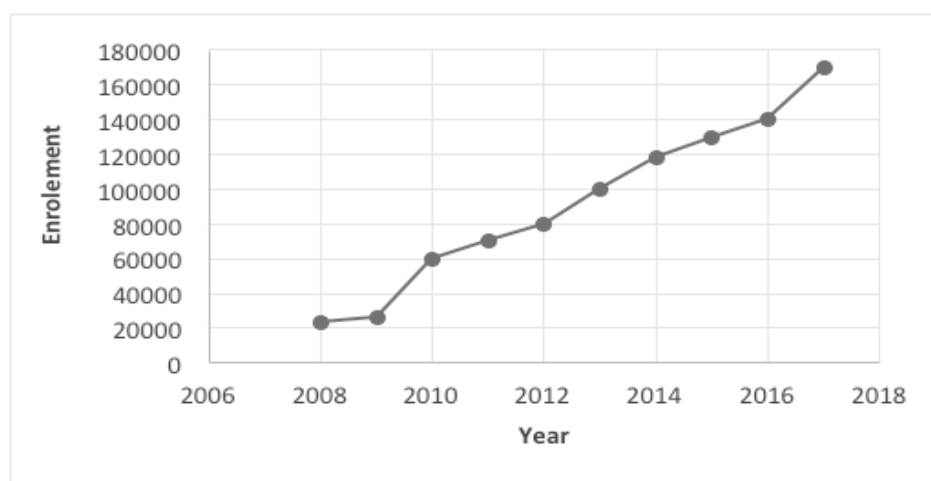


Figure 11: Enrolment Projections for Vocational Technical Education and Training (Source: African Development Bank, 2013b, p.2)

By 2017, the proportion of enrolments in TVET, is projected to grow to around 170,000 from 20,000 in 2008.

If the projection of the enrolment is accurate in 2017, around 8.5 times larger numbers of students would be enrolled in the TVET system since 2008 and around 37 times larger

numbers of students since 2000. Seven times larger numbers of students have already been enrolled in 2014. As is evident from table above, 80.4% of people who work in the agriculture sector have no schooling while 15.5% people do, having attended tertiary/higher education. Of those who do, 63.5% have some primary level education, 20.1% have O-level and 3.7% have A-level of education. The importance of this is to indicate how beneficial those who graduate from tertiary/higher education can be in leading the agriculture sector by introducing appropriate skills sets to those who have little or no schooling (Ministry of Education and Vocational Training, 2011. P. 166).

Having a clear projection of enrolling TVET students, as indicated in Figure 11, is crucial to indicate achievement. The problem with this current projection is that it seems unrealistic. Enrolments distributed among the various grades have not grown as anticipated. Massive gains in enrolment in grade 1 have not been matched by similar increases in higher grades. This is of considerable concern, indicating that despite the expansion of the education system, many young people still fail to complete a full cycle of the system (Lewin and Akyeampong, 2009, p.171).

Although TVET is seen to be the emerging sector for increasing employment for youth, the portion of the public education budget allocated to TVET is still significantly less than the portion allocated to other sectors in Tanzania. One prudent measure might be to allow some secondary schools to introduce TVET, but with the proviso that they meet clearly defined cost-effectiveness standards (Lewin, 2008b, p.90). The risk with overly optimistic planning is that the rate of progress towards goals falls below that expected. As Figure 12 by Lewin (2008a) shows, the gradient of what needs to be achieved steepens progressively to the point where the planning and implementation system enters a Zone of Improbable Progress (ZIP). The projections for very high growth rates in TVET may already be in this zone.

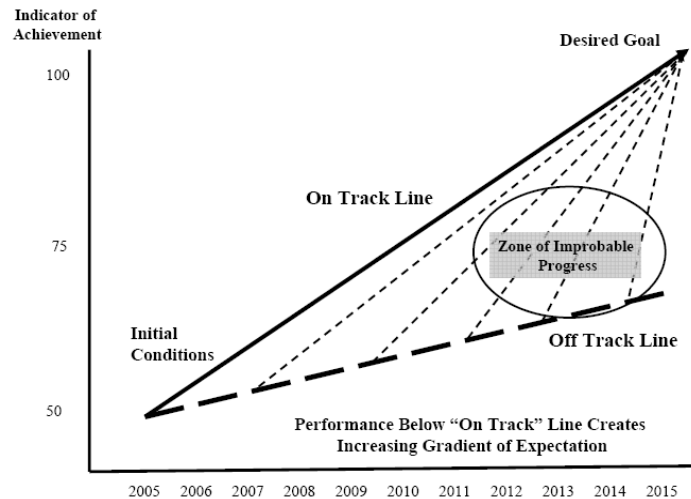


Figure 12: Gradients for Goal Achievement (Lewin, 2008a, p.10)

Government planners often lack the necessary autonomy to produce independent analyses such as this since there is invariably pressure to produce an analysis that suits political preferences even though it violates underlying realities and causal relationships. Planners should be aware, however, that innovation is needed in education systems that fail to deliver an acceptable quality of service in an equitable way (Lewin, 2008a, p. 12).

Formal technical and vocational education favours relevant, practical skills-building over general, theoretical education. Internships can also help in building the initial work experience and skills of those students who are still in school as well as of those who are unable to complete formal education. Likewise, employer training programs offer on-the-job skills-building in a non-formal setting (World Bank, World Bank Institute, 2007b, p.5).

A government's failure to create adequate jobs can also lead to a number of societal ills. Education and, more specifically, acquiring the right set of skills can solve these ills since dropouts are the ones who are usually identified as socially problematic: "Youth who drop out of school early are vulnerable to unemployment, poverty, teen marriage, pregnancy, and delinquency" (AfDB, 2013). However, recent events in North Africa have shown that even

youth who have attended tertiary schooling are vulnerable to unemployment and extreme poverty (AfDB, 2013). In some cases, this causes desperation and leads to self-immolation and other even more violent forms of resistance. The World Bank has addressed the problem of there being a lack of connection between education and work—as education does not always lead to employment – yet the Bank has not proposed very inventive solutions and limits its recommendations to “recognizing employers as key stakeholders” (Steven, Samoff and Stromquist, 2012, p.30). Strengthening its recommendations would entail considering issues of wealth distribution and power relations as well as the possibility that education has become a tool to propagate disparities and continued patterns of injustice. Moreover, the notion of education as a human right should be emphasised by strengthening the idea that it is a public good and that its provision is a responsibility to citizens that the state has assumed (Steven, Samoff and Stromquist, 2012, p.28). The implementation of good policy and strategy for diminishing the skills gap is crucial. In summary, TVET has a core function to play in supporting the labor market in Tanzania. However, TVET’s contribution to the employment sector has been minimal due to budget constraints occasioned by the government’s lack of allocation of substantial resources.

3.1.5. Rice production in Tanzania

i. Why rice production?

The issues discussed above are relevant across a number of different sectors of employment. This research chooses to focus on one sub sector. The agricultural sector remains the largest provider of jobs in Tanzania. Household enterprises have been the most dynamic source of employment in recent years. The number of jobs in such businesses has risen by approximately 13 per cent per year, or three times faster than the national average. This expansion reflects that there has been innovation in the form of the diversification of economic activities in rural areas, particularly on the part of agricultural households seeking

complementary income alongside a rapid process of urbanisation (UNESCO and Ministry of Education Vocational Training, 2011, p.p. 201-202).

In Tanzania, the major agricultural commodities are rice, maize, wheat and cassava. Although these commodities contribute to economic growth, they will continue to do so only if there is value added to the production process in increasing yields, quality and efficiency; otherwise, the producers will lose out to competition from other countries producing these basic foods of better quality and affordable prices. All the aforementioned commodities are regarded as the major sources of nutrition in Tanzania, not only for human beings but also for livestock. In fact, Tanzania increased its rice imports to maintain an adequate supply and to support national food security (JICA, 2013). Hence, the Government of Tanzania formulated the National Rice Development Strategy (NRDS) in 2009 for the purpose of increasing rice production up to 1.96 million tons by 2018, which is double the amount produced in 2008 (JICA, 2013).

Moreover, there is an abundance of scientific research and innovation on agricultural commodities in Tanzania. For instance, in the specific case of rice, the quality of rice has been improved as a result of the effort that has been expended on scientific research and activities. In addition to improving the quality of rice, the purpose of these activities has been to make rice commodities more valuable for foreign exchange (Chianu, 2013). Also, with the support of donor partners like JICA, a variety of project interventions have been implemented to improve the quality of rice in Tanzania by promoting the NERICA hybrid rice.

ii. Skills required for rice production

According to the International Rice Research Institute (IRRI), the required skills for basic rice production include: land preparation and crop establishment, water management, integrated nutrition management, crop health, harvesting, drying, storage, milling and

processing, economics and marketing, ripening, skills on reproducing, ripening, late vegetative skills, early vegetative skills and preplanning skills (IRRI, 2009). However, advanced paddy farming skills such as building an effective irrigation system, efficient water management and the use of ICT for marketing should also be learnt in TVET agricultural system training with improved curricula and pedagogy to develop advanced learning.

Moreover, good management skills are also crucial (JICA, 2013). All of these skills can and should be strengthened through TVET education. However, it needs to be recognised that in order to acquire these skills at the TVET training level, the trainees need to have basic skills in science, mathematics/numeracy, social skills and communication, which are acquired from basic education.

iii. Linking rice production to economic growth

Good management and coordination skills in the agricultural sector are essential in putting forth the best case possible to the finance ministry for obtaining funds for the education sector, and for TVET providers in particular. In addition, management skills are needed to monitor funds and ensure they are spent appropriately after they are allocated. For example, successful management frequently gathers information on the amount of money that has been allocated to each activity, the way in which the money has been used and the activities that have already been financed. For this, good financial planning and time management are crucial. In such activities three financial operation skills are essential, namely 1) budgeting, 2) accounting: recording and reporting actual income and expenditure, and 3) auditing: ensuring that all control procedures, particularly financial procedures, are appropriate, comprehensive and followed. Ensuring that rice production managers acquire the aforementioned skills ensures that rice production will be value added, support economic growth and invite big profits.

iv. Lessons learned from Japan's history of developing its higher agricultural education system

Japan is well known for having one of the world's richest experiences in paddy-field agriculture (Kyushu University, 2013). From the early days of Japan's history until the 1970s, Japan's leaders have considered the production of as much rice as possible to be one of the country's most important political and economic priorities. Subsequently, agricultural education in Japan was designed to develop and disseminate practical knowledge and technologies to farmers with a primary focus on paddy production (Tajima and Ito, 2009, p. 29). Lewin (2008a) stated that some governments began trying to "pick winners" by deciding which sectors they wanted to be internationally competitive and then investing in the education and training necessary to create capacity in these sectors. Such investment, it was hoped, would be sufficient for these sectors' success. Japan and the East Asian tigers were seemingly more successful at this than governments in other parts of the world. More generally, planning was based on the idea that projections and predictions could be used to anticipate likely and desirable changes in educational demand. Incremental reforms were to be adopted to balance educational outputs with future labour force needs (Lewin, 2008a, p.2).

The Japanese higher education system has been greatly influenced by the events of the past 150 years. These events include the Meiji restoration of 1868, when the Tokugawa government restored the political power of Emperor Meiji, and the end of World War II in 1945, after which the speed of westernisation increased. Despite the fact that social conditions in Japan varied greatly during these periods, improvements in agricultural production were consistently seen as a national imperative (Tajima and Ito; 2009, p.30). Until 2007, the Japanese agricultural system focused on traditional agricultural education programs, mainly for the purpose of increasing productivity. However, because the food production program became unnecessary due to its historical achievements, Japan's agricultural education system now focuses on biological resource science. The current trend in the education system is to

integrate biological resource science courses within a liberal arts education (Tajima and Ito, 2009, p. 39).

In contrast, the development of higher education in Sub-Saharan Africa has been influenced by different internal and external factors and has occurred over a much shorter time period. These factors include the country's colonial heritage; internal political situations; the nature of the relationship between government and higher education systems; international power relationships, which have caused dependency and the peripheral nature of African universities; and the economic crisis of the 1980s (Guedegbe, 1997, p.25). Because higher education in Sub-Saharan Africa has not been established as an area of study or research, it has not been the focus of individual scholars and researchers. However, the economic decline experienced by most Sub-Saharan countries sparked interest in higher education, which was expected to provide the qualified manpower needed to drive national development (Guedegbe, 1997, p.27). The establishment of technical vocational education came much later, after the promulgation of the Education Acts (UNESCO BREDIA 1996). TVET arose when graduates of liberal arts-oriented curricula faced difficulties finding employment due to a situation in which the few clerical and other administrative jobs were offered and in which these graduates lacked the basic skills actually required in the employment sector. It is also important to recognise that most of Africa's post-colonial education systems were being heavily criticized for being mere adaptations of the elitist colonial education systems in which vocational education and training were intended to accommodate African manual labourers. This resulted in the total rejection of TVET by elitist Africans (King and McGrath, 1999, p.203).

Despite such significant differences between the experiences of Japan and Tanzania, comparing Japanese historical agricultural development to Tanzania does allow the latter to learn from the former's experience up to 2007. The key lessons that Tanzania can take from Japan regarding the improvement of agricultural education and development include three main considerations:

1) A strong foundation of basic skills such as literacy, numeracy and cognitive skills (problem solving, analytical thinking and critical thinking) has been well cultivated in the Japanese education system. This has fundamentally supported traditional agricultural education classes due to these skills' application to subjects such as biology, environmental studies, animal and food production, information science, chemistry, plant and forest studies, resource management and ecology, among others. For instance, the Japanese Math and Science (M & S) Education System offers the following;

- The experience of a deliberate, wide-spread diffusion of M & S education through systemic efforts. This was neither attained by a single policy or policy instrument nor even a clearly enunciated approach, but by a conglomeration of multiple efforts mobilized in an increasingly systemic manner over time.
- The long and varied experience in planning and implementing M & S curricular changes with shifting educational philosophies but always under severe resource constraints.
- The accumulated knowledge, know-how and experience in teaching methods and materials for M & S education, emphasizing observation and simple experimentation.
- The long-standing practice of an in-service teacher training system designed for professional development of teachers as well as retraining for periodic curriculum changes.
- The practice of group learning by teachers for self-improvement through lesson research, which is usually carried out on a voluntary basis.
- The experience of linking basic M & S education to vocational and technical education with industrial applicability and enhanced employability.

(Nagao, 2004, p. 57)

According to the literature on human capital accumulation, high quality education at the primary level generates the highest returns, both at the primary level and all levels thereafter. Juma (2005) also clarified that despite clear implications that strengthening the quality of higher education and its link with the needs of industry facilitated greater competitiveness in a global knowledge economy, the skills and knowledge developed at earlier education levels were equally crucial (Juma & Yee-Cheong, 2005, p. 3). Investing in quality learning that occurs in early childhood develops cognitive and social skills that lead to better and longer-term impacts on skills and labour market outcomes. Evidence also suggests that the efficiency of education at this level would be further enhanced by parallel investments in children's health (Fasih, 2008, p. 3).

- 2) A well-organised school curriculum focuses not only on the theoretical and practical information learned in classrooms but also strengthens practical skills learned through various activities such as internships for workplace experience, study visits and other field experience, including attendance at seminars and conferences.

- 3) Since 1954, Japan has organised the Central Union of Agricultural Co-operatives, which is an independent administrative body within the Japan Agriculture (JA) Group. This union determines policy and administrates the group (Ja-Zenchu, 2013) in order to contribute to the sound development of the group's activities. It does this by formulating common guidelines and programs of the group's activities and promoting the implementation of these programs by the group's member organisations. In order to attain such objectives, Japan Central Union of Agricultural Co-operatives performs various functions. In collaboration with its members, the 47 Prefectural Unions of Agricultural Co-operatives throughout the country, the group provides management guidance, auditing, farm policy representation, public relations activities and education & training services for staff members and officials of agricultural cooperatives. JA group also makes continuous contributions to the development of

agricultural co-operative movements in developing countries through its affiliated international training center, the Institute for the Development of Agricultural Cooperation in Asia (IDACA) (Ja-Zenchu, 2013).

According to Nagao (2004), Japan can provide a good example for Africa in Mathematics and Science (M & S) education. However, this is contingent on Japan's ability to develop a workable system that provides an experience-sharing model of technical cooperation in the area of M & S education (Nagao, 2004. p.68). The "experience-sharing model" is not only relevant in the area of M & S but can also be applied to traditional agricultural education in Tanzania. King (1998) also believes the experience-sharing model to be beneficial for facilitating a sense of "ownership" of innovative programmes in developing countries such as in Africa.

The case of Japan demonstrates how high-yield production of quality rice can be achieved from agricultural practices imported from such a successful rice-producing Asian nation. Learning from Japan introduces many of the new technologies relating to the traditional Asian practice of paddy farming. Many of these are labour intensive and require a discipline of constant nurturing and monitoring. From observations in the field and from survey feedback, it is clear that these skills have proven difficult to inculcate and develop in the various TVET programs in Tanzania and many students find it difficult to understand concepts unless they are linked to known local practices. Moreover, traditional farmers find it difficult to transfer to paddy production since many of the long-term cultivation processes seem too technical and, at times, antithetical to traditional agricultural processes.

Moreover, Japan has a good basic education system on a strong foundation, having been developed for more than 100 years, providing students with literacy and numeracy which supports these students in learning how to produce high quality rice and also supports a good R & D system by producing a population with strong science and mathematics skills. At the same time, the government of Japan has been investing in traditional agricultural education programs due to the demand for high rice productivity which called for an improved

curriculum and pedagogy at school. The Japanese education system has been given strong support politically and historically and has itself incorporated a pedagogical scaffolding with respect to traditional thought and practice in addition to its focus on high-order literacy and numeracy. In order to benefit from this Japanese experience, Tanzania must have a supportive system to catch up with the long investment time Japan has had to develop its rice production methods over hundreds (if not thousands) of years. To make up for this time gap, the DACUM approach to curriculum development, which provides a more demand-driven, practical and realistic skills-development programme, could be one major investment by the government of Tanzania in the TVET school system. The DACUM approach is further discussed in chapter 5 and pedagogy and “scaffolding” later in this chapter.

Although McGrath (2011) expressed his uneasiness about borrowing from different contexts, it is worthwhile learning from other contexts like the Japanese case. Applying characteristics of the Japanese skills development system to rice production has served to strengthen the quality of rice production in Japan, and we can draw important lessons from this method. As a first step, lessons from Japan can be used to determine the best ways for Tanzanian youth to obtain relevant and practical skills through the TVET system and to make a significant impact on the quality, efficiency and yield in rice production in the country.

3.2. TVET in Tanzania

In Tanzania, quality assurance and quality control for TVET programmes are undertaken by the Vocational Education and Training Authority (VETA) for Vocational Education and Training (VET) and the National Council for Technical Education (NACTE) for Technical Education and Training (TET). TVET in Tanzania is provided by different institutions under different Ministries, including the Ministry of Education and Vocational Training; the Ministry of Community Development, Gender and Children; the Ministry of

Health and Social Welfare; the Ministry of Agriculture; Food Security and Cooperatives; the Ministry of Water; the Ministry of Works; the Ministry of Livestock Development and other key stakeholder institutions (African Development Bank, 2013a).

The Government of Tanzania, in collaboration with development partners and civil society organisations, has implemented a number of initiatives aimed at promoting and improving the TVET provision in the country. These include upgrading teaching and learning infrastructures, establishing institutional capacity and enhancing quality control in training provision. Stakeholders are viewing initiatives taken to promote TVET and improve its provision as occurring at a slow pace and as having limitations since there are still a number of primary and secondary school graduates who are not accessing training (United Republic of Tanzania, President's Office, Planning Commission, 2012, p.106). Employers are dissatisfied with the skills acquired by TVET graduates and with their performance in the actual world of work. Efforts and resources so far have been directed mostly towards massively expanding the quantitative dimension of the public and private TVET providers and only to a lesser extent towards quality improvement, and this is starting to present a problem. With respect to the syllabi, it was felt that there is also a real mismatch between training programmes and industrial experience in most of the countries addressed. Again, it was voiced that students may have toolkits, and gain the necessary knowledge, but still not be successful.

However, a nationwide survey done by VETA in 2012 in all major regions of Tanzania and covering all major vocational training sectors indicates that most of vocational education trainees enrol in ICT and automotive courses, with 26 per cent and 19 per cent respectively enrolling in these two programs (see Figure 13). In contrast, the agriculture and food processing sectors enrol only two percent of all the trainees.

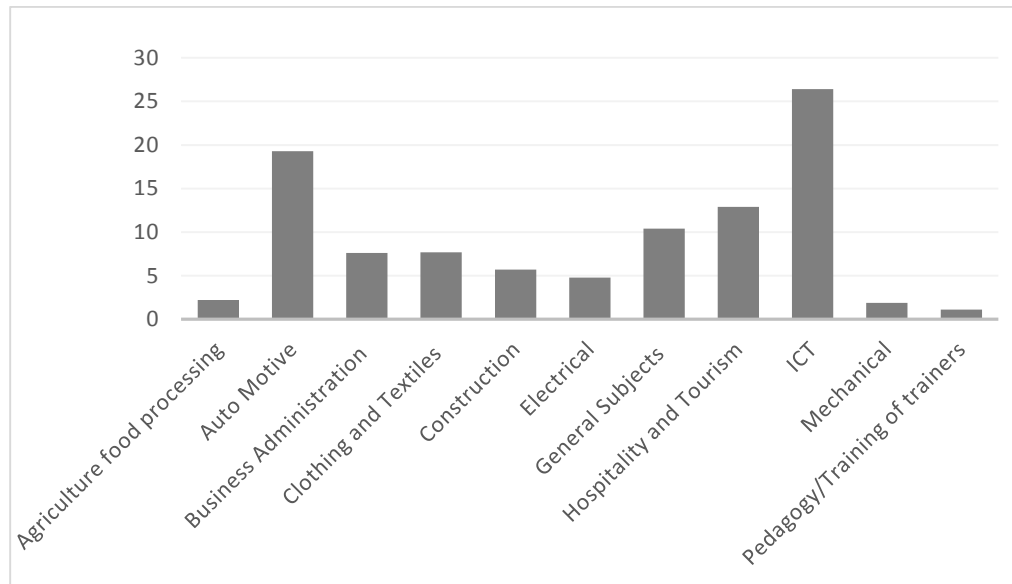


Figure 13: Percentage of students by sector (Source: MoEVT and VETA, 2012)

However, different institutions indicated that their graduates were absorbed into the labour market at different levels. As Figure 14 shows, the agriculture sector reported the highest absorption rate followed by engineering at 70 per cent and business and management at 50 per cent. The agricultural sector seems to provide more employment opportunities as compared to the other sectors although the registered number of students who study agriculture is very small. Since there are fewer TVET graduates who studied for the agriculture sector, those students would get more opportunities for employment with less competition than students who studied for other sectors. The sector is much bigger, even if it grows more slowly. In addition, students are not encouraged to study agriculture in the TVET system, which further indicates that there is a gap between supply and demand in the agriculture sector that remains unaddressed by TVET. According to the informal interviews with TVET students, these students think working and studying in the agriculture sector is considered old fashioned and is not highly regarded. For instance, many young people prefer studying ICT, which can be utilised more widely in subjects such as marketing and finance, or other areas that are considered more fashionable and lucrative than agriculture.

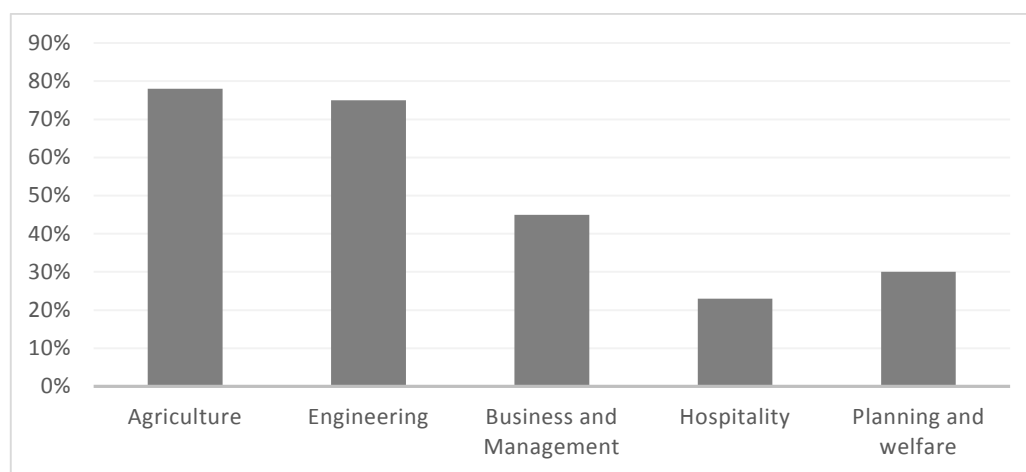


Figure 14: Absorption rates by Institution's Area of Training Specialty (Source: MoEVT and VETA, 2012)

The labour market's demand for TVET graduates depends on the areas of their specialisation. Figure 15 indicates the destination of most TVET graduates after they complete their training and is based on a survey of TVET providing institutions. Responses indicated that for 37 per cent of the sampled institutions, graduates were employed mostly by the public sector. 36 per cent of these institutions indicated that graduates were employed in the private sector, and 23 per cent claimed that self-employment was the main destination of their graduates. Four per cent of the institutions were not sure of their graduates' whereabouts after training.

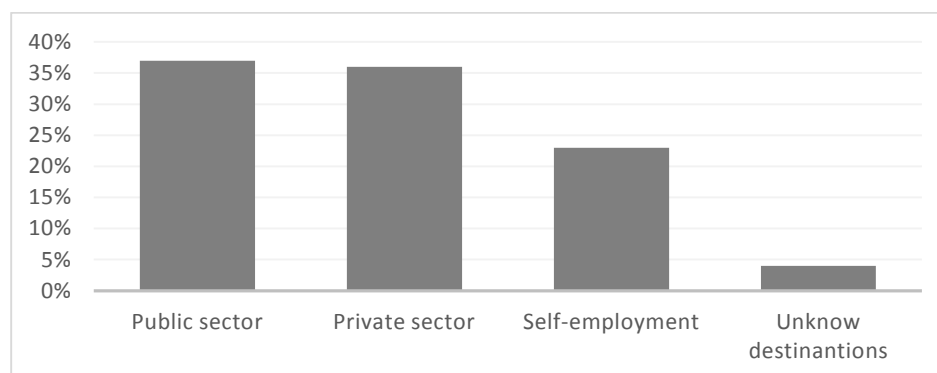


Figure 15: Employment destinations of TVET graduates (Source: MoEVT and VETA, 2012)

However, it is clear that addressing skills development without considering the vast majority of youth who never take part in formal training institutions will only solve part of the problem (MoEVT, 2011). As a consequence, the contribution of TVET to productivity and employment is still questionable.

So far, TVET programmes have failed to address actual competency needs in the economy, and most programmes are judged to be of low quality and based mainly on theory rather than practical and relevant training (African Development Bank, 2012). These programmes suffer from resource constraints, lack of skilled TVET teachers and shortages of the relevant equipment in ill-equipped environments. A systematic integration of TVET and the demand from the labour market and workplace has not yet been achieved. Since achieving such integration is a long-standing problem, this research seeks to answer why the problem has not been resolved, despite all the efforts made by development partners and the government of Tanzania over the last 30 years.

A number of challenges face TVET delivery systems in a developing country like Tanzania. The first challenge is the quality of TVET and the number of students entering TVET with insecure foundational skills. For example, science education at the pre-tertiary level does not provide students with an adequate knowledge base to pursue scientific and technical programs at the tertiary level. The second challenge is that TVET needs to play a much more important role in imparting trade and entrepreneurial skills to females who often end up self-employed in the informal market (United Republic of Tanzania and The Association of Canadian Community Colleges, 2011). In fact, informal sector growth is important socially as well as economically, since improvements in the well-being of disadvantaged groups (such as females, the self-employed and rural populations) depends upon informal sector growth (Ziderman, 2003, p.154). Overcoming these challenges is not easy as the target group is varied in terms of educational background, custom and culture, level of expectations and age. The existing laws and regulations also do not favour various initiatives targeting the informal sector (Kali, 1997, p.59). Some groups may want to be

trained in specific skills such as business marketing, how to sell goods, and conducting marketing campaigns; however, the provision is not always available. These are skills needed to strengthen the functioning of the group, and are important according to the stages reached by the beneficiaries (Kali, 1997, p 59). The third challenge is that many young people simply do not have access to formal training institutions such as VET and or TET (Netherlands Organisation for International Cooperation in Higher Education, 2010).

Tanzania's main concern is skills development. Skills acquisition is beneficial for everyone, regardless of age and level of learning, and it supports global economic and social development. Sometimes, government strategies and policies tend to focus narrowly on acquiring skills and neglect focusing on putting skills to use. Such neglect is based on the assumption that current skills development systems are insufficient to cope with demands and insufficient in adjusting to African context rather than recognizing that transformational approaches are often required (GEMS Education Solutions, 2013, p.2). There are five definitions of different types of skills:

- 1) Foundation skills – core literacy and numeracy skills that many fail to achieve through primary education and which are essential to effective working lives;
- 2) Transferable/Dissemination/Implementation skills (often called 'soft skills') – these are crucially important for employment, but alone neither make people employment-ready nor create jobs;
- 3) Technical and vocational skills- these are acquired in upper secondary school, colleges, training institutes and the workplace;
- 4) Higher level skills - a sub-set of technical and vocational skills, essential to the creation of technical specialists. These are often overlooked but serve as a route to and are vital within higher education;
- 5) Life skills- particularly social skills such as those used to support individuals at home or, at a broader scale, to mitigate the threat of HIV and AIDS.

(GEMS Education Solutions, 2013, p.2).

In fact, the skills and attitudes that individuals need to meet both their own goals and societal demands have become more complex in this day and age. For example, employers and industries are demanding that workers be adaptable to keep pace with fast-changing technologies, workplace organisation and work modes. Globalisation also makes it necessary for people to understand and respect the diversity of cultures and beliefs with which they are increasingly coming into contact. Furthermore, societies face collective challenges of modernisation and must learn to balance economic growth with environmental sustainability and prosperity with social equity.

Moreover, according to the Labour Force Survey, the significant skills gap in Tanzania needs to be narrowed in order for the country to achieve the Tanzania Development Vision to attain middle-income status. Skill gaps analysis is a common business tool used by governments to assess the difference, or gap, between the current state and a future goal state. A skills gap analysis can also be a valuable tool to individuals because it allows an employee to identify the improvements he will need to make in order to advance in his career. A successfully performed skills gap analysis will give the employee (the TVET graduate) a clear path for professional improvement. If the employee is able to close the gaps indicated by the analysis during his or her training period, he or she should significantly improve his or her chances of demonstrating competency in the work environment and satisfying employers. Some particular groups of skills needs that apply to the case of paddy farming are listed below:

- How to build an irrigation system;
- Water management;
- Fertilization method improvement;
- Harvesting; and
- Use of ICT for Marketing

(VETA, 2012)

Subjects related to improving skills in management and enterprise should be strengthened in the agricultural curriculum. These skills are mostly lacking in the current curricula (VETA, 2012). Knowing ways of training management, in particular, is necessary to enable and encourage innovation in agricultural enterprises and enable them to have an impact on economic growth. The curriculum needs considerable strengthening in creating (i) effective functioning of producer and marketing groups; (ii) sustainable management of priority marketing infrastructure investments by district councils and local communities; and (iii) strengthened capacity of private sector operators to benefit smallholder farmers (African Development Bank, 2011,p.p.8-9).

The skills gap is attributable to the lack of pertinent Labour Market Information (LMI) and the corresponding occupational and/or training standards as well as the inadequacy or lack of the required human, physical and financial resources for teaching and learning facilitation in the subject areas. Moreover, the application of knowledge and skills is quite low: farmers do not always apply acquired skills and knowledge timely and correctly (Swisscontact Tanzania, 2013, p.2). These issues need to be addressed if Tanzania wants to ensure that TVET's anticipated impact is realised. The knowledge management system and the Planning Monitoring and Evaluation (PME) capacity at the regional level needs to be strengthened so that each region can analyse its implementation experience and incorporate this analysis into creating enhanced programme results and sharing. Analysis will also be beneficial for assessing fiduciary issues, assessing knowledge and capacity gaps and determining how these are managed. Such analysis will also be crucial to the increase of awareness within the private sector, thus making the actors more effective participants in service provision, and to create opportunities for new graduates to enter the market for service provision in rural areas (African Development Bank, 2011, p.17). Moreover, introducing external training is also crucial to overcome shortcomings by developing the appropriate training courses to complement internal skills acquisition (Ziderman, 2001, p.155).

For success in such a complex, interdependent and ever-changing world, individuals need to develop certain “core competencies.” Education is not just about knowledge and equipment, but about standards, attitudes and competencies (Kali, 1997, pp. 12-13). Building these competencies needs to be incorporated into the objectives of school curricula, which instead tend to focus on abstract, de-contextualized and factual knowledge. In fact, early investment in cognitive and non-cognitive skills produces a high return and lowers the cost of later educational investment by making learning at later ages more efficient (Fasih, 2008, p. 3).

Competencies include more than just knowledge and skills; they also involve a psychosocial element that includes values, attitudes and the ability to apply skills in a particular context. These elements are not less important in the knowledge economy; in fact, they are necessary tools for knowledge acquisition and communication (World Bank, World Bank Institute, 2007, p.2). Some of the key competencies include:

- Cognitive/academic/technical: Skills in processing language, symbols, text, logic, mathematics and technology as well as the ability to use these tools purposively and interactively.
- Problem solving: Capacity to observe, analyse, think critically, question, challenge, identify parts of a problem, suggest creative solutions and innovate.
- Social/interpersonal: Ability to interact and communicate, relate well to others, work in a team both as a member and leader, cooperate, negotiate, manage and resolve conflicts, construct arguments and develop social/professional networks.
- Work ethic: Demonstrating commitment, interest, motivation and responsibility at work; this also includes flexibility and adaptability, risk taking, goal setting, initiative and entrepreneurship.
- Autonomy: Motivation to learn, learning to learn, learning independently, concern with one’s own development, self-knowledge of one’s capacities, self-confidence,

ability to form and conduct life plans and personal projects and to defend and assert one's rights, interests, limits and needs.

(World Bank, World Bank Institute, 2007, p.4)

In particular, efficient investments can transform TVET capabilities by supporting the development of critical thinking skills, problem solving, risk taking and experimentation, which are needed for skills development and which will further help diminish the gap between the skills that are acquired and the demand from the local labour market. Efficient investment can, therefore, accelerate economic growth in Morogoro paddy fields. Investments can particularly help Tanzania, where enrolment growth in tertiary institutions has outpaced financing capabilities. The ratio of academic staff to students has also fallen significantly, resulting in severe crises in staffing, brain drain, poor working conditions and insufficient output from post-graduate programs (World Bank, 2009).

The value of a given competency depends on the particular goals of an individual and the values of his or her society. Identifying which competencies to include in any given curriculum, therefore, should include careful consideration of which psychosocial abilities are needed for individuals to function successfully in their current environments, cope with and adapt to changes happening around them and purposefully implement positive change to shape their world in the future. Although individuals need a wide range of competencies to face the complex challenges of today's world, it would not be practical to list each ability that a person may need throughout his/her lifetime in every context. Thus, when identifying which competencies should be prioritised by education and training programs, it might be more useful to generate them around certain broad characteristics. For example, each competency should be:

- **Beneficial:** Contributing to valued outcomes for individuals as well as societies, with social and economic purposes.

- Transferable: Applicable in a wide variety of contexts and multiple areas of life, from the workplace to personal health and well-being, to relationships and parenting and into the social and political spheres.
- General: It is important for all individuals to aspire to develop and maintain general competencies, rather than those particular to a specialized area, trade/occupation, or walk of life.

(World Bank, World Bank Institute, 2007, p.5)

3.3. Linking occupational analysis to TVET curriculum design

The DACUM approach provides a promising approach to analysing the competencies and skills required for a worker, and it uses this type of analysis to design a curriculum for training. The acronym DACUM refers to “Developing a Curriculum” and it is a leading on-line resource for occupational analysis developed by Ohio State University, USA (DACUM, 2001). This approach is an indicative strategy for occupational analysis –analysing the tasks and competencies needed to carry out a vocational or technical activity – mainly by using expert, successful or “master” workers to define their occupation (DACUM, 2001). This research does not advocate that this specific approach be adopted but rather cites it – or one that is similar – as a possible approach that could be efficiently used especially in case of Tanzania’s paddy sector. DACUM is the type of approach that could be used to inject more systemic analysis into constructing training curricula.

DACUM is a means of researching and analysing a particular job, and it results in a chart listing the duties, tasks and related information about the job. That information can be applied in the development of a TVET curriculum (and individual lesson plans) to assure and, in fact, document, that the content is directly relevant to what is required on the job. In the DACUM process, a panel of incumbents who perform the job (usually those who perform it well) develop a list of all duties and tasks associated with the job based on consensus. The

panel also develops a list of knowledge and skills, tools, equipment, etc., that are essential for success. This all becomes compiled in a DACUM chart, which is a roadmap for identifying relevant training topics (NIC, 2003). A sample DACUM research chart for a technician in company A is shown in Figure 16, below.

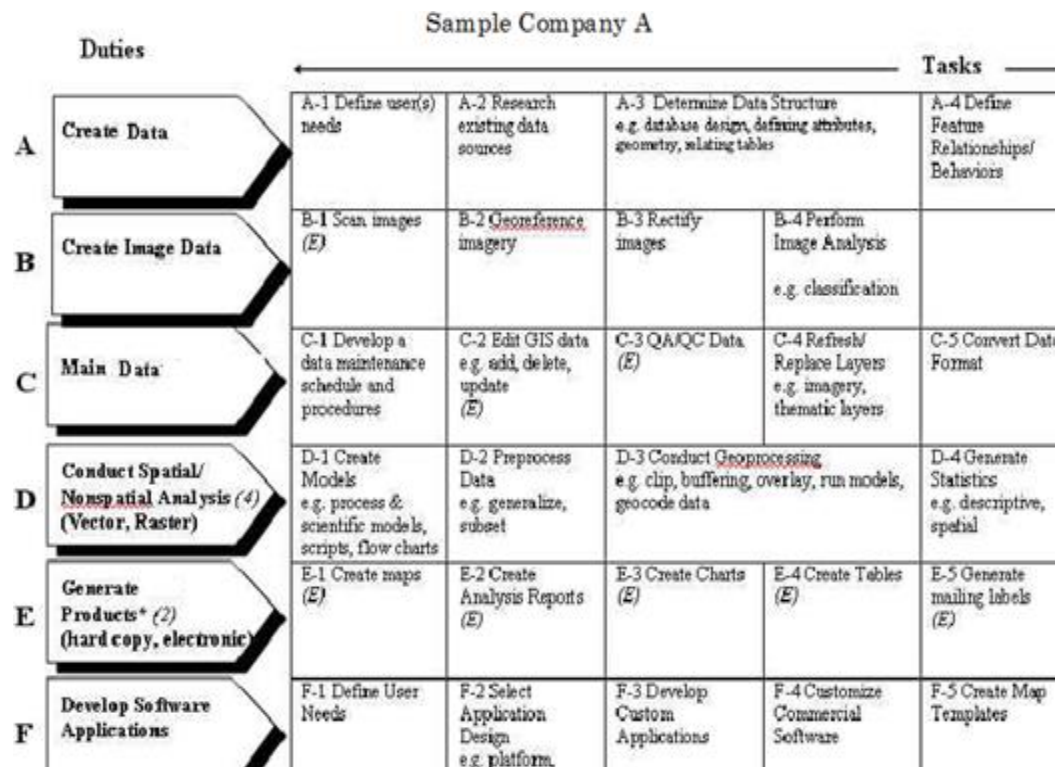


Figure 16: DACUM Research Chart for Technicians (Johnson, 2008, p.6)

Another example of such a system of occupational analysis is the framework termed a “Systematic Curriculum & Instructional Development (SCID)”. This system aims to develop scalable skills based on DACUM methodology. The goal of this approach as an analytical framework is to update the curriculum in order to address the workforce needs of specific industries (Johnson, 2008, p.4). The following sample model provides a detailed structure for designing, developing, implementing and evaluating a skills-based curriculum. It is outlined in Figure 17.

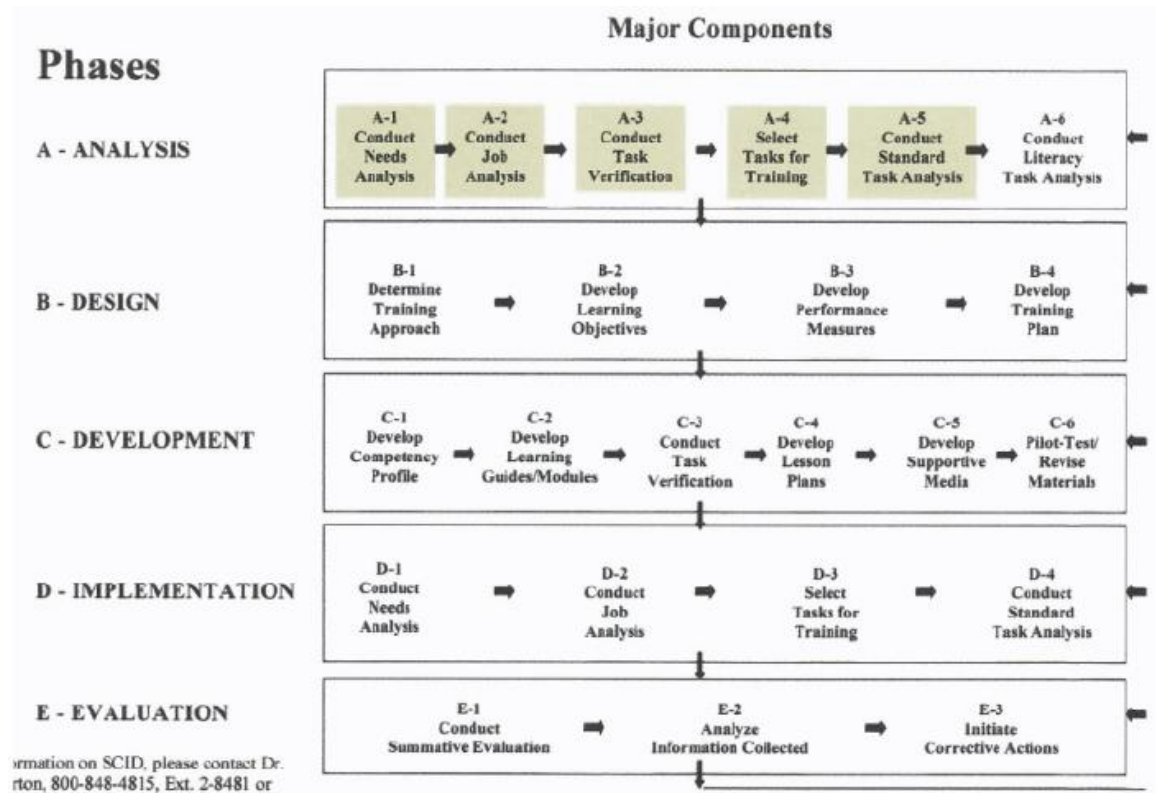


Figure 17: Systematic Curriculum & Instructional Development (SCID)(Johnson, 2008, p.5)

In the case of Tanzania, this DACUM approach could help to strengthen the linkages between the TVET providing institutions and a workplace in which farming activities in the paddy field sector are realistically experienced since it (1) enables the Morogoro paddy experts to describe and analyse their occupational tasks better than the current TVET specialists do independently in the providing institutions; and (2) facilitates a more systematic and effective description of the Morogoro paddy agricultural tasks than before since it can provide analysis of the competencies or skills that successful or “master” workers in this occupation perform and, by means of comparison, determine the specific knowledge, skills, attitudes and tools that a novice Morogoro paddy worker needs to acquire (Reid, 2003, p.1). Moreover, a systematic approach to occupational analysis and the development of the TVET curriculum such as offered by the DACUM approach could also incorporate a leadership

function for the TVET graduates to enable them to function as extension workers in supporting the transfer of new technological practices, technical skills and knowledge to the traditional farmers. However, initially it would be important to create the basic database for identifying the master farmers in Morogoro areas to facilitate this process. One weakness in the DACUM approach is that it does not seem to have a system of identifying the master farmers or a rating system for identifying quality achievement.

3.3.1. Pedagogy and the concept of scaffolding

However, any post-secondary and tertiary education strategy also needs to engage with pedagogical issues, such as teacher training and curriculum by integrating them with the African context. The concept of scaffolding draws heavily upon the work of Vygotsky, and although Vygotsky never used the term 'scaffolding' in his work, it has been associated with the term “zone of proximal development”:

“... the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers”

(Vygotsky, 1978, p.86)

The idea of the zone of proximal development therefore focuses on the idea that instruction should be focused on maturing psychological functions rather than already existing functions that are only relevant for the specific intellectual development of the next stage of development (Kozulin, 2003, p.13). The attractiveness of this idea for the case of TVET in a developing country context such as Tanzania is that it conceptualises the relationship between human learning and development. At a simple level, TVET, through its preparatory training and subsequent continuous professional development, should be provided with the local “scaffolding” or temporary support from instructors/trainers in order to solve the problems concerning agricultural production so that farmers can do it independently. However, the concept of scaffolding is particularly relevant when considering African context thought

processes, belief systems and customs such as those used by local farmers in Morogoro. In fact, it is argued by Piaget (1960) that learning is a phenomenon that results from mental and physical maturation as well as experience, which means that development precedes learning.

Sometimes, goals are set whose attainment is mainly achieved through investing more in inputs (e.g., more trained teachers or university professors, a better curriculum or more learning materials) as well as through paying greater attention to institutional changes in the education system. Moreover, strategies tend to emphasise the importance of aligning governance arrangements, financing, incentives, accountability mechanisms and management tools with national educational goals. In reality, strategies mainly focus on these systemic changes and rarely mention the reality of problems and the African culture. These problems appear to be difficult to address in public and to indicate in both quantitative and qualitative terms. These problems include the existence of low-quality teachers, the need of teachers to supplement their insufficient salaries through private tutoring, the lack of instructional materials and curricula lacking relevance to local needs (Steven, Samoff and Stromquist 2012, p.29). Reform strategies must, therefore, address this broad spectrum of performance problems in the education and training sector while also considering the African context.

In summary, the major challenges in vocational and technical education in Tanzania as represented in the literature are perceived to be; i) the skills mismatch between training courses, the content of these courses and the demands of the labour market, ii) rigid and formal curricula and course organisation that is too theoretical and not adequately competence-based, iii) the lack of coordination among different actors, iv) insufficient training materials and opportunities for experience-based learning and v) low levels of achievement and acquisition of knowledge and skill. All of these challenges need to be improved to support the agricultural sector and to facilitate; (i) improved access to goods, services, markets and information, (ii) reduced transaction costs, (iii) increased output and productivity, (iv) enhanced food safety, (v) reduced post-harvest losses, (vi) improved product quality and increased producer (farm gate) prices, and (vii) improved economies of scale (African Development Bank, 2011, p.13).

The implications for this study are for policymakers to know the kind of skills provided by vocational training in Tanzania as well as the relevance of these skills to employment in the agricultural sector. Policy and strategy could assist in strengthening the TVET system so that it is more relevant and labour market driven.

CHAPTER 4: METHODOLOGY AND DATA COLLECTION

Introduction to this chapter

This chapter discusses the research methods and data collection used in this thesis. To start, this chapter reviews the research questions raised at the beginning of this thesis as a reminder. Secondly, the chapter introduces the research methodology. After this first section, I discuss the methods of data collection on which I focused, 1) TVET Labour Market National Survey in Tanzania (Secondary Data), 2) TVET Labour Market Regional Survey in Morogoro (Primary Data), and 3) field visits and group meetings for qualitative assessment in Morogoro and case studies of agricultural companies (Primary Data). The chapter describes the path taken by the author to organise data sources and to arrive at the results, all of which are introduced and explained in Chapter 5.

4.1. Research questions discussion

There is a need to identify whether the TVET system in Tanzania has adequate empirically-generated information regarding: (i) the skills mix, particularly emerging skills, required in the labour market (this will be used to guide the creation of a curriculum that adequately responds to the needs of the labour market), and (ii) the relevance of the skills offered through TVET to current employers.

This research aims to answer the following questions using several different methods.

The key questions are:

- 1. What are the skills required by employers in the agricultural sector, especially in relation to cash crops?**

2. What are the skills that TVET graduates acquire from training in TVET institutions, especially in cash crop farming?

3. To what extent do the skills acquired match the skills identified by employers as needed in cash crop agriculture and what are the gaps?

4. What are the policy implications arising from employers' needs, trainees' skills, and skill gaps for the development of the TVET system.

The methods used included (i) literature review (Secondary Data), (ii) data from both the VETA national labour market survey (Secondary Data) and the Morogoro regional survey (Primary Data) as well as the case study of cash crop farming in the agricultural subsector for paddy crops in Morogoro (Primary Data), (iii) field visits and interviews to enhance the qualitative assessment (Primary Data), and (iv) insights from my own professional experience (Primary Data).

In order to answer the key questions listed above, this research uses both qualitative and quantitative methods and takes an empirical approach towards analysing vocational training in the agriculture sector, especially in cash crop farming in paddy field. It provides analytical descriptions of the realities of the field and gives voice to some of the perceptions of the key issues. Questionnaires were used to collect first-hand information from employers and employees who have been beneficiaries of vocational training in Tanzania, especially in the cash crop farming agriculture subsector. These questionnaires were used to form employment measurements and indicators through 1) the TVET Labour Market National Survey in Tanzania, 2) the TVET Labour Market Regional Survey in Morogoro, and 3) field visits and group meetings for qualitative assessment in Morogoro and key informant interviews of selected case studies of agricultural companies.

4.2. Methodology

4.2.1. The use of mixed methods, combining qualitative and quantitative analysis

This research was conducted using both qualitative and quantitative methods and by taking an empirical approach towards analysing vocational training in the agriculture sector, especially in cash crop farming in paddy fields. Questionnaires were used to collect first-hand information from employers and employees who have been beneficiaries of vocational training in Tanzania, especially in the cash crop farming agriculture subsector. These questionnaires were used to form employment measurements and indicators.

The first stage of my project involved an extensive study of available literature on vocational training and employment in Tanzania as a secondary source. This stage formed the cornerstone of the rest of my research, as it was used to provide an initial overview of vocational training in the agriculture sector. This initial study also outlined the opportunities and challenges TVET graduates face in acquiring employment in the agricultural subsectors. From the research review it was possible to identify several key issues that shaped the research questions, all of which were indicated in Chapter 2.

The second stage of my research was concerned with deepening my understanding of the labour market through the analysis of secondary data and interviews with key informants. The best complement to my understanding arose from my role as an external adviser to the African Development Bank to Tanzania. In this role, I was directly involved in developing the national labour market studies of TVET for the Government of Tanzania during 2012.

Analysis of the secondary data and other analyses of reports served to generate concise workable policies and strategies contributing to the development of TVET in Tanzania. This involved some analysis of existing secondary data in order to explore the output of TVET systems and opinions about its adequacy. Labour force surveys and data on the flow of

students through the education and training system and into the labour market were also used.

Third, the next stage of my study involved collecting and analysing data on graduates of TVET who had gained employment in the cash crop farming agricultural subsector in paddy and are working in agricultural companies in the Morogoro region. This data used as a primary source was collected through a questionnaire-based survey, which I conducted. This data was supplemented by the statistical study from the Ministry of Education and Vocational Training. The combination of sources used in this study provides a clear overall picture of the situation of TVET in Tanzania as it relates to the agricultural sector in general and paddy farming in particular.

The research also used interviews conducted in the Morogoro region in Tanzania focusing on cash crop farming in the agricultural subsector as a primary source. These interviews constituted an illustrative case study of one subsector of agriculture and were used to explore the issues raised by secondary data analysis and interviews with key stakeholders at the national level. Structured interviews of farmers and trainers were conducted in person, and questionnaires were administered to individual farmers and trainers.

Empirical analysis of the collected data was used to generate answers to the four research questions introduced in Chapter 1. This analysis focused on the skills mix, particularly for the emerging skills required in the agricultural labour market. Such analysis can guide the formation of a TVET curriculum that adequately responds to the needs of the labour market and can also guide the assessment of the relevance that the skills offered through TVET have in graduates' current employment.

4.2.2. Mixed methods

This research was intended to remain as objective as possible, despite the difficulty in relying on some data, especially data from interviews and questionnaires from respondents

who may have had biases towards particular questions. Having such an intention and taking such an approach does not always guarantee that everything collected will be presented in an objective way. Poor quality data often stems from the poor quality of data collection methods common among developing countries, and here it did pose validity and reliability problems. This difficulty was addressed through extracting relevant data from the most reliable sources and comparing these sources with each other. This is the most appropriate method to corroborate and validate data and reach results that are pertinent to the questions raised in this research.

4.2.3. Limitations of the chosen methodology

The limitations of the approach adopted are those commonly associated with using interviews and questionnaires. These include limitations related to sampling, gaining access to appropriate informants, biases of status, selective recollection of events and actions as well as time constraints.

The challenge of sampling was related to the selection of respondents and size of appropriate sample to minimize sampling bias. This was addressed by doing follow-up fieldwork studies to confirm the results of the situations studied.

Difficulties with gaining access to appropriate informants arose from the fear of confidentiality when using the collected information. This was solved by making use of VET administrators and local enumerators as part of this study to provide confidence to the respondents.

Bias of status implies the preference for the current state of affairs. In the case of TVET, the respondents, both employers and employees as well as college administrators might have considered responding to this study's research questions based on the state of affairs instead of the reality on the ground. Again selective recollection, which means responding to what you choose to remember, might also have led to bias and thus affecting

the validity of the results of this research. This was minimised through follow-up studies.

4.3. Methods of data collection

4.3.1. TVET labour market national survey in Tanzania (Secondary Data)

i. Role of author account

The Ministry of Education and Vocational Training (MoEVT) and the Vocational Education and Training Authority (VETA) conducted the national survey with my direction and cooperation. This VETA survey was a large scale exercise that I contributed to as the Task Manager and the auditor from the African Development Bank. Moreover, I was able to use my experience to generate preliminary insights into the nature of skills gaps as secondary data and develop a national picture of the issues before developing my Morogoro regional survey and case study. Both this regional survey and the case study, both of which contribute to produce primary data, were fieldwork undertaken by myself with some research assistants who provided translation and assisted in gaining access to informants.

ii. Purpose

The general objective of this national survey was to determine relevant skills required by employers in the labour market, both in the formal and informal sectors of the economy. This survey should give some indication of the measures that increase the contribution of the labour force to socio-economic development and the reduction of income-poverty in Tanzania (MoEVT and VETA, 2012. p. 16). This is crucial in this research because it helps TVET institutions in Tanzania organise efficient programs by providing relevant knowledge, practical skills and attitudes to enable students to secure employment and to support the social and economic development of the country.

iii. Expected outcome from the national survey

The expected outcomes from the National Survey were as follows:

- Determine skills required by employers in the labour market and identify employers' opinions about the current supply of skills, which shows the skills gap;
- Identify emerging skills in the market versus the current training provision and;
- Determine relevance of skills acquired through TVET in graduates' current employment, which would guide TVET institutional improvement.

(MoEVT and VETA, 2012. P. 16)

iv. Sampling and administration of the survey

The sample used in this study obtained a total number of 1,376 response entities. This number compares to the 2,194 response entities originally planned from the population. This is 63% out of the total possible and is summarised in Table 2 below.

Table 2: Summary of the number of responding entities (Source: Ministry of Education and Vocational Training (MoEVT), and Vocational Education and Training Authority (VETA), 2012)

Responding entity	Employers	Employees			Responses from Training Institutions	Focus Group Discussions	Total
		Male	Female	Total			
Dar es Salaam	22	76	19	95	15	6	186
Eastern	7	141	15	156	12	6	132
Central	15	112	47	159	6	16	191
Western	11	44	20	64	6	3	108
Lake zone	19	128	61	189	6	10	227
Northern	13	55	28	83	37	1	135
South-West	14	87	19	106	7	6	159
South-East	20	70	35	105	6	5	127
Highlands	13	66	20	86	6	3	102
Total Coverage	134	784	266	1050	101	56	1376
Target	122	1952			60	60	2194
<i>Percent achieved</i>	<i>110%</i>	<i>54%</i>			<i>168%</i>	<i>93%</i>	<i>63%</i>

The total coverage of the survey by region included 11 political regions in Tanzania's mainland, sampled from the nine VETA Zones. The particular regions covered were Arusha, Dar es Salaam, Dodoma, Iringa, Kilimanjaro, Mara, Mbeya, Morogoro, Mtwara, Mwanza and Tabora. The sample was selected and constructed based on the data from the school administration of VETA in each region.

In fact, the author visited the 17 regions (Dodoma, Singida, Manyara, Dar es salaam, Morogoro, Iringa, Mwanza, Kagera, Arusha, Kilimanjaro, Tanga, Mtwara, Lindi, Mbeya, Rukuwa, Tabora, and Shinyanga) where the labour market survey was taken and she held discussions with VETA labour market staff to make sure the labour market study for TVET Tanzania, which was extensive in terms of scope and coverage, focused on the following:

- Characteristics of employers, employees and training institutions.
- TVET qualifications and the specialization of skills for both employers and employees.
- Employment status and employment history of TVET graduates.
- Usefulness of the acquired TVET skills in jobs.
- Employers' satisfaction regarding the relevancy of skills possessed by TVET graduates.
- Identifying the availability of new and emerging skills and their challenges in the world of work.

The findings of this study were intended to provide new insights for skills development practitioners, policy makers, researchers and others involved in related development and poverty-eradication programmes. To academics, this study's findings and its empirical evidence shall be a valuable source of information and data for further social studies.

It was agreed that the questionnaires for employers, employees and institutions would be based on a direct interview approach. The training of master trainers was done at the national level, at the VETA Head Office, Dar es Salaam. This was followed by training of field staff in nine VETA Zones covering all regions of the Tanzania Mainland. The training was intensive and aimed at ensuring that the knowledge was transferred in a uniform manner to potential field staff. Efforts were made to standardize the administration of instruments and to ensure construct validity.

Master trainers conducted training sessions in all nine VETA Zones for their respective enumerators. Both the national and zonal stages of training included instructional methods such as lectures, exercises and fieldwork practice in selected parts of the questionnaire.

v. Methods of data analysis

a) The scope of coverage

The Labour Market Study for Technical and Vocational Education and Training (TVET) covered the Tanzania Mainland and utilised the nine VETA Zones within the structure of governance used by the Vocational Education and Training Authority (VETA). The structure of VETA Zones and coverage of Tanzania geographical regions is as shown below:-

- Central zone (Dodoma, Singida and Manyara)
- Dar es Salaam zone (Dar es salaam)
- Eastern zone (Coast and Morogoro)
- Highland zone (Iringa and Ruvuma)
- Lake zone (Mwanza, Kagera and Mara)
- Northern zone (Arusha, Kilimanjaro and Tanga)
- South East zone (Mtwara and Lindi)
- South West zone (Mbeya and Rukwa)
- Western zone (Tabora, Kigoma and Shinyanga)

Due to time constraints, the study concentrated on the areas within reach of individual headquarters within the VETA zones. The newly established regions, as announced by the Government in September 2011, of Njombe, Katavi, Geita and Simiyu were not included in the sample as regions.

b) Sample design and selection

For the employers study, the following stratification was used – (i) companies, which are main contributors to the national corporate tax, (ii) parastatal organisations, and (iii) informal enterprises.

Stratum A: - A total of 30 companies contributing to about 90 per cent of the entire corporate tax in Tanzania were purposefully selected and included in the study.

Stratum B: - A total of 30 parastatal organisations were selected. Initially, the list of parastatal organisations was stratified into three major categories in terms of their outputs, i.e., Utility Entities, Service Entities and Executive Agencies. Ten organisations were selected randomly from each category.

Stratum C: - For the purpose of this study, the informal sector was defined as business entities that are characterised by the following attributes – (i) lacking proper business records, and (ii) failing to pay the required taxes. A sample of 90 such enterprises was selected. For these, stratification was employed to ensure that all TVET categories were represented (VETA, 2012). The results are reported using the above three strata.

In the study for employees, a total of 1,920 employees were targeted in the sample. These were taken from the 150 employing entities that were selected for this study. A list of all employees having TVET qualifications – in the range of achievement from NVA levels one to three and NTA levels four to eight was requested from each respective employer that was interviewed. For each employing entity, a maximum sample of 16 employees was targeted. The design ensured, to the extent possible, that there was equal representation from each of the NVA and NTA levels represented in the particular company.

For the TVET training institution study, a total of 60 pertinent TVET institutions, all within a convenient distance from the companies to be studied, were targeted. Once the companies used for the employers' study had been picked and their locations known, then the 60 training institutions were identified.

c) Development of the data collection instruments

A team of TVET stakeholder experts jointly developed four questionnaires for data

collection. These questionnaires included employers of TVET graduates, employees, TVET training institutions and Focus Group Discussions. The development of the questionnaires was based on standardised questionnaires and included quantitative and qualitative questions where appropriate.

d) Data processing and analysis

The data entry processes conducted at Kibaha Conference Centre started on 25 June 2012 with the coding and editing of the questionnaires. This activity involved officials from the Ministries of Education and Vocational Training; Community Development, Gender and Children; the African Development Bank and VETA together with data entry clerks. Experts from VETA used a computer software programme, namely the Software Package for Social Scientists (SPSS) for analysis. This work resulted in data entry and the production of tables for data processing and analysis. This task involved the mentioned officials as well as labour market analysis from all VETA nine Zones. Working together as a group during the data entry, processing and analysis was meant to build capacity and better ensure local ownership. The task of coding and entering data was centralised. A centralised approach was argued to guarantee uniform data editing and cleaning, thereby ensuring quality control. The whole exercise ended during the first week of July, 2012. The data entry and processing generally included the following activities:

- Preparation of the Data entry and consistence checks program;
- Receiving and batching the filled in questionnaires;
- Recruitment and training of Data Entry Clerks;
- Manual Data checking and coding before entry;
- Data entry (double entry or 100% verification); and
- Data cleaning using a consistency check program.

e) Data cleaning

Data cleaning was undertaken during the data entry stage through a double entry process and through screening and editing questionnaires received from various Zones. At the data entry stage, control checks were integrated into the data entry application for the purpose of reducing illogical entries. Finally, after all of the data was entered, a batch edit application was used on the entire data set to ensure that no erroneous data remained. A Compact Disc (CD Rom) containing the original data file and another with the cleaned data were then archived. Further, tables of analysis were produced that are consistent with the overall and specific objectives of the study and that outline the study report as agreed during the series of consultations among TVET institution experts.

f) Design of tabulation plan

Table and graphs for analysis were divided into three areas as per survey categories: employers survey tables, employees' survey tables and TVET institution survey tables. It was recommended that further analytical tables be generated as analysis and report writing proceeded.

g) Problems and limitations of national survey

While collecting this data, I was part of the team as a task manager and auditor. We faced the following challenges:

- Limited time of one week for data collection;
- The exercises needed more time to enable enumerators to make reliable appointments with employers;
- English language was used in interviews, and some respondents were not conversant with this language. It was crucial to organise the interviews in English since it is an

official language in Tanzania. Moreover, using English instead of using local languages was crucial for this National Survey because it made output more useful for analysis regionally, nationally and internationally;

- Some employers and graduates in some areas appeared generally busy and had little time to spare for seemingly non-productive purposes. They often failed to honour appointments for interviews;
- Some questionnaires were left with respondents for completion and were to be collected at a later date. However, these yielded low returns and were more time consuming since one had to make several follow up visits before the questionnaires were completed, and in some cases, they were not completed;
- Some employers had opted to administer the questionnaire to their employees. While they did agreed to do so, the actual process of administering the questionnaire has been a problem and some could not respond as required. However, no evidence has been documented to show that these problems affected the responses given by the interviewees, and, therefore, the analysis assumes that the respondents were not affected.

(Source: MoEVT and VETA, 2012)

After the process described above, the data was used by MoEVT to create a report. I present some of this report's findings here to describe the main situation. To do this, I used the original data, and I then extracted the information that follows. The national data was especially helpful in identifying and strengthening the situation analysis, especially when I addressed the key research questions one to four. This is because the national data gave me a wide perspective of the TVET situation and a focus on the skills gaps in Tanzania.

The analysis of secondary data provided many insights into patterns of training and the flow of graduates into jobs and this influenced my work as a task manager of a TVET project in Tanzania in the African Development Bank. Using a mix of secondary data (labour

force data, school census, qualification rates etc) was especially helpful when it came to addressing developing research questions and establishing what was already known.

4.3.2. TVET labour market regional survey in Morogoro (Primary Data)

i. Role of author account

For this regional survey, the author becomes the primary actor in creating and organising the regional survey from the ground up. This has the benefit of compensating and strengthening the questionnaire so that it includes questions that had not been covered in the national survey indicated above (4.3.1). The case study fieldwork was undertaken by myself with some research assistants who provided translation and assisted in gaining access to informants. In addition, it was helpful for the author to attend and conduct interviews in person so as to see and judge the gestures and reactions given during the interview, which helps analysis.

ii. Purpose

The general objective of this regional survey was to determine relevant skills in paddy sectors and ways in which TVET institutes could support the production of appropriate skills and avoid the creation of a skills gap. This was, therefore, a more focused exercise than the first data collection exercise survey. The Morogoro area is the largest region and the heart of the agriculture sector in Tanzania. Therefore, in order to produce an in-depth analysis on skills development in paddy sectors, it is essential to focus on the Morogoro region in identifying the skills gap and finding an innovative way to make TVET institutions more relevant in producing the right skills based on local needs. This is the major difference between this survey and the national survey. Morogoro faces several challenges. These include a lack of funds for irrigation infrastructure; inadequate extension staff; poor infrastructure;

environmental degradation; the lack of a processing facility for crops, especially tomatoes; and communicable diseases such as malaria, diarrhoea and HIV/AIDS, among others (Regional Commissioner's Office Morogoro, 2012). Successive regional development plans, apart from social services, concentrate efforts on the improvement of the food crop sector. The main constraints have been low technology, dependence on rain-fed agriculture and poor infrastructure. Various investigations have been made concerning ways of utilising the potential of the region's considerable water resources with a view to removing undue dependence on rain-fed agriculture and, subsequently, to improve food crop production. There is also still a low level of consciousness among women for defending their rights and privileges. More women groups are needed to foster such consciousness by bringing up the relevant gender issues for joint examination. Such consciousness can be promoted by NGOs, bilateral/multilateral agencies and even individuals. Governments can also play a role. Income generation as a first step towards women's emancipation is proving popular among women. Therefore, more efforts in this direction are needed (VETA, Eastern Zone, 2011).

iii. Sampling and administration

The main survey instruments used were structured questionnaires and tables, which were to be completed. A sample of 100 respondents was selected. These respondents were selected randomly from a list of names that was provided by VETA Morogoro Regional office. The population is indicated in table below. All of this data is author's original work.

Three questionnaires were administered: (i) one for agricultural company employers; (ii) another for employees who were TVET graduates working or attached to the agricultural industries/companies; and (iii) one for administrators and instructors in TVET providing institutions. Details of the sample size are given in Table 4 below. 40 of the respondents were employees/TVET graduates; 40 were company employers; and 20 were TVET Institution administrators. The sample for the questionnaires was determined after holding discussions with the Headquarters of VETA Morogoro, the Morogoro Chamber of Commerce and the

local office of the Ministry of Labour. In preference to a random sampling of companies from a compendium of 359 companies in the Morogoro government company register, provided by VETA, a stratified sample of companies was chosen based on the following criteria, which was proposed by VETA based on their knowledge of the Morogoro region:

1. all had to be involved in an aspect of paddy production
2. a variety of agricultural subsectors had to be represented (e.g. sisal, dairy, ranching, seed production, etc.)
3. a variety of company sizes had to be represented (from X employees to 300 employees)
4. a representative distribution throughout the region but all in rice growing areas had to be used.

Table 3: Sample size determination and target population of TVET graduate employees and employers in Morogoro Region (Source: Author)

Target population	Sample Size	Total population	Percentage population
TVET Graduate Employees	40	305 (224 Males and 81 Females)	13%
Employers	40	359	11%
TVET Institutions Administrators	20	58	34%

The sample of employees/ TVET graduates in Morogoro was selected from those who had graduated in the last year from their agriculture courses and from those who specialised in paddy and were, therefore, currently involved in the paddy production. The employees for this study were selected randomly from a list of TVET graduate employees provided by each company. The questionnaires were administered by three enumerators who were trained under the author's supervision. Where answers were in Swahili, however, it was translated into

English by the head of VETA Eastern Region (Morogoro).

The validity of the questionnaires was pilot tested, and a revised version was developed. 22 respondents were interviewed in the questionnaire testing stage. This included one instructor from Morogoro Teachers College as well as one staff member from VETA. The purpose of administering these questionnaires was to revise them in order to assist in devising a more reliable database at the end of the exercise. This testing revealed that the questionnaires were too lengthy and some questions were overly complex and, therefore, difficult to answer. This piloting helped simplify and shorten the questionnaire leading to faster administration. Once the questionnaires were revised, the 22 respondents were interviewed again as part of the 100 respondents from the selected sampled population. 46 of these respondents were TVET graduates, 44 were TVET employers and 10 were TVET institutions.

10 companies were identified. Of these 10 companies, seven were able to respond to the survey's request to complete questionnaires. Three were not able, mainly due to the absence of the company managers at the time the survey was conducted. Since all the selected companies are key firms in Morogoro, and given that 70% of the sampled firms responded, this research considers this as a high response rate and as representative of the population. The importance of these companies was confirmed by VETA, which selected the companies to represent the agricultural sector investment in Morogoro. The selected companies were: (1) African Fibers; 2) Agricultural Seed Agency; 3) Dimara Agricultural Trading Cooperative Society Ltd; (4) Godfrey Mkondya; (5) Kingolwira Dairy Farm; (6) Mpembwa Agriculture and General Business Limited; and (7) National Ranching Co. Ltd (NARCO). The seven companies are medium sized with a number of employees, on average 35 employees. Details of the questionnaires and answers are given in Annex 1 and 2. In fact, there were three questionnaires, for (a) TVET Graduate Employees, (b) Employers, and (c) TVET Institutions Administrators. The key themes of each questionnaire are (a) to identify whether graduates could obtain any relevant skills related to crop farming from the TVET institution in question (b) to identify the efficiency and relevancy of the current TVET institution curriculum/strategy

in the agriculture sector and (c) to identify the internal voice of TVET Institutions Administrators. Specifically, Annex 1 is composed of the case study of these companies from which I have also obtained the supplement to sharpen the methods of regional survey.

For the testing phase of the employees' survey, the sampling error was 0.11 whereas that of the employer's survey was 0.13. The sample error was estimated by probability modeling of the selected sample as shown below:

$$\text{Sampling Error} = \pm 2 \sqrt{\frac{P(1-p)}{n} \left(\frac{N-n}{N-1} \right)}$$

where p is the proportion in decimal form, n is the sample size and N is the population size (Botsch, 2012). The findings of the instruments-testing phase were used to refine the questionnaires, to make them shorter and more specifically based on the objectives of this research. Details of the three sets of questionnaires and the compilation of findings are given in Annex 2-A (Employers), Annex 2- B (Employees) and Annex 2-C (TVET Institution).

iv. Expected outcome from the Morogoro regional survey

The expected outcome from the Morogoro regional survey is to support (i) identifying the skills that students need to perform jobs in agriculture, (ii) identifying the existing skills gaps between employers' needs and employees' capabilities, and (iii) analysing and evaluating the employability of TVET graduates in the agricultural sector, especially in the cash crop farming subsector of paddy. This Morogoro regional survey together with the national survey (secondary data) has deepened the analysis of the key questions raised in this research. The strength and uniqueness of this regional survey, which produces the primary data, forms both the methodology and methods formulated by a meta- theory composed of ontological and epistemological elements, assisted future perspectives, specifically those aimed at improvement of the curriculum and the policy framework.

v. Methods of data analysis

To accomplish the objectives of this study, I administered questionnaires to randomly selected respondents from a list of employers and employees, provided by VETA, in the Morogoro region. The questionnaires elicited information concerning the characteristics of employers and employees in the agricultural sector in the Morogoro Region specifically (see the Annexes YY for questionnaires). As explained before, to provide a nationwide analysis, this study used the VETA survey on labour market studies for TVET organised jointly with author in Tanzania in 2012. For the regional level survey, the agricultural sector of the Morogoro Region in Tanzania served as the context. Morogoro was selected to represent Tanzania in the agricultural sector based on VETA's recommendations.

The main regional survey instruments used were structured questionnaires with few open-ended questions and tables that respondents filled, all of which were prepared by the author. Many questions were closed, which served the purpose of performing easy analysis. Three questionnaires were administered; the first was completed by employers, the second was completed by VET graduates working or attached as interns to agricultural industries/companies, and the third was completed by TVET institutions. For the purposes of this study, the Morogoro region was selected for the administration of the interviews. The survey included interviews with owners of companies/industries, institutions' administrators and trainees. Discussions were centered on skill gaps and job opportunities in the agricultural sector. The Morogoro regional survey was supplemented by field visits and the case study of agricultural companies in Morogoro. The interviews complemented the surveys and confirmed/tested the validity of the answers provided in the surveys.

This regional survey was the main pillar of this thesis and served to answer the key research questions raised at the beginning of the thesis. This primary data was supplemented by the national data, which came from the Government of Tanzania. This data collection was

led by the author, as was the content analysis of interviews, all of which made the analysis deeper and allowed it to support the answering of the key questions by comparing and contrasting the research data as indicated in Chapter 5 from both the regional survey (primary data) and national survey (secondary data). This process is inevitable in deepening the analysis since the primary data is to be used efficiently by critically analysing the secondary data.

vi. Challenges of Regional Survey

There are two major challenges of this regional survey. The first challenge is the reliability and validity of the answers given by respondents. This is because interviewees tend not to be used to answering such specific questions as provided by the author and may not have had enough time to think through the questions prior to administration. Secondly, the questionnaires needed to be adapted to respondents' awareness. Most of the respondents were cooperative in answering the regional survey except for a few such as the heads of agricultural companies due to their having a busy schedule as well as scepticism in providing their companies' private information. To counter this problem, I visited and interviewed the respondents and asked them to provide information that was not actually classified as confidential by the company.

4.3.3. Qualitative interview (Primary Data)

i. Methods of interviewing and themes

The field visits and group meetings for qualitative assessment in Morogoro were regarded as the pre-field visits and insights for developing research methods as well as the means of strengthening the analysis of my national and regional surveys. The field visit strengthened my understanding of the farmers' view of the agricultural cycle and the process of production at different stages. This allowed me to understand more about the skills they had and wanted to see in new graduates from agricultural colleges. It was important to have

first-hand experience of perceptions they had about their paddy production. Being present in the field allowed me to observe their gestures and their communication styles as well as the construction of their answers. It helped me to develop and present the regional questionnaires in a way that the respondents could understand the questions easily and in a form that could trigger their analytical and critical thinking in their responses.

In order to sharpen my research methods for the Morogoro regional survey, I organised field visits and group meetings for the development of instruments and check lists to support the collection of qualitative data.

During the field visit, I organized interviews on the 14th and 15th of November, 2013 in Morogoro. I visited (a) Kihonda Regional Vocational Technical School Center (RVTSC) in Morogoro, (b) a Morogoro paddy firm (Intermech LTD), (c) Morogoro Agriculture Seeds Agency (ASA) –government agency, and (d) Kileka Farmer’s Village in Morogoro.

Overall, these qualitative interviews was organized, by the creation of a set of main questions that were used to guide the interviewing and allow respondents some freedom to respond, the development of a consistent way of conducting the interviews and introducing the topics in the field, a process of recording responses using short note taking with subsequent expansion after the end of each interview, consideration and collation of responses under thematic headings and identification and reflection on common themes and significant points of view.

Each interview used semi-structured questions. The schedule of questions covered the following thematic concerns and interviewees were encouraged to elaborate on their responses.

- i) What are the skills required for tertiary level school leavers by employers in the labour market (formal and informal sectors of the economy) in the agricultural sector?

- ii) What are the new and emerging skills in the market versus the current training provision in the agricultural sector, especially cash crop farming?
- iii) Are the skills acquired through TVET relevant in the current employment market in the agricultural sector, especially cash crop farming?
- iv) What are the opportunities and challenges for TVET graduates in the agricultural sector, especially cash crop farming?
- v) What problems are faced by employers in filling vacant positions in the agricultural sector, especially cash crop farming?

For the village level interviews, I organized different questions to address the following themes, taking the farmers' language skills and level of comprehension into consideration.

- vi) Do you have any problem in your farm?;
- vii) Are you satisfied with your current situation?;
- viii) Do you accept to use of technology?
- ix) Do you have any plans for improving your farm?; and
- x) What kind of skills are needed on your farm?

The interviews were recorded in contemporaneous notes which were elaborated after the interview. The option of recording the interviews was considered but rejected because of the likelihood this would inhibit interviewees unfamiliar with recording devices and wary of official interviews.

ii. Specific contribution of qualitative interviewing toward my formulation of Morogoro regional survey

Meetings with the principal of the Morogoro Regional Vocational Training Center– as well as the president of a paddy firm in Morogoro (Intermech) were organised to refine and improve the survey instruments and interview schedules for the Morogoro regional survey. Visits were also organised to the Agriculture Seeds Agency (ASA) – a Government Agency

– and to farmers’ villages in Morogoro to explore their working practices. These meetings strengthened the situational analysis, which gave extensive insights into practice in different contexts as well as some visual understanding of how the respondents behaved during my interviews. This information was useful in developing and finalising the methods I used for data collection.

When in the field I took advantage of opportunities to gain insights from as many perspectives as possible. For example, when I had a discussion with the principal of Kihonda Regional Vocational Training Center in Morogoro, I took the chance to visit teachers’ offices to meet with teachers and look at the TVET curriculum related to agriculture. This generated impressions that teachers were mostly satisfied with their current situation and not very motivated to improve their curriculum or pedagogy. The way they organised their information such as their filing and documentation including the curriculum and textbooks did not suggest that they were frequently engaged in review or actively considering improvements to pedagogy. As a result of this experience, I refined the regional survey and created more opportunities in the instruments for TVET administrators and students to provide more examples of the extent to which they actively engaged in reviewing and critically analysing their current situation.

Secondly, when I had an interview with the president of Intermech, I found out that there were many innovative ideas in this small firm and that unique innovation had been happening through the utilisation of new technologies. New technologies included milling machines for paddy rice, which use innovative methods to make the rice whiter. Employees who had graduated from TVET schools were also more educated. However, the scale of innovation was too small to have an impact on the agricultural economic growth regionally and nationally. Also, their innovative ideas have not been replicated and scaled up with other firms due to lack of collaboration among firms. Moreover, the government of Tanzania has not focused on scaling up innovative ways of increasing the production of agricultural

commodities. Therefore, politically and strategically, there is still room for improvement. My visit to Intermech also made my research questions more refined, as it allowed me to focus on policy implications aligned with the local demand and to bring up their innovative ideas and initiatives.

Thirdly, when I visited ASA, I organized the interviews with the staff employed by ASA. I noticed that the ASA staff did not interact with the MoEVT staff and TVET school since ASA's extension training had weak linkage with TVET schools. This is because ASA is under the Ministry of Agriculture and not the MoEVT. There is a problem of coordination among ministries and it drastically affects the quality of training especially in the field. This should be regarded as one of the critical issues of Tanzania and one issue to be addressed in this research into how to make policies effective. Based on this, I have organised my regional survey to analyse this issue: how to strengthen the coordination among the Ministries in order to improve the Tanzanian government's intervention in TVET.

Lastly, when I visited the farmers' villages, I discovered that there was a lack of updated information in the villages. In many rural areas there is little access to information from TV or the internet and few visitors from urban areas. This situation constrains opportunities for farmers to engage in critical thinking and to interact with a modern environment with its opportunities to improve ways of paddy production. The farmers' methods were conditioned by their local way of thinking, which clearly differed between those in more remote rural areas and those around urban areas.

iii. Problems and limitations of qualitative interviewing

The difficulties of the qualitative interview especially during field visits were that most of the interviewees seemed to be very passive in providing responses, and they seemed to have a lack of motivation for improving their current situation. This might have been the result of the organization of the interviews since the interviewees (the farmers) were not used to seeing

foreigners in their village and tended to be overwhelmed by the length, contents and numbers of interviews. This could also have been a result of culture or of personality, or it could be a result of their isolated environments, or some or all of these factors. Moreover, due to the amount of physical work with a lack of human capital and advanced technology, some of the farmers whom I interviewed were already too tired to answer my questions.

4.4. The relationship between the initial VETA survey and the subsequent research carried out by the candidate

The VETA survey was a large scale exercise that I contributed to and which I was able to use to generate preliminary insights into the nature of skills gaps and develop a national picture of the issues before developing my case study. The case study fieldwork was undertaken by myself with some research assistants who provided translation and assisted in gaining access to informants.

4.5. Chapter summary

This chapter discusses the research methods and data collection on 1) TVET Labour Market National Survey in Tanzania, 2) TVET Labour Market Regional Survey in Morogoro, and 3) field visits and group meetings for qualitative assessment in Morogoro and case studies of agricultural companies.

The importance of using mixed methods is that it allows a deepening of the analysis of key research questions. Survey data drawn from a large sample can be analysed alongside qualitative data from in depth interviews. Persons can be compared, patterns observed and explanations sought. Some questions are best approached through surveys and others through interviews and field visits. Mixed methods allow for different kinds of triangulation and better corroboration than if only a single method is used.

The chapter, therefore, describes the path the author has taken in organising data sources both primary and secondary and arriving at the results all of which are introduced and explained in Chapter 5. This helps illustrate the result of the TVET labour market survey in Tanzania and the regional survey in Morogoro by demonstrating the results of qualitative interviews, field visits and case studies, all of which are supplemental to the national and regional labour market survey.

CHAPTER 5: ANALYSIS AND RESULTS

Introduction to this chapter

This chapter shows the result of the TVET labour market survey in Tanzania and the regional survey in Morogoro. Moreover, it demonstrates the result of the qualitative interviews, field visits and case studies, all of which are supplemental to the national and regional labour market survey. The chapter addresses the research questions raised in this research. This will involve checking whether the TVET system in Tanzania has adequate and empirically generated information regarding: (i) the skills mix, particularly for the emerging skills required in the labour market, which will be used to guide the creation of a curriculum that adequately responds to the needs of the labour market, and (ii) the relevance of the skills offered through TVET to current employers. This research aims to answer the following key research questions:

- 1. What are the skills required by employers in the agricultural sector, especially in relation to cash crops?**
- 2. What are the skills that TVET graduates acquire from training in TVET institutions, especially in cash-crop farming?**
- 3. To what extent do the skills acquired match the skills identified by employers as needed in cash crop agriculture and what are the gaps?**
- 4. What are the policy implications arising from employers' needs, trainees' skills, and the skill gaps for the development of the TVET system?**

To answer these questions, I will use the following analysis methods in this chapter:
(i) data from the national labour market survey completed by VETA as a secondary source

which provides the basis for the author's fieldwork and the Morogoro regional survey done by the author, (ii) field visits and interviews to enhance the qualitative assessment as primary data, and (iii) my own professional experience at the African Development Bank as primary data. I also refer to the literature review as a secondary source. The expected results of this analysis are some answers to the key research questions raised in this research and, eventually, documentation of the value addition for policies promoting agricultural development in the paddy sector in Morogoro. This chapter is organized in 2 parts. Part 1 covers data analysis which includes both the national labour survey by VET and my Morogoro regional survey. In part 2, the results of this research are presented.

5.1. Analysis

This analysis is composed of (a) the national labour market survey as secondary data, (b) the Morogoro regional survey as primary data, and (c) field visits and interviews as primary sources.

5.1.1. National survey (Secondary Data)

As presented in Chapter 4, the objective of the national survey was to determine relevant skills required by employers in the labour market in both formal and informal sectors of the economy. This national survey is used to provide the basis for the author's regional survey and the fieldwork. This should give some indication of measures that increase the contribution of the labour force to socio-economic development and the reduction of income-poverty in Tanzania (MoEVT and VETA, 2012. Pg. 16). This is crucial for this dissertation because it helps TVET institutions in Tanzania organise efficient programs by providing relevant knowledge, practical skills and attitudes to enable students to secure employment and to support the social and economic development of the country. Moreover, this survey gives general insights not specific to agriculture and paddy sector. The following sections provide the results of the national survey:

a) Qualification of employees

The purpose of the survey was generally to identify whether employees possessed the set of skills they needed in the workplace. MoEVT and VETA's survey indicated that a total of 1,050 employees holding TVET qualifications were surveyed, which indicates that coverage was 54% of the targeted number. 784 (75%) of those surveyed were men, while the number of female respondents was 266 or 25%. Figure 18 shows the age groups of sampled TVET employees. More than 80% of employees who hold the TVET qualifications were between the ages of 18 and 44 years. Male and female employees within the ages of 25-34 and 35-44 dominated the sample as shown in Figure 18.

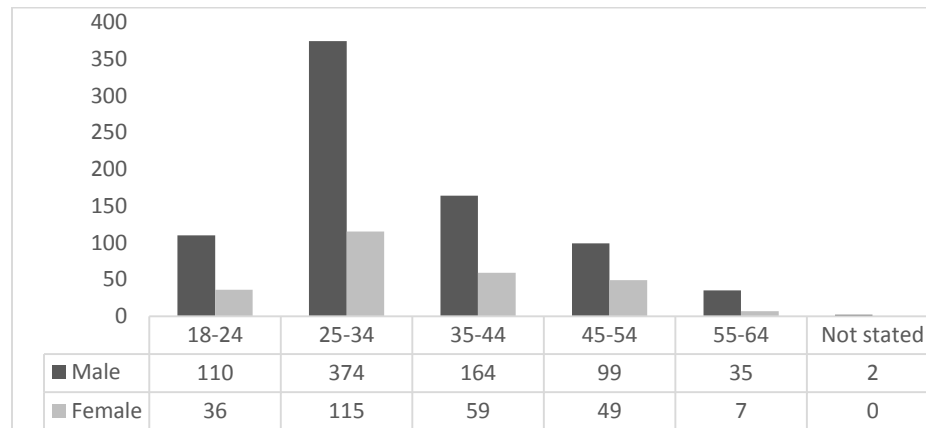


Figure 18: Age groups of sampled TVET employees (Source: MoEVT and VETA, 2012)

Almost half of the surveyed TVET employees were found to possess National Technical Awards levels four to eight (ranging numerically from certificate level to diploma and with Bachelor's degree (level 8) being the highest qualification). The other half of respondents held National Vocational Qualifications levels one to three (TVET award status). This is indicated in Table 3.

Table 4: Highest Educational Qualification by Sex of Employee (Source: MoEVT and VETA, 2012).

Highest Education Qualification of visited TVET Employees	Sex of Respondent				Total		Cumulative per cent
	Male		Female				
	Count	Per cent	Count	Per cent	Count	Per cent	
Bachelor’s Degree(NTA 8) and above	28	4%	7	3%	35	3%	3%
Higher Diploma (NTA 7)	48	6%	17	6%	65	6%	9%
Ordinary Diploma (NTA 6)	88	11%	39	15%	127	13%	22%
Technician Certificate (NTA 5)	66	8%	22	8%	88	8%	31%
Basic Technician Certificate (NTA 4)	28	4%	14	5%	42	4%	35%
National Vocational Award (NVA 3)	119	15%	20	8%	139	11%	46%
National Vocational Award (NVA 2)	87	11%	22	8%	109	10%	56%
National Vocational Award (NVA 1)	59	8%	20	8%	79	8%	64%
Other qualifications	220	28%	91	34%	311	31%	95%
Not stated	41	5%	14	5%	55	5%	100%
Total	784	100%	266	100%	1050	100%	

The category of “other qualifications” includes certificates of attendance covering mainly short courses in various fields such as motor driving and computer applications. In general, more men than women are graduating in all the various certificate levels offered in TVET institutions. However, a variety of activities have been developed recently to attract more women into the TVET system. For example, more scholarships have been created for women, mentoring courses for women have been developed to provide them with counselling support and more women have been hired as staff/teachers at TVET institutions (Arusha Technical College, 2012). Women tend to be over-represented in jobs and tasks that require fewer and lower-value skills, are lower paid and have restricted career prospects. In Tanzania, women

account for the majority of workers in the informal economy. Their overrepresentation in the informal sector implies that they have greater job insecurity than they would if they were in the formal sector, and that they lack access to training as well as social protection and other resources. Disadvantages such as these make them comparatively more vulnerable to poverty and marginalisation. There is a significant overlap between being a woman, working in the informal economy and being poor (ILO, 2008, p.6).

b) Employment status of respondents

The employment status of those currently employed indicates that more than half of sampled TVET employees, or 52%, have permanent employment. 25% have contractual employment, 16% have temporary employment and 6% have part time employment, as indicated in Table 5. The 2% that are listed as “not stated” are termed as employees in this study because although they were employed, they were not ready to disclose the terms of their current employment (MoEVT and VETA, 2012).

Table 5: Employment Status of Respondents (Source: Ministry of Education and Vocational Training (MoEVT), and VETA, 2012)

Employment Status of Respondents	Frequency	%	Cumulative %
Permanent	545	52%	52%
Contractual	261	25%	77%
Temporarily	163	16%	92%
Part-time	60	6%	98%
Not stated	21	2%	100%
Total	1050	100%	

In the survey, a Bachelor's degree was found to be the highest award in the TVET sector in Tanzania, an educational level which included only 3% of the surveyed employees. Findings show that almost half of the surveyed TVET employees were found to possess National Technical Awards levels 4 to 8 while another half of respondents were those holding National Vocational Qualifications levels 1 to 3 as indicated in Table 3.

c) Job Specialisation by Employment Status

As Table 6 indicates below, the study found that 58% of the sampled TVET employees were employed in engineering specialisations. The next largest proportion of the sample, 16%, was from business management professions. 7% had agricultural related jobs and 5%, 3% and 2% had professions related to health, planning and teaching, respectively. Although major economic growth comes mainly from agriculture, natural resources / the environment, only 7% of the employed that hold TVET qualifications are employed in these jobs. This reality is consistent with the observation that the attractions of agriculture-related jobs are low for TVET employees and, indeed, young people in general. ILO (2014b) also indicates that agriculture seldom tops young people's "most wanted" wish-list of careers. It is perceived as representing the past and the antithesis of progress. As more and better farms are created, related industries in agri-business, agro-tourism, land management, mechanical and agricultural engineering will expand as well (ILO, 2014b).

The significance of this data is that it is crucial that the government promotes agribusiness more effectively by creating a new policy or strategic options in order to attract youth who are suitably qualified and who possess the desired range of skills. For instance, as one would expect, high-paying jobs are a preference of every college graduate and by offering attractive take-home pay, these jobs would provide adequate incentives to attract better qualified candidates with the intention of leading to better quality work and higher productivity. Jobs with low wages tend to be avoided and to have a higher employee turnover.

Table 6: Job specialization by employment status (Source: MoEVT and VETA, 2012)

Job Specialization	Employment Status of Respondents					Total	%	Cumulative %
	<i>Permanent</i>	<i>Part-time</i>	<i>Temporarily</i>	<i>Contractual</i>	<i>Not stated</i>			
Engineering and other sciences	297	42	97	155	13	604	58%	58%
Business and Management	109	3	16	39	1	168	16%	74%
Agriculture, Natural Resources and Environment	31	3	30	10	0	74	7%	88%
Health and allied sciences	48	1	2	4	0	55	5%	93%
Planning and welfare	18	1	1	7	0	27	3%	96%
Teaching and Facilitation	14	3	1	4	0	22	2%	98%
Other	22	7	11	37	3	80	8%	81%
Not stated	6	0	5	5	4	20	2%	100%
Total	545	60	163	261	21	1050	100%	

- d) **TVET skills acquisition, relevance of training and employment satisfaction**
- **Views from TVET graduates (Employees) –whether they have received adequate training from TVET institution**

This section checks whether TVET graduates have received adequate training. Table 7 indicates the response of employees when asked whether they considered the training they received from TVET institutions to be adequate. The results show that the responses were positive. 2% responded that the training they received from their colleges was not useful at

all. 66% said the training was very useful and 23% responded that the training was somewhat useful (VETA, 2012).

Table 7: Do TVET Graduates (Employees) receive adequate training from their TVET Institution? (Source: MoEVT and VETA, 2012)

Usefulness of acquired skills in the job	Frequency	%	Valid %	Cumulative %
Very useful	694	66%	66%	66%
Somewhat useful	240	23%	23%	89%
Not useful at all	23	2%	2%	91%
Not stated	93	9%	9%	100%
Total	1050	100%	100%	

e) View from employers on adequacy of the courses

When TVET employers were asked about the adequacy of the skills received by the TVET graduates they had employed, 51% of the respondents from engineering specialisations admitted that the skills were not required to perform actual work. Moreover, 60% of TVET employees said that their occupations required skills that were entirely different from those they gained from the training courses they had completed (MoEVT and VETA, 2012).

Since employers seek specialised skills for their organisations, achieving in-depth and frequent communication between the labour market and TVET institutions is important. Strengthening such communication would better reflect which skills were emerging and, therefore, which new skills should be taught, developing possible strategies to do so. For instance, employers were asked about their views regarding various aspects of the courses taken by their TVET employees in line with job performance. The results above provide basis answers to research questions 3 by giving the information on how the employers judge their

employees' situation in terms of skills and what kind of skills are missing that are demanded by the employers.

Table 8 below gives a tabulated summary of their views: employers place the greatest weight on practical skills. 75.2% of respondents said the practical skills of their TVET employees needed improvement. 53% of interviewed employers suggested that both TVET trainers and trainees should have their practical skills enhanced.

Table 8: View from Employers on Course improvements (Source: MoEVT, 2012)

Course Area	% Employers Recommending Improvement to Course Area	% Employers Satisfied with Course Area
Course Content	40.2	59.8
ICT Skills	46.2	53.8
Practical Skills	75.2	24.8
Soft Skills	41.0	59.0
Duration of Study	18.2	81.8
Enhance Practical Skills to both Learners & Instructors	53.3	47.7

The survey emphasises that TVET graduates' practical skills are not well cultivated during their course of study. Further, this data strengthens the idea that an improvement of TVET system is needed, especially the alignment of curriculum and pedagogy to make it more demand-driven. This would enhance the development of practical training and provide the basis of answers to research question 2.

f) Employers' Ratings of Abilities of TVET Employees

In addition, the study asked employers to rate the various indicators of their employees' abilities. The responses are recorded in Table 9, in which most indicators show that the TVET employees have more than good ratings except for research skills and ICT skills.

Table 9: Employers' ratings on indicators of ability of TVET employees (Source: VETA, 2012)

Indicator	Rating	
	Poor to Fair %	Good to Excellent %
Capacity to adapt to new situations	21.7	78.3
Capacity to apply knowledge in practice	15.7	84.3
Time Management	25.0	75.0
Team Work	20.0	80.0
Negotiation Skills	35.3	64.7
Leadership Skills	33.9	66.1
Creativity	34.4	65.6
Decision Making Skills	34.8	65.2
Entrepreneurial Skills	45.8	54.2
Goal Setting Abilities	37.6	62.4
Self-confidence	26.4	73.6
Lifelong skills	33.3	66.7
Independence	26.4	73.6
Problem solving skills	35.0	65.0
Research Skills	56.3	43.7
ICT Skills	60.8	39.2
Skills to gather and analyse data	30.6	69.4
Verbal Skills	33.6	66.4
Conflict Management Skills	27.4	62.6

Overall, this analysis shows that TVET employees have enough capacity with most of the skills required by employers and the labour market. However, this data indicates that although employees have obtained capacity, in case of practicality, TVET students still need to be trained on “how to” apply the capacity of practicality into the field. The competence in applying practical skills is a bottleneck that needs to be straightened within the TVET system especially with relevant curricula. Without a good curriculum, no matter how good the students' capacity in dealing with practicality, the insufficient ability to apply this capacity will diminish the TVET employees' usefulness as they apply their skills in the field. ICT and research skills are the skills based on a scientific approach. These skills need to be cultivated based on appropriate training from TVET.

To support the analysis findings above, a number of respondents (employees) specified reasons why the skills acquired from training institutions were not useful at all in their current jobs. Box 1 below presents a list of reasons provided by respondents. Lack of computer skills is mentioned as one of the factors that cause some employees to feel that training acquired is not useful at their jobs, which supports the basis of research question 1 and 3 by introducing skills gap.

Box 1: Specifications by respondents on skills acquired from training institutions not useful at all to their current jobs (Source: VETA, 2012)

- Business study and customer care
- Computer application, drawings and designing
- Computerized study methods
- Construction of interlocking blocks and making of roofing tiles
- Curriculum content is inadequate
- Deeply in studying domestic installation while in workplace not differ with the work required
- Electronics machines and hydraulic system
- Filtration course help to understand how the filter and coolant works, bearings course and fits helps?
- Hotel management & advanced decoration activities
- Lack of computer skills
- Lack of tools [currently] for working & lack of current technology
- Local building materials (interlocking blocks, low cost building materials)
- Mechanics, basic mechanics
- Machinery operator [automation]
- Mechanics of the car
- Mechanics vehicle fixing
- Teachers not very much helpful to trainees
- The absence of system transaction courses

Table 10 gives a summary of the percentage of institutions that offer on the job training for their employees. 95 employers give training to their employees (78.5%).

Table 10: TVET Graduates Employers' Responses on Provision of Staff Training for Employees (Source: VETA, 2012)

Response from employers on provision of staff training	Count (No)	Percent
Yes	95	78.5
No	26	21.5
Total	121	100.0

These 95 employers were also distributed according to organisation categories as shown in Table 11. All public entities in the study give training to their employees and 22 parastatal organisations train their employees. However, 23 of 73 private companies, constituting about 32%, do not give training to employees, i.e., only 68% do train their employees on the job.

Table 11: Category of Employers who responded on provision of staff training (Source: VETA, 2012)

Do you provide any on-job training for your TVET employees?	Type of Organization				Total
	Public	Private	Parastatal	Civil Society Organization	
Yes (Percent)	20 (100%)	50 (68%)	22 (92%)	3 (75%)	95 (79%)
No (Percent)	0	23 (32%)	2 (8%)	1 (25%)	26 (21%)
Total	20	73	24	4	121

This indicates that at least most of the organizations try to organize the on-the-job training to avoid skills gaps with TVET employees. This result supports the basis of research question 4 that highlights the importance of on-the-job training which could be strengthened at the policy level. Moreover, employers have been asked if the TVET trained employees are trainable as well. They responded according to the summary below (see Table 12). 88percent

(Strongly agree: 29.2 percent plus Agree: 59.2 percent) stated that they found TVET employees in their organisation trainable, and adaptable to emerging skills.

Table 12: Employers response on TVET employees' ability for training (Source: VETA, 2012)

Do you find your TVET employees trainable and adaptable to emerging skills?		Count (No)	Percent
Response	Strongly agree	35	29.2
	Agree	71	59.2
	Unsure	9	7.5
	Disagree	3	2.5
	Strongly disagree	2	1.7
	Total	120	100.0

This result shows that the employers are sanguine about the trainability and adaptability of TVET graduates, supporting the ideas on research question 1.

In addition to the above surveys, to check whether employed TVET graduates are trainable and adaptable to emerging skills, a study of the industry sector organisation was done as presented in Table 13. 106 of the 120 answers (or 88%) agree that TVET graduates are trainable and adaptable to emerging technologies as compared with five out of 120 (or 4%) who disagreed. Nine (7.5%) of the 120 responses indicate indifference.

Table 13: Responses from Employers on whether TVET graduates employed are trainable and adaptable to emerging skills (Source: VETA, 2012)

Do you agree TVET employees are trainable and adaptable to emerging skills?	Industry Sector of Organization							Total (Percentage)
	Agriculture, Natural Resources and Environment	Business Management	Eng. & Allied	Health, Hosp. & Allied	Planning & Welfare	Teaching & Facilitation	Other	
Strongly agree	0	2	8	6	3	5	11	35 (29%)
Agree	5	5	23	8	2	1	27	71 (59%)
Unsure	0	0	2	1	1	0	5	9 (8%)
Disagree	0	0	1	1	0	0	1	3 (3%)
Strongly Disagree	0	0	1	0	0	0	1	2 (1%)
Total	5	7	35	16	6	6	45	120

Moreover, these results show that TVET graduates have good foundation for being adaptable to emerging skills that will also be the supporting data on research question 3.

In box 2 below, a list of new and emerging skills is presented as given out by some of the TVET employers. Skills relate to ICT were mentioned as one of the emerging skills in the visited employment sites. In fact, all the listed skills below are acquired in specific technical

training with well-elaborated curriculum and teaching. To form these skills listed below, TVET students need to obtain high-order literacy and numeracy skills through primary school training. This will allow them to learn emergent skills, most of which are composed of ICT, R&D and practical skills. This analysis would support research question 2 by indicating the skills, including the new and emerging skills, that TVET institutions impart.

Box 2: New and emerging skills as given out by employers (Source: VETA, 2012)

- Advanced electronic money transfer skills
- Automobile engineering skills
- Skills to handle modern, advanced working tools
- ICT skills
- Electronic gear skills
- E-Learning skills
- Programming logic control
- Automated meters like “Luku” for electricity metering
- GPS
- Medical engineering technology skills
- Security systems
- Procurement skills

It was desirable to find if employers mixed workers of different trades in their organisations, for example, if an organisation that employs an agriculturalist also employs an engineer. In fact, table 15 summarises the mix of professionals among against the employing entity. From these results, it is clear that the public sector and para-governmental organisations lead in the blending of professionals in their employment. This may be explained by the fact that government and para-governmental organisations tend to have many more different departments than private sector and civil societies. Overall, 69% of public sector enterprises recruit employees with a mix of skills but 79% of private sector organisations do not employ a mix of trades. A skills mix is especially necessary for the agriculture sector in order to strengthen the introduction of new technology by including engineers and ICT experts. This supports the basis of the research question 2 by suggesting that the TVET institutions need

more training in terms of ICT. Moreover, having employees with a mix of skills would strengthen innovative ways of production of new agricultural commodities especially in the paddy sector since it would enhance R & D by including scientists, researchers, etc. These results support research question 4 by strengthening the policy implications of TVET's link to national development based on the lessons learned from cash-crop farming in the agricultural subsector.

Table 14: Labour Mix by Sector (Source: VETA, 2012)

Does organisation employ a mix of trades in recruiting?	Type of Organization				Total
	Public	Private	Parastatal	Civil Society Organization	
YES (10)	1	0	1	0	2
11	3	1	4	0	8
12	5	9	4	0	18
13	4	36	5	4	49
NO (14)	0	2	0	0	2
Total	13	48	14	4	79

All of the above data is secondary data used as a basis to answer the research questions by supporting the primary data from the Morogoro regional survey. As a conclusion from national data, the survey identified the relevant skills required by employers in the labour market by giving some indication of realistic measures, especially the importance of strengthening the practical skills.

5.1.2. Morogoro survey (Primary Data)

As pointed out in Chapter 4, the Morogoro agricultural sector was chosen for the purposes of this research, since the Morogoro area is the largest region and the heart of the agriculture sector in Tanzania. Interviews and focus group meetings were conducted in

companies and TVET institutions in the area of the agriculture survey. The companies varied in size. The total number of workers employed was 571 with a range between 12 and 400 workers and an average of 150 employees per company. The findings from this case study and the questionnaires are the primary data reported in the following sections. However, limitations have to be acknowledged in the analysis of the result of the regional survey as well as the informal interviews. This is due to the very low primary level of awareness and motivation that exists in respondents towards the need for a narrowing of the skills gap that exists between the TVET education sector (supply side) and the companies (demand side).

i. Administration

This study administered employee and employer questionnaires to 46 TVET graduate respondents, 44 company employers and 10 TVET institution administrators that employ TVET graduates. Due to time limitations, the study concentrated on selected areas in the region. Of the agricultural companies studied, most of the TVET graduates were employed in those that were labour intensive like sisal and rice farming companies, as seen in Figure 19. Due to the limitations of the sample mean, the findings are illustrative rather than representative.

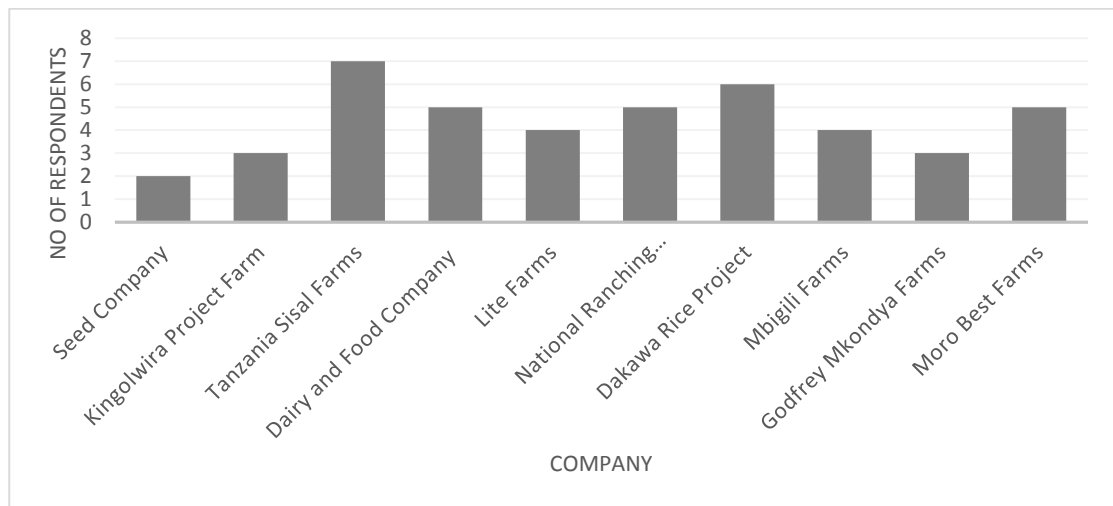


Figure 19: Number of respondents per company studied (Source: Author)

ii. Descriptive summary statistics

The table below summarises the descriptive statistics of TVET graduate employees who responded to the administered questionnaires in this research.

Table 15: Descriptive Statistics – TVET Graduate Employees

Selected Variables	Observations (No of Students)	Mean	Stad. Dev	Minimum	Maximum
Age	46	26.32	5.41	20	41
Gender	46	0.65(Men)	0.48	0	1
Marital status	46	0.54 (Married)	0.50	0	1
No of Children	46	1.09	1.46	0	5
Why Study Agriculture	46	0.74 (to get career)	0.44	0	1
Support from TVET institution for securing jobs	46	0.28	0.46	0	1
Support for female employees	46	0.26	0.44	0	1

The table below summarises the descriptive statistics of TVET graduate employers who responded to the administered questionnaires in this research.

Table 16: Descriptive Statistics – TVET Employers

Selected Variables	Observations	Mean	Stad. Dev	Minimum	Maximum
Company ownership	44	0.82 (Head/President)	0.39	0	1
Internship opportunities for TVET	44	0.86 (Getting Internship Opportunity)	0.35	0	1
Mentoring program	44	1.00 (Have mentoring program)	0.00	1	1
Satisfaction of skills	44	0.40 (Satisfaction)	0.50	0	1
Skills relevance	44	0.11 (relevance)	0.32	0	1

iii. Skills possessed by TVET graduates in the agricultural subsectors

With regard to the skills possessed by TVET graduates, this study found that most of the respondents who went to agriculture colleges specialised in the cultivation of agro-products (63%) and animal husbandry (24%). A small number, 13%, specialised in other subsectors like fish farming, bee keeping and forestry. Figure 20 shows the areas of specialisation in which TVET graduates in the agricultural subsectors studied.

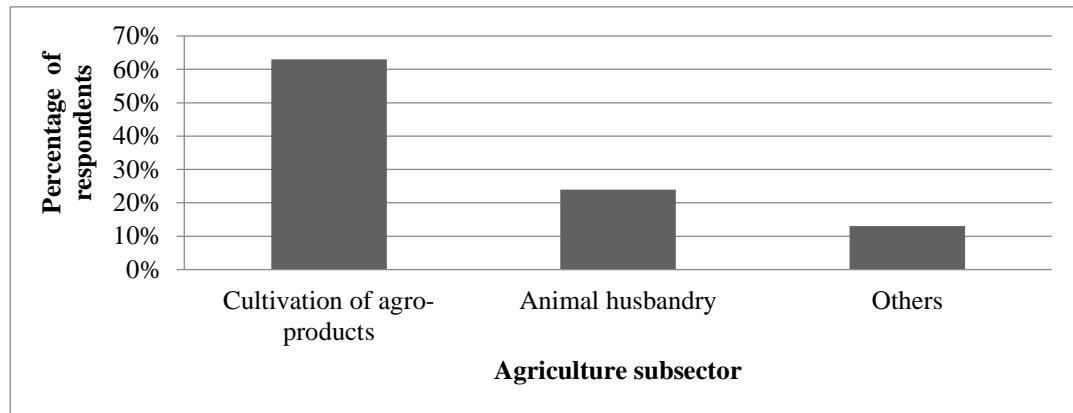


Figure 20 Skills possessed by TVET graduates in the agricultural subsectors (Source: Author)

iv. Level of employer dissatisfaction with employee skills

An analysis of the level of employer satisfaction with employees' skills found that most employers considered the skills possessed by TVET graduates to be unsatisfactory. While 60 % argued that graduates' skills were unsatisfactory, 40 % claimed to be satisfied as shown in Figure 21. The high proportion of unsatisfied employers suggests that the TVET institutions may not be succeeding in transmitting the appropriate skills to their students or are selecting inappropriate students, or both. These results provide the basis for all the questions from 1 to 4 by indicating that employers' problems stem from a lack of skills.

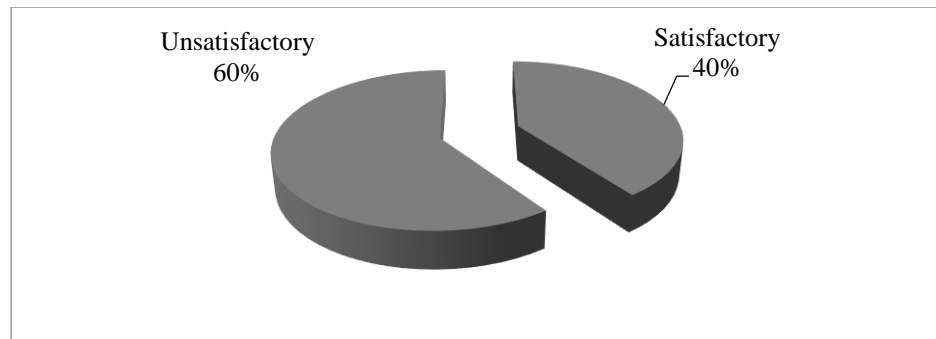


Figure 21: Graduate skills at the time of employment (Source: Author)

Linking up with the results showed above, below is a list of skills in the agricultural

sector (especially for paddy production) that are required by employers in the labour market (in both formal and informal sectors):

- Agricultural machinery skills to supervise and repair agricultural machineries;
- Electrical skills for processing and production machinery;
- Pasture establishment and management skills;
- Seal control skills;
- Irrigation and dairy farming skills; and
- Water availability skills.

These results are similar to those formed when answering research question 1. In fact, these results are aligned with the results of the national survey in showing that most practical skills (technical and electrical) need to be strengthened during TVET. These skills build upon a scientific approach relating to agricultural practices.

v. Relevance of employees skills to current job

This study also looked into the relevance of employees' skills in their current employment. Although the graduates had studied many courses in school, most of these courses were not relevant to the jobs they assumed after school. 89 % of employers argued that many of the skills possessed by graduates were not applicable in a real job situation as shown in Figure 22.

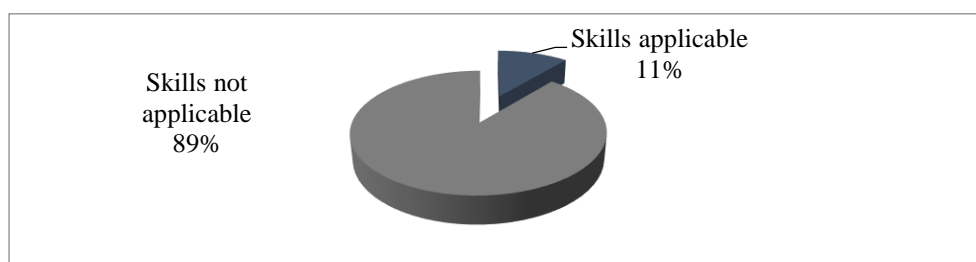


Figure 22: Relevance of employee skills to current job (Source: Author)

This is an interesting finding since, as indicated in part 5.1.2.2 (Table 5), when judging

the relevance of employees' skills based on the national survey, employers were found to be satisfied overall with employees' performance. The national survey of job specialisation (section 5.1.1.2, Table 6) indicates that only 7% of respondents are in agricultural employment, which is a representative sample. However, the 7% of TVET graduates from the agriculture sector have a high responsibility to pass on the skills they acquired during their TVET studies to the people who do not have opportunities to study agriculture but are working in the agricultural informal sector, and clearly this will be difficult or impossible if the work does not match the skills. Overall, in terms of the national survey, the result has not been much affected by the agricultural sector due to smaller scale compared with the other sectors. However, this regional survey demonstrated contrary results, indicating that TVET institutions need to improve their quality to produce more youth with relevant skills especially for the agriculture sector.

It is evident that graduates need more skills relevant to companies' operations and specialisations. For this to happen, TVET needs to be more demand driven and trainers need to be closer to the production process to understand what skills are needed and how they are best acquired. The companies need to discuss directly with the schools ways of selecting the appropriate students and equipping them with the right set of skills otherwise the companies must substantially re-train the graduates once they employ them. Overall, this result supports questions 2 and 3 by indicating that the skills of the employees do not match the demands of the employers.

vi. Problems faced by employers in filling vacant positions in the agricultural sector

This section presents conclusions to the question of "what problems are faced by employers in filling vacant positions in the agricultural sector, especially cash crop farming? Are these problems only stemming from a lack of skills or are there other major problems?" In forming a conclusion to this question, focus was placed on the case study of cash crop farming in the agricultural subsector for paddy crops in Morogoro, which explores research questions 2, 3 and 4.

The data suggests that vacant positions in the agricultural sector are not easily filled for a variety of reasons that include:

- Skilled people are not ready to work in remote (rural) areas due to poor infrastructure and have better opportunities in and around the towns. Most of those graduating from TVET are not from the poorest groups and are likely to have aspirations to live in towns and cities.
- Incentives and payments are not sufficient to attract new entrants to live and work in rural areas and there is no established system of recognising the additional costs that may be incurred e.g. transport and accommodation.
- The profit margin depends on the type of cash crop grown. This discourages people from going into some agricultural product areas and encourages them to enter into other more profitable activities. This is a complex area that depends on patterns of demand, access to markets, costs of inputs of fertiliser and pesticides, vulnerability of crops to weather and storage hazards etc. Crop insurance is poorly developed so income can fluctuate widely. Industries in urban areas give more stable income to employees as well as any chances for getting larger salaries within structured employment with performance bonuses and promotion.
- Employees have a lack of personal and relational skills. These VETA graduates may go straight into dairy product and husbandry areas without experience of local agricultural practices and their reasons and seek to reform farmers working methods from a purely technical point of view.
- Graduates cannot communicate clearly with local farm workers who do not understand new ideas quickly;
- The younger generation is not interested in the farming business as it offers neither adequate rewards of social status nor high salaries;
- The government neglects farmers, and there is a general lack of commitment to agricultural development.

vii. Skills gap

This section presents the results obtained for the case study question, “what are the TVET skills gaps that exist in the agricultural sector especially cash-crop farming?” The TVET skill gap is a significant issue in the agricultural sector, especially in cash-crop farming. Below is a summary of the qualitative survey I did with the selected companies. To diminish the skills gap, companies requested new TVET training that addresses:

- Different types of machineries used in production and the processing of different cash crops;
- Basics of cash crop farming especially paddy, new crop production technologies;
- Farming products (products and crops) for business purposes or local customs;
- Agricultural business awareness;
- Operation and management/maintenance of agricultural machinery and implementation;
- Pests and weed control;
- Use of agro-chemicals, and
- A framework which will result in self-employment and support independence after some period.

This information strengthens conclusions related to the research questions, especially questions 1 and 2, by elaborating on the skills gap, and gives some indication of what kinds of skills the companies want and what kind of training TVET needs to provide. From the interviews and observations it seems that the most common requests are for:

(a) More technical training specifically technology oriented for mass production – as cash cropping becomes more common and infrastructure allows access to bigger markets production methods must change to be more responsive to demand, more able to produce in large volume on time and inside budget, more able to develop supply chain management, and

able to add value by developing product differentiation;

(b) More training for risk management – risk management is needed to offset good and bad harvests, to anticipate and mitigate the effects of changing weather patterns, to manage large fluctuations in prices, and to invest effectively to reduce risk;

(c) More marketing and business training related with the agribusiness—more resources need to be invested in marketing and branding and in identifying pathways to growth in volume and improved quality; and

(d) Better organizing of the career service to strengthen the school to work transition by helping entrepreneur, self-employment service system – managing first appointments is critical to the consolidation of skills learned in TVET. Support for self-employed entrepreneurs, with appropriate availability of credit, technical advice and marketing assistance, is essential to growth.

viii. Policy implications of TVET

In support of research question 4, this section presents findings that help to address the question, “What are the policy implications of TVET’s link to national development based on the lessons learned from cash crop farming in the agricultural subsector as well as the findings of the case study analysis of this research built through my professional experience?” Accordingly, the major suggestion made was:

- TVET graduates need to transfer their knowledge and skills to people who have had no training in the agriculture sector, especially in paddy field, and especially they need to see how this transfer can make the agriculture informal sector more relevant for economic growth.

Here are some supportive findings:

- a) TVET graduates can transfer their knowledge and skills to people who have had no schooling to spread knowledge in the agriculture sector, especially in paddy production, by assisting them in forming teams for which they elect leaders to seek financial support (e.g. for venture capital to fund start-ups). This will help them to start agricultural enterprises so that they can afford agricultural machinery and fertilizers, which will increase production. This will enable many people to be involved in the production processes thus helping transform it into the formal sector.
- b) TVET graduates can transfer knowledge by staying with a farmer within the area and working together to understand how he/she thinks and behaves.
- c) The graduates can establish their farm field (*shamba la mfano*) that can serve as a model to provide innovative, good practice from which traditional farmers who lack a formal school education could learn. Management skills such as cultivation and harvesting of crops such as paddy could be transferred in this way to traditional farmers. In this case, these farmers could make a contribution to the informal agricultural sector by making it more relevant and effective in improving the economic growth of the country.

ix. Internship scheme provided by TVET institution

This research also examined the curriculum used by TVET institutions in the Morogoro region in order to explore the question of whether practical skills in the field were being taught as part of coursework. 80 % of the sampled institutions responded that their curriculum incorporated internships as part of the learning process in order for graduates to leave school with hands-on experience. The internship is supposed to be organised as a field based orientation and students are sent to industries that have agreements with the schools for around three months in order for them to practice applying their practical and theoretical skills in the field. At the end of level II, trainees go for eight (8) weeks on internship within their locality, which should be supervised by vocational teachers. There is a logbook for each trainee, which suggests areas to be covered and then shows the areas that were actually covered. The industry to which the trainee is attached provides a supervisor to guide and assess

him/her in day-to-day activities.

However, employees questioned the intensiveness and relevancy of the internships completed by the graduates during their training. Some of the graduates mentioned that the internship was exciting and relevant, but during some of the internships, employees were not able to apply the skills learned during TVET. The most likely reasons appear to be that internships are often not mentored systematically and trainees may or may not find a supportive and structured environment that encourages the use of their skills. For some it may also be that their competencies are limited. They were asked to utilise other skills which they did not learn during school such as more practical skills and IT skills etc. This indicates that it is necessary to review the curriculum especially as it relates to the internship to check whether it is well organised or not. It seems that there is a weak linkage between the school and the field especially in the agriculture sector. This result supports questions 5 and 6 by indicating the importance of supporting the career opportunities for cash crop farming as well as the policy implications in support of TVET's link to national development.

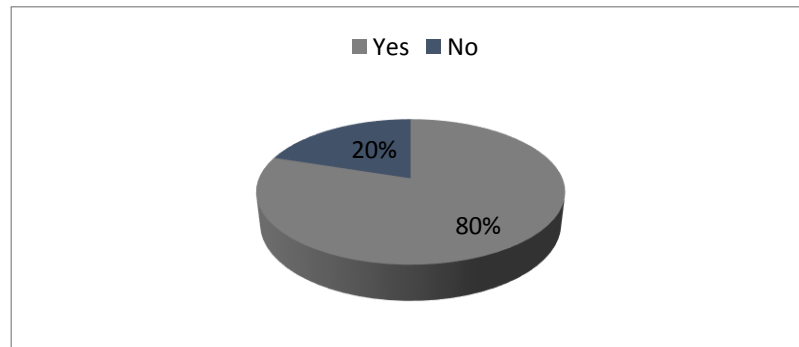


Figure 23: Internship scheme provided by TVET institution (Source: Author)

x. Availability of TVET institution career support

On career support, 50% of TVET institutions reported that their institution did have a working career-support centre which disseminates labour market information, the availability of jobs, and which matches student graduates to appropriate jobs. 50% reported that their

institution did not have a career-support centre. This indicates that many TVET graduates do not have adequate support in approaching the job market. Apparently, there is hardly any feedback system that reports the kinds of skills employers want back to TVET institutions career-support centres. The few that exist are not frequently updated. This will be further discussed in chapter 6.

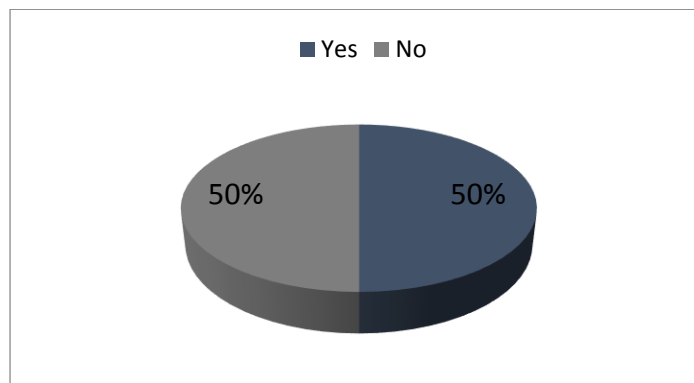


Figure 24: Availability of TVET Institution Career Support (Source: Author)

xi. Qualitative Interviews in Morogoro

This section presents an analysis of the study's interviews administered in the Morogoro region during field visits and group meetings and which provide qualitative assessment. The study used the case study of issues in college to understand their curriculum and to address research question 2: what are the skills that TVET graduates acquire from training in TVET institutions especially in cash crop farming? The section is organized around a series of visits to different organisations and employers, the cases of Kihonda RVTC, Morogoro Farmers' Village, Intermech Engineering Ltd, and the Agriculture Seeds Agency.

a) **The case of Kihonda RVTC in Morogoro– issues in relation to a college**

This case focused on curriculum analysis using competence based education training (CBET). A discussion with the Principal of Kihonda Regional Vocational Training Center (RVTC) in Morogoro indicated that there were currently a total of 420 students at the center. 33% are female students. According to the principal he indicates that most of the students were eager to learn as well as the competent and passed the examinations most of the time. After graduation, 60% of students were shown to be self-employed and 40% to go into commercial business. CBET is introduced in the VET system as a means of providing training that is 70% practical and 30% theoretical. For example, skills in “agro-mechanics” and “horticulture” are provided in important classes in subjects like “paddy and beans”, which directly apply to the agriculture business. VET is comprised of 3 levels. The minimum entry qualifications for each level are as follows: LEVEL I: Should have obtained ‘O’ level Secondary Education, LEVEL II: The trainee should have attained a minimum CBET Performance – Grade C – in Level I, and LEVEL III: The trainee should have attained a minimum CBET Performance – Grade C – in Level II. Total hours of the courses are as follows: LEVEL I consist of 1619hours, LEVEL II consists of 1589 hours and LEVEL III consists of 1652 hours (VETA, 2012b).

The objectives of the course units are;

- (a) To establish a vocational and training system including both basic and specialized training to meet the needs of the formal and informal sectors of the economy.
- (b) To satisfy the demand of the labour market for employees with trade skills in order to improve production and productivity in the economy.
- (c) To foster and promote entrepreneurial values and skills as an integral part of all training programs.
- (d) To promote on-the-job training in industry for both apprenticeship training and for

skills updating and upgrading.

- (e) To raise the quality of the vocational education and training being provided.
- (f) To promote or provide vocational education and training according to needs within the framework of overall national socio-economic development plans and policies.
- (g) To promote access to vocational education and training for disadvantaged groups.
- (h) To promote and provide tailor-made course programs and in-service training in order to improve the performance both in terms of quality and productivity in the national economy.
- (i) To provide a dual vocational education and training system, combining broad basic training, gradual specialization and practical work experience.
- (j) To promote a flexible training approach and appropriate teaching methodologies.

Also, all students in CBET are mandated to complete “field training,” which is an internship, at the end of both the 2nd and 3rd level. However, according to the Morogoro regional survey, although TVET curriculum includes the “field training” and internship program, the program itself is apparently not relevant in producing skills for the needs of the field (see 5.2.6) due to its weak linkage with the demand arising from the labour market. This is a critical issue that TVET teachers need to work on by reviewing their curriculum and pedagogy.

Roles of a vocational teacher in assessment

In CBET, the teacher is involved in continuous assessment and is responsible for completing the log sheets and transferring the grades attained by a trainee into a log-book. The vocational teacher, therefore, should make sure that the log-book is endorsed accordingly (VETA, 2012b).

Modes of Assessment

In implementing CBET, testing and assessment shall be conducted in two ways: internal and external assessment according to assessment guidelines (VETA, 2012b).

Internal assessment: This is a continuous or formative assessment, which is conducted by a vocational teacher. Each unit has to be assessed and the trainee has to meet a required standard before she/he can proceed to the next unit.

Final assessment: Final assessment is a quality assurance process conducted by a licensed external assessor before the learner is awarded a certificate of competence.

Validation of assessment: Validation of final assessment is conducted by licensed experts from the industry in the relevant field with the objective of validating final assessment and the process of learning.

Roles of a trainee in assessment

The trainee is responsible for identifying her/his own strengths and weaknesses, i.e., she/he will conduct self-assessment under the guidance of a teacher or assessor. The trainee is also responsible for endorsing the results for the continuous and final assessment (VETA, 2012b).

Assessment records

Progress reports for every individual trainee should be recorded in the log sheets and logbook to provide evidence that will be used to support claims of achievement. The vocational teacher has a duty to keep and maintain records of a trainee (VETA, 2012b).

Marking and grading

The emphasis in CBET is on performing to the required standards in workplaces; therefore, the grades descriptions shall focus on performance levels as follows:

A: 90 - 100: Exemplary performance

B: 70 - 89: Good Performance

C: 60 - 69: Average performance

D: 50- 59: Needs more training

E: 0 – 49: Needs to be guided toward other opportunities

Trainees who do not score a minimum of 60% in formative assessment will not be allowed to sit final examinations. The pass mark is, therefore, applicable to both formative and summative assessments. A trainee with grade E will need to be guided in opting for other opportunities (VETA, 2012b).

Pass levels

Continuous assessment marks shall be combined with final assessment marks to determine one's grade for award. A candidate who does not pass continuous assessment and field attachment at a minimum of 60% (C) shall not qualify for final assessment. The pass mark of related subjects and cross-cutting skills shall be 60%. A trainee is allowed to carry over modules to another level if not passed. The total pass mark for practical examination and theoretical examination shall be 60% (C). Notwithstanding, a candidate who qualifies for final assessment shall only be awarded a certificate if she/he scores a B in the final assessment (VETA, 2012b).

During the interviews, both the principal and the teachers indicated that they were proud of their school system. They answered my questions confidently and confirmed that they thought the training system and curriculum were well designed and relevant and they were satisfied with the current situation. The teachers did indicate a need for more support but were unable to articulate this very clearly except for a request for overseas training which seemed inappropriate. Both the principal and the teachers interviewed were preoccupied with

emphasising that their students pass rate was over 95% compared to the average national examination pass rate of 90%. It proved difficult to get the interviewees to discuss the specific skills that they taught that would be of value in the local labour market. The overall impression from these interviews was that there was little reflection on the relevance of the TVET curriculum to employment and no systematic discussion of the kinds of learning outcomes that might have most value. The examination pass rate seemed to be the only criterion of effectiveness. There appeared to be a lack of concern or understanding of the need for the shaping of the curriculum in practice to be at least in part demand-driven. This encouraged me to enquire further into the reasons for this lack in the regional survey and subsequent interviewing.

Informal interviews of TVET students, both male and female, illustrated enthusiasm for their subject and a willingness to learn about new methods of agricultural production. Thus one said “I want to know more about new technologies in agriculture sector and I want to learn and practice a lot”. Another asserted “After graduation from this school, I want to be an agriculturalist to help my village”. Most of the students whom I interviewed expressed their satisfaction with the current TVET programmes they were following but at this stage they had no means of judging the relevance of the programme to the labour market. The willingness to learn was evident and the wish to embrace new technologies widespread. Idealism, as motivation to contribute to development at village level, is a passion that TVET programmes might capitalise on more if internships and first job placements were managed more effectively but this was not mentioned in the interviews.

As a critical reflection on the curriculum, generally it is necessary for curriculum transformation to include relevant skills and practical orientation. The problem of the currently existing curriculum is that there is no program for enhancing the generic enabling skills, which endangers the quality of training in terms of science-based technical training. Moreover, there is neither introduction nor guidance for adapting the skill’s flow from the classroom to the field.

There is a need to develop a strong and relevant TVET curriculum to produce skills in the agricultural sector, which can promote the employability of youth in Tanzania. The TVET system should work more closely with the government and the private sector to support the development and strengthening of the curriculum to make it more demand driven. For instance, it is crucial to create programs that will strengthen overall “generic enabling skills.” Sessions for field attachments/internships in potential employment institutions could also be considered to enable trainees to obtain sufficient experience in work places.

In the case of the Kihonda RVTC, the curriculum was revised in 2012 based on VETA’s labour market surveys through the introduction of new relevant skills and practical orientation. Teachers believe their curriculum is well implemented and effective. However, this is only the observation from the supply side. Teachers have not yet given attention to making the curriculum more relevant and field-oriented by identifying ways of diminishing the skills gap. Although CBET has been introduced and internships were integrated into the curriculum, both need to be improved to provide quality practical training and to produce relevant skills for the agriculture sector.

Teachers need to be more informed about the situation of VETA graduates by tracking students post-training more effectively. In addition, teachers need to identify the actual and potential bottlenecks in reducing the mismatch of skills and attempt to improve the curriculum to address the concerns of graduates’ employability. To diminish the skills gap, TVET institutes need to obtain frequent feedback on the need for skills in the local market. This school visit helps to analyse the research question 2.

b) The case of Morogoro Farmers’ Village – issues in relation to the farmers

The Morogoro rural farmers case visit was aimed at understanding the challenges farmers go through while doing business. This included checking the kind of knowledge and skills they possessed and how much the farmers understood the operations of the market. This visit would seem to be in alignment with insights the author gained during visits to farmers’

villages in rural areas where farmers seemed to have significant problems in understanding or relating to the concept of running an efficient business. Most of those interviewed could not understand English so it was necessary to use translators with whom I worked closely to ensure that as far as possible meanings of questions and answers were understood consistently. The overall impression from the interviews with farmers was of a conservative and risk-averse set of practices and attitudes that valued familiarity and consistency over innovation and yet more innovation.

This experience can be contrasted with the interviews I conducted when I visited Sokoine University, which is the second-biggest agricultural university in Africa. The farmers I was able to interview in English told me “we are much more concerned with improving the yields and quality of paddy and we are always enthusiastic about ways to make use of new technology.” They were well informed and associated with the university research and development group for paddy. This indicated to me that there is plenty of scope to enhance the connections between these farmers and these capabilities through TVET linked to improving practice in less advanced areas. The knowledge and skill of how to do this already exists but may not be reflected in typical TVET environments.

Traditionally village level small scale farmers learn from their family and reproduce long standing practices. This inherited knowledge is insufficient to improve the quality and quantity of their products, which requires understanding of the importance of different agricultural inputs, pest management and other aspects of cultivation that benefit from science-based practical training. In addition it was clear that many village farmers were unaware of the buyers and millers for their products. Awareness of this situation in a supportive environment would allow village farmers to think about the customers’ needs more carefully during production of the paddies and commodities, to become more client-oriented and to increase the quality which can add value.

c) The case of Intermech Engineering Ltd – issues in relation to a company

To observe the demand side of skills development, I visited Intermech Engineering Ltd, a firm started in 1994 that supports innovations based on societal needs and that specifically relates to the invention of machines for paddy, cassava, oil seeds and grading cleaning seeds. Several steps are taken in this firm in order to fulfil its mandate. First, in each of its projects, an identification stage is used to assess the social needs including the needs of the community for better food security or more profitable production of agricultural products such as rice. Secondly, an input stage involves typically inventing a machine or device to solve the problem identified in the identification stage. Lastly, a testing stage involves making sure the machines work properly. At Intermech, the testing stage also offers in-service training for staff, which is held for 2 hours per week. This training is helpful since employees are sometimes only good at the theoretical approach. Through in-service training, Intermech aims to scale up existing skills and diminish the skills gap. According to the president of Intermech, he told me that “I believe that adaptation of the new inventions and innovative ideas using new agricultural machines will be the key to decrease processing time and increase the quality and quantity of the agricultural commodities.” However, he mentioned to me that there is some risk that machines may be unprofitable if they are the wrong machines for the particular crop or if they are not used appropriately. I asked if Intermech aims to develop and strengthen the risk mitigation and research systems to ensure the quality of machines and their appropriate use in production. About my question, he expressed himself to me saying “yes, indeed it is a very important point. Risk mitigation and research systems are not currently part of our activity though they should be in the future in Intermech. TVET adapted to purpose would include risk mitigation in its curriculum.” Intermech also offers internship opportunities to VETA students. One employee was hired immediately following his internship during the course due to his excellent performance. Intermech has developed innovative ways for closing the skills gap and enhancing productivity. Firms like these should be supported more by TVET institutions in order to send more students to such firms. The experience gained from working with these firms could be used to improve the curriculum, and especially to improve the

quality of internship programs. Also, this situation should be publicised and expanded upon by policymakers to encourage the tight relationship between the local firms and TVET institutions. In this way, youth could be given demand-driven skills efficiently through the provision of the value-added internship program, which cultivates their practical skills and closes the gap.

The president of Intermech appears very committed to advising interns how to use new technologies but he may not be typical. At the end of the interview, he expressed his dissatisfaction by saying “I am not getting any support from the government to scale up my company and to improve communication with the TVET sector. I need to have more attention from the government to strengthen the business by linking up with local farmers in villages, to other companies and to TVET schools.” This interview drew further attention to the key importance of considered government intervention aimed at the improvement of coordination between the relevant stakeholders in the TVET and the labour market itself. Such coordination should greatly assist in identifying and reducing the skills gap and also in developing and sharing skills to improve the paddy production in Tanzania.

d) The case of the Agriculture Seeds Agency – a government agency

Further insights were also gained by visiting the Agriculture Seeds Agency (ASA), a government agency that mainly functions by offering workshops for chief farmers to learn how to conduct mass production and adapt new varieties of paddy. By offering in-service training, ASA uses a participatory approach. Most of the participants in ASA are primary school leavers and are not VETA graduates. Therefore, the communication and numeracy skills of these participants are sometimes weak. More difficulties arise in giving farmers skills in adopting new technologies. All the training manuals of ASA are written in Swahili since farmers sometimes lack literacy skills and do not always understand English. However, there are some issues in terms of the levels of organisation at ASA. For instance, ASA is under the Ministry of Agriculture and is not linked with VETA. As such, ASA does not give feedback to VETA with regard to organising the curriculum for VET schools. When I asked the staff of

ASA they indicated that they were dissatisfied that they worked independently without any linkages with MoEVT. They feel unhappy that there is little attempt to build on their successes because of the lack of coordination among Ministries. They told me “if the Ministry of Agriculture had a better partnership with the Ministry of Education, we could have worked on our training methods and methodologies with the MoEVT to produce better training for farmers together. But we must work by ourselves since we are under the Ministry of Agriculture.” This lack of coordination among the Ministries does appear to create major problems in identifying and addressing gaps in capabilities identified by employers.

5.2. Results

These results are based on the analysis mentioned above as well the literature review and my own professional experience. This section focuses on linking research findings with research objectives and questions and previous studies. This is because, in discussing the results of this research, it is important to address the questions raised at the beginning of this research. The section is organized into four parts each of which addresses one of the research questions raised in this study.

Research Question 1- What are the skills required by employers in the agricultural sector, especially in relation to cash crops??

The Morogoro survey results using primary data indicated that employers think that TVET employees’ practical skills and ICT skills are weak. This resonates with responses to the national survey. Specifically, weak skills were thought to include (a) agricultural machinery skills to supervise and repair agricultural machineries, (b) electrical skills for processing and production machinery, (c) pasture establishment and management skills, (d) seal control skills, (e) irrigation and dairy farming skills, and (f) water availability skills are

required by the employers in the agricultural sector. To learn these listed skills indicated as needed in the primary data, it is necessary for TVET students to acquire high order literacy and numeracy skills from the primary level. Without this foundation, TVET students cannot learn these skills, which are more science oriented and which require problem-solving skills.

Based on the national survey as a secondary source, it is clear that more frequent communication between TVET institutions and agricultural industries is important since although TVET employees thought they were well equipped with the useful skills at work after their graduation at TVET, employers think employees' practical skills are not relevant to the actual work. Moreover, employers would like to have some TVET employees who actually have the adjustable ability, mentioned in the literature review by McGrath, and the competence to apply their skills practically in the field. Indeed, the practical skills learnt during school were not transferred efficiently into the field and working places according to the employers. Hence, it is also crucial for TVET students to obtain the competence to apply these practical skills in the field. Moreover, this competence is crucial to the growth of their basic skills and to their professional growth based on the local demands and their flexibility as well as adjustability. The current TVET curriculum appears to lack a means of providing this competence and needs to be strengthened by introducing more field-based practical training, which also provides opportunities for TVET students to improve their competence in the application of their new skills.

Other concerns include a lack of motivation among TVET employees due to the environment (a rural area), low salaries and a lack of incentives, which causes workplace problems such as disloyalty and a lack of commitment. This results in the rapid turnover of employees. In addition, a professional mindset needs to be strongly inculcated into the TVET employees once they are in the work environment. Embedding such a mindset should begin even sooner and during the school training.

Research Question 2 -What are the skills that TVET graduates acquire from training in TVET institutions especially in cash crop farming?

From both the national (secondary source) and regional survey (primary source), employers think most of the skills trainees acquire are not applicable. Overall, 67% of all employer respondents believe there are opportunities to learn skills in their setups. Moreover, based on both the national and regional surveys, the skills related to ICT as well as scientific and technical skills were mentioned as some of the emerging skills in the employment sites visited. For example, these are the skills related to ICT, computers and agricultural machinery such as new crop machines and their maintenance. This shows that it is essential to introduce western science training to make courses more valuable in relation to the needs of the current labour market. To do so, it is important for TVET students to obtain high-order literacy and numeracy through primary school training and to be able to acquire emergent skills most of which are composed of ICT, R&D and practical skills.

More specifically, emerging skills include generic enabling skills, general agricultural and farming skills as well as skills relating specifically to rice production. All of these skills need to be strengthened and refined in the TVET system to reinforce their relevance and efficiency and allow them to be transformed to fit the needs of the field. This point is missing in the current TVET agricultural curriculum. Creating and introducing entry requirements that include a high order of literacy and numeracy skills to enter TVET would help in cultivating all the generic skills listed below and even strengthen the likelihood that they would be transformed to fit the needs of the field. This depends on whether demand for TVET is strong enough to be more selective at entry level.

The skills, including the new and emerging skills, can be categorized in terms of three sets of skills required of agricultural workers as they enter the labour market which have been generated from the Kihonda RVTC case as well as studies by VETA. These are generic, general agricultural skill, and specific crop related skills:

a. Generic enabling skills:

- (i) A good foundation of basic education, including high-order numeracy, literacy, problem solving, critical thinking, analytical thinking, life skills and the development of a societal awareness;
- (ii) Inculcation of a sense of professionalism related to developing a “work ethic and sense of responsibility.” This includes skills at time-keeping, meeting deadlines, personal planning, and life skills;
- (iii) Application skills: being able to link theory with practice and to apply skills learned in training to the practical reality of agricultural work;
- (iv) Understanding of new technology as well as ICTs and ways it can serve to create better and more efficient production methods;
- (v) Good communication skills, including respect and sensitivity to local and traditional farmers whose customs and practices can offer constraints in the adoption of modern farming practices; and
- (vi) Entrepreneurship and business skills related to establishing start-ups, developing a business plan, basic accounting and bookkeeping practices.

b. General agricultural and farming skills

- (i) Skills related to the dissemination and adoption of agricultural innovations; and
- (ii) Basic science and engineering skills relating to agricultural production.

c. Skills relating specifically to Rice Production (practical skills)

- (i) Skills for adaptation of new technology for mass production and improving the value-added quality of rice production – this includes sufficient numeracy and literacy among those majoring in agriculture, in particular the ability to read and

understand the reading matter and manuals for new technologies or the introduction of new methods of production; and

- (ii) Skills for processing products (how to package and store, etc.), entrepreneurial skills, life skills and agro-mechanics skills.

Some of these skills are taught in the existing curriculum; however, some are missing and need to be taught in relation to the adaptation of new technology and competency in the application skills.

A key question is how TVET graduates transfer their knowledge and skills to people in the agriculture sector, especially those who work in the paddy fields who have no schooling and how these graduates can make the agriculture informal sector more relevant for economic growth, like the formal sector. These concerns need to be addressed by an effective system of knowledge dissemination and training built on the current cascade training system that uses not only the TVET institutions to enhance the transfer of modern farming practices, but also employs extension workers who visit farmers in the field. In practice, there are very few TVET graduates who have studied agriculture; only 74 graduates out of 1050 (just 7% of all the TVET graduates so far) and even fewer farmers have been properly educated at the TVET level. Hence, young people who have obtained skills from TVET institutions need to play a role as leaders and to have proper leadership training during TVET and to transfer and cascade emerging skills in the field. These graduates need to ensure that knowledge and skills are reflected in field practices. The cascade system would need to be supported by ASA policy or at the level of strategy.

In conclusion, as the national survey emphasises (table 8), TVET graduates' practical skills are not well cultivated during their course of study. Further, this data strengthens the idea that an improvement of TVET system is needed, especially the alignment of curriculum and pedagogy to make it more demand driven which is aligned with what McGrath mentions in his literature review: the "importance of capturing local context for effective TVET policy

implication” (see section 2.2.2.). TVET students also need to obtain high-order literacy and numeracy skills through primary school training. This will allow them to learn emergent skills, most of which are composed of ICT, R&D and practical skills. Indeed, these analyses from both primary and secondary data support research question 2 by indicating the specific skills, including the new and emerging skills, that TVET institutions should impart.

Research Question 3 – To what extent do the skills acquired match the skills identified by employers as needed in cash crop agriculture and what are the gaps?

For the question on TVET skills gaps between TVET graduates and employers’ needs that exist in the agricultural sector, especially in cash-crop farming, results indicate that skills gaps arise from many factors. However, a major factor is “how she/he could apply these emerging skills defined in research question 2 in the field”. Graduates’ competence in applying skills in the field could be a major factor that requires attention by addressing the appropriacy of the curriculum or the on-the-job training. According to the regional survey in Morogoro, even though 80 % of the curriculum programmes include an internship program, the system of the internship program itself is not efficient enough. Indeed, employees question the intensiveness and relevancy of the internships they completed during the internship period of their training. This implies that many TVET graduates are still not well-equipped with practical skills especially during level 2, implying that 2nd year internships are not as efficient as the internship completed during level 3. This causes a loss of cost and poor time efficiency. Therefore, level 2 internships should be replaced by more practical-oriented courses. Internships need to be actively managed and linked to records of the achievement of skills. Moreover, the purpose of field training itself needs to be clear and well elaborated to students since, based on interviews with students, it seems that they do not understand why they undertake internship programs and especially what they should achieve during their internship.

The challenges facing the region revolve around its ability to utilise its existing human capital to produce the right set of skills for promoting efficiency and mainstreaming paddy commodities to support economic growth. First of all, the human capital that emerges from TVET especially those who studied in the agriculture sector is very small compared to the demand, due to a lack of incentives and the unpopularity of studying agriculture in TVET among youth. As analysed above, the agriculture sector is not attractive to TVET students compared to engineering and science or business management. Moreover, the government neglects farmers. It is also difficult to obtain a stable income in the agricultural sector as compared to other sectors. As the literature review revealed, it is important to recognize that there is a need to create the mechanisms for TVET to feed into human development and to harness the knowledge as well as the production of skills and put them into effective use for economic growth (McGrath, 2011, p 44).

The national survey shows the contradiction between what employees feel about the skills they acquired at TVET institutes and what TVET employers think about those skills' relevance. This is one of the cases that describe the gap between TVET and the labour market. More specifically, Box 1 of the national survey presents a list of reasons provided by respondents. Lack of computer skills is also mentioned as one of the factors that cause some employees to feel that training acquired is not useful at their jobs, which supports the basis of research question 3 by introducing the skills gap.

All of the above indicates that TVET institutions evaluate and educate youth in an inefficient way, which means that the curriculum and pedagogy are not being well analysed to cultivate the relevant demand-driven skills. Therefore, it would increase the efficiency of training if TVET institutes and industries could discuss the methods of training more frequently with regard to the local contexts, which is one of the ways to diminish the skills gap and increase the efficiency of training.

Research Question 4 - What are the policy implications arising from employers' needs, trainees' skills, and skill gaps for the development of the TVET system?

Mainly, the findings of these research questions from one to three mentioned above lead to the need to invest in curriculum development, identify and act to reduce specific skills gaps and increase the relevance to jobs in agriculture and paddy production. This could lead to transformation of TVET through policy change and revision.

In order to deepen this analysis of skills, diminishing skills gaps and providing relevant skills, DACUM, which was introduced in Chapter 3 (3.3), provides a system that could be applied in the case of the TVET programmes in the agricultural sector in Tanzania (see Figure 16 and 17) by strengthening it as one of the policy implications. DACUM can introduce a process that provides a picture of what the worker does in terms of duties, tasks, knowledge, skills, and characteristics – and often the tools the worker uses. The process presents information in graphic chart form and can include information on critical and frequently performed tasks and the training needs of workers. This information is converted into competencies and skills and, finally, into an instructional curriculum. This form of occupational analysis is particularly effective for the design of TVET curricula and it often provides an analysis of both novice and top-performing veteran workers in order to develop a gradation of knowledge, skills and competences linked to certification and promotion (DACUM, 2001). Such an approach would be particularly valuable in linking the reality of agricultural work in the field with curriculum design and pedagogy in TVET institutions.

One way of doing this is that systematic field observations could be conducted to ensure that farmers are prepared adequately as novices in agricultural production methods as well as supported with relevant and effective continuous professional development to graduate to mastery level. In addition, the importance of developing sensitivity and understanding of local context must be underscored here. This is because TVET programmes should enable graduates to accommodate such local systems by using them as scaffolding in a heuristic process that empowers local farmers and allows them to gradually adopt scientific agricultural, business and entrepreneurial practices without perceiving them as conflicting with their traditions and customs. Hence, only by studying the way farmers perform, behave

and reveal their assumptions about cause and effect in their daily activities can TVET programme designers and implementers incorporate an appropriate and effective curriculum. Therefore, the introduction of DACUM systems in curriculum development should be strengthened through the Ministry of Vocational Education Training as one of the policy implications, to promote this mechanism to make TVET curriculum more relevant and demand driven based on the local needs.

Moreover, having employees with a mix of skills would strengthen innovative ways of production of new agricultural commodities especially in the paddy sector since it would enhance R & D if scientists, researchers, and so on could be included. These enhancements are also to be considered important in the promotion of the agriculture sector by policy and strategy implications from the government.

CHAPTER 6: DISCUSSIONS AND CONCLUSION

Introduction to this chapter

This chapter discusses the findings of the research and the contribution it makes to knowledge and how it adds to the existing understanding of TVET policy and practice in Tanzania. It also extends the discussion by adding the author's professional learning experience as part of the final reflections of this chapter.

6.1. Discussion of the findings

From the national and regional survey as well as the literature review, informal interviews and case studies, it is clear that the agriculture sector of TVET institutions, especially TVET administrators and employers, has not paid enough attention to ways of reducing the skills gaps between what TVET provides and what employers say they need. The signals are that TVET institutions are more supply driven than demand led.

Knowledge and skill related to jobs and employment play a key role in the social and economic growth of any nation and shape productivity in the labour market (Tanzania Education Sector Analysis, the republic of Tanzania, 2012). However, the government of Tanzania has paid less attention to the development of TVET compared to other education sub-sectors such as primary and secondary education. This can be seen in the lack of budget allocation to the TVET sector so far (see figure 8). Although the projection of the TVET enrolment rate shows a considerable increase by 2018 (see figure 11), this is not matched by commitments from the government of Tanzania to finance the high rates of growth and reform TVET policy and the agricultural curriculum and pedagogy so that it is more demand driven. There is a risk that output will be inefficient and underfunded and it will not link up with the high quality needed for economic growth driven by increased production of paddy and other products. According to McGrath (2012a, p. 620), there is an urgent need for new theorisations

for vocational education training, a field which for a long time has been theoretically weak or neglected. McGrath (2012a) also argues that the intention of new theorisations is “to be deliberately divergent and to avoid both the absolute rejection of economic insights into VET and development and the tendency of that approach to reject alternative accounts as unworthy of consideration.” The theorisation journey faces numerous bottlenecks such as the lack of a compelling theory of change (McGrath, 2012a, p. 620). There are numerous concerns on how the new theorisation can guide the formulation of VET policies that are applicable to the current socio-economic conditions and also policies that are adaptable to the changing economic and geopolitical situations. If these concerns among other constraints are not well addressed in the new theorisation, it is likely that the VET skills mismatch will persist. It is unfortunate that, as indicated in chapter 2, Tanzania’s agriculture sector is central for national economic growth and yet its potential has not been fully tapped. This is partly a result of a lack of vision and the lack of consistent political and economic leadership in relation to the development of TVET.

McGrath (2011, p. 42) also argues the most of the approaches to VET have been developed on the basis of a pessimistic view of African development. A new emphasis on VET is unlikely to yield positive results without new policies and practices that are linked to a new approach that balances skill acquisition with knowledge of good practice, and is more demand driven. The purpose of VET, McGrath declares, should be re-evaluated and re-emphasized, and linked to the realities of universal access to secondary school (McGrath, 2011, p.46). A comprehensive overview of VET is needed in Tanzania so as to develop and implement new approaches to VET applicable to development needs. It is also important to remember that not all skills demanded by the employers can be provided by VET. New approaches need to make good use of apprenticeships and internship to bridge the gap between school and work and also obtain skills unattainable in a classroom setting (Adams, 2007, p. 34).

Agriculture is one of the major development sectors in Tanzania, and it is essential to find ways of supporting the sector's growth in terms of productivity. At the national level, there is a wide gap between the number of graduates in the agricultural and food processing sectors, and the much larger number of graduates in other sectors of development. This is likely to have a negative impact on economic growth and development. Agricultural programmes in TVET institutions are among the programmes that receive the smallest number of students. Partly as a result employment rates of agriculture graduates are high. As indicated in the labour market analysis done in chapter 5, most of the students who graduate from agricultural programs are absorbed by the job market. This does not mean that the high employment rate equates with high productivity. Unfortunately, only a few TVET graduates are encouraged to work in Tanzania's agriculture sector and the numbers fall well below demand.

In the Morogoro region employers are not satisfied with the skills possessed by TVET graduates. This was made clear by the employers who indicated that most TVET graduates who came from agricultural programs lacked relevant skills and had to go through company-level training before they could begin functioning in their new jobs. This indicates the poor quality and relevance of instruction and learning during TVET programmes. This appeared true both of generic skills as well as in-depth practical skills both of which are explored in chapter 5. There is a gap in perception between employers and employees about the value of their training. This shows that the graduates from TVET schools in Tanzania are not satisfying employers and that the lack of a more field-based curriculum is regarded as a handicap for entrants to the Morogoro labour market (see chapter 5). The current curriculum lacks a means of enhancing generic skills and providing practical-oriented classes close to the production process, and has no systematic way of introducing and supporting appropriate scientific and technological advances in the agricultural sector. The TVET system must relate more integrally with the local context of employment and recognise the need for a more demand-driven TVET curriculum.

6.2. TVET Policy Implication from Lesson Learning

It is important that the TVET institutions should work more closely with government and the employers of TVET graduates since there appears to be little coordination between these stakeholders and few attempts to manage the education and training of new entrants to the labour force from selection into TVET institutions, through the acquisition of knowledge and skill, into employment, and with support for performance on the job. In Morogoro companies such as Intermech Engineering Ltd. could provide opportunities for trainees to acquire more demand-driven skills in an entrepreneurial curriculum. ASA could support capacity building across the TVET agricultural curriculum. More effective efforts to link TVET with farmers are crucial if innovation is to spread across the agricultural landscape and enhance the quality and productivity of commodities to generate economic growth in Tanzania.

It will be necessary to align policy with local context and promote the development and delivery of the necessary knowledge and skills indicated in chapter 5. Considerations need to include, a) the role of government and other related stakeholders; b) sector cluster skills; c) the role of the education sector (teachers, pedagogy, and curriculum) in providing the relevant skills for workforce development; d) standards, established by the government, that are necessary for the development of a monitoring and evaluation process to ensure that those entering the workforce develop appropriate knowledge, skills and behaviour and that competencies are of a sufficiently high quality; e) the role of Research and Development (R&D) institutions in strengthening the linkages with industries and private sector enterprises; f) the role of the public education sector in supplying the relevant competencies for initiating and sustaining new enterprises; and g) the relevant feedback mechanism to be value-added to the government's development priorities, ensuring that adjustments are made to the system in a way that brings about efficient and effective outcomes.

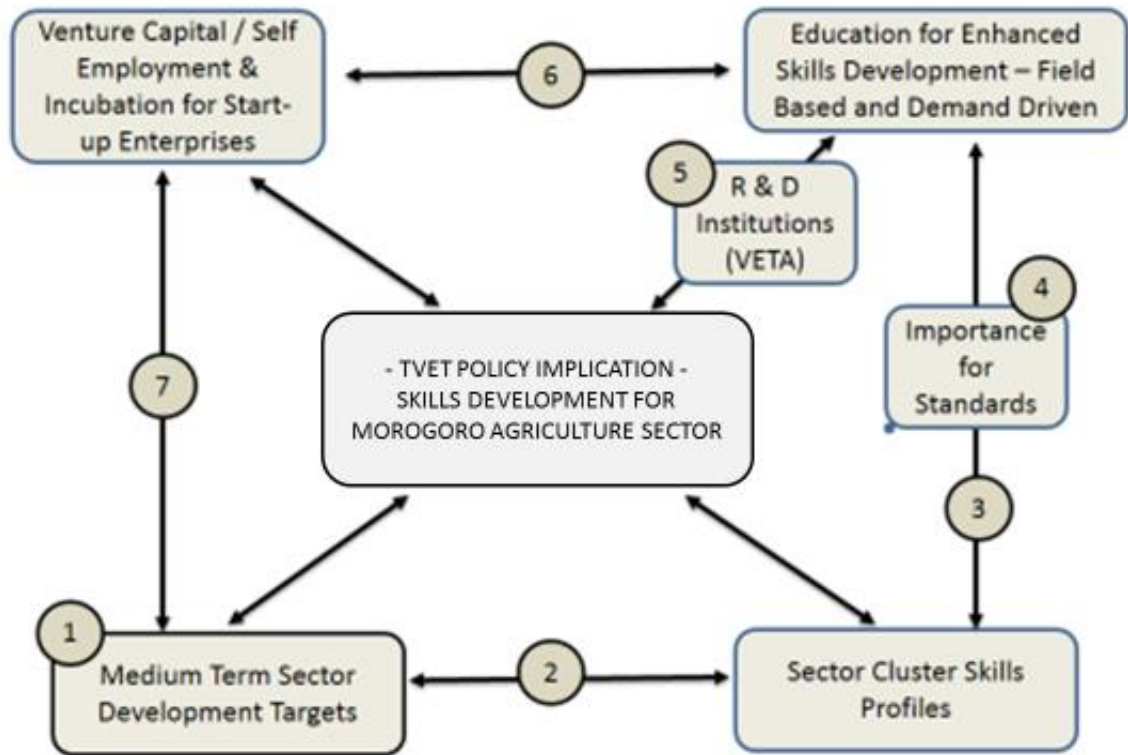


Figure 25: TVET Policy implications of key concepts (Source: Author)

Figure 25 describes the TVET policy implications of key concepts such as:

- 1) Medium-term sector development targets: according to an overall development vision based on medium to long-term government development planning priorities, governments establish sector development priorities and translate these into medium-term development targets. These targets, made by policymakers, must be owned collectively and shared with key stakeholders in, in this case, the education sector, the agriculture sector and the labour market sector;
- 2) Sector cluster skills profiles: these sector priorities depend on the countries' given set of natural resources, manufacturing skills, service industries and markets, which is agriculture in the case of Tanzania's Morogoro region. Sector priorities are translated into sector cluster skills profiles through public-private partnerships

(PPP) and stakeholder contributions, which specify the knowledge, skills and behaviour needed for workforce development in line with sector targets;

- 3) Education quality: the education sector needs to provide the skills needed for workforce development in accordance with the medium-term sector targets and the skills cluster profiles. The sector needs to focus on the provision of equitable access to quality instruction (especially in this case the field based curriculum mentioned above, teachers, pedagogy, infrastructure and assessment);
- 4) Importance of standards: the issue of establishing, monitoring and evaluating standards is critical to ensure that the necessary knowledge, skills and behaviour are developed by those entering the workforce. Standards also ensure that competencies are of a sufficiently high quality to contribute to the labour market and are demand driven, which is the key to reducing the skills gap and skills mismatches;
- 5) Research and innovation: R&D in independent research institutions (in this case, TVET institutions) should strengthen linkages with industries and private sector enterprises through the coordination of mechanisms that serve local development needs;
- 6) Promotion of new enterprises: the education sector needs to supply quality competencies for initiating and sustaining new enterprises which will enhance the inter-value chain in the agricultural sector; and
- 7) Feedback from industry entities on development policies: demand entities should increasingly provide feedback on a government's development policies. This should allow governments to adjust their policies to ensure that expected outcomes, efficiency and effectiveness levels are reached by reducing the skills gap.

A further refinement is needed to determine the type of policies needed to design and implement the promotion of TVET in the education system based on local needs, in this case in Morogoro in Tanzania. It requires a new type of TVET system, which is more field-based

and oriented with stronger generic enabling skills including high order literacy and numeracy. These skills would be in addition to the general agricultural and farming skills as well as skills relating specifically to rice production. The government can instigate top down change through policy reform, which is especially important for making agriculture products more commercially oriented, for example, by increasing the local productivity, improving the quality not only at the subsistence level but also at other levels to accelerate production for export. A bottom up approach could be taken by adapting the curriculum in TVET. This would work through allocating compulsory fieldwork time in the curriculum as well as setting aside budget for this fieldwork. This approach is equally crucial, as it is needed to tackle the skills gap and major bottlenecks. Training should be linked to extension support to farmers so they can acquire skills in making their products more client-oriented through quality improvement, and less costly through better production technologies.

6.3. Creation of relevant TVET curriculum

The TVET system should work more closely with the government and the private sector to support the development and strengthening of the curriculum to make it more demand driven. Development of field attachments and internships in potential employing institutions is under developed and not systematically managed so it falls short of providing all trainees to with effective and sufficient work experience. The whole area of work experience needs more purposeful management and assessment. Although most TVET students complete an internship during their TVET training (see survey in Chapter 5 results) it appears that students' awareness of the purpose and value of the internship is weak because the objectives of the internship as relayed to the students were unclear. Introducing the internship to students during Level 2 may too early, when students' practical skills are not yet ready and not fully cultivated. Besides that, experience from internships is not structured into the post-internship curriculum.

Better placing of TVET graduates with farmers in the agriculture sector is crucial in order to promote innovation in farm practice. Strengthening this could enhance the quality and production of agricultural commodities. Close collaboration between TVET institutions and the employers should help develop relevant skills and make the transition from TVET institutions to work more efficient. So far, this has generally not happened. Awareness amongst TVET teachers and policy makers as to the nature of production skills relevant to the labour market and the skills gaps is weak. If training is to be more demand-led then the labour market must have access to graduates who have relevant and up-to-date knowledge as well as skills that are in line with Tanzania's development needs.

One approach to bridging the skills gap between demand and supply is to develop a field-based TVET curriculum as shown in Figure 26.

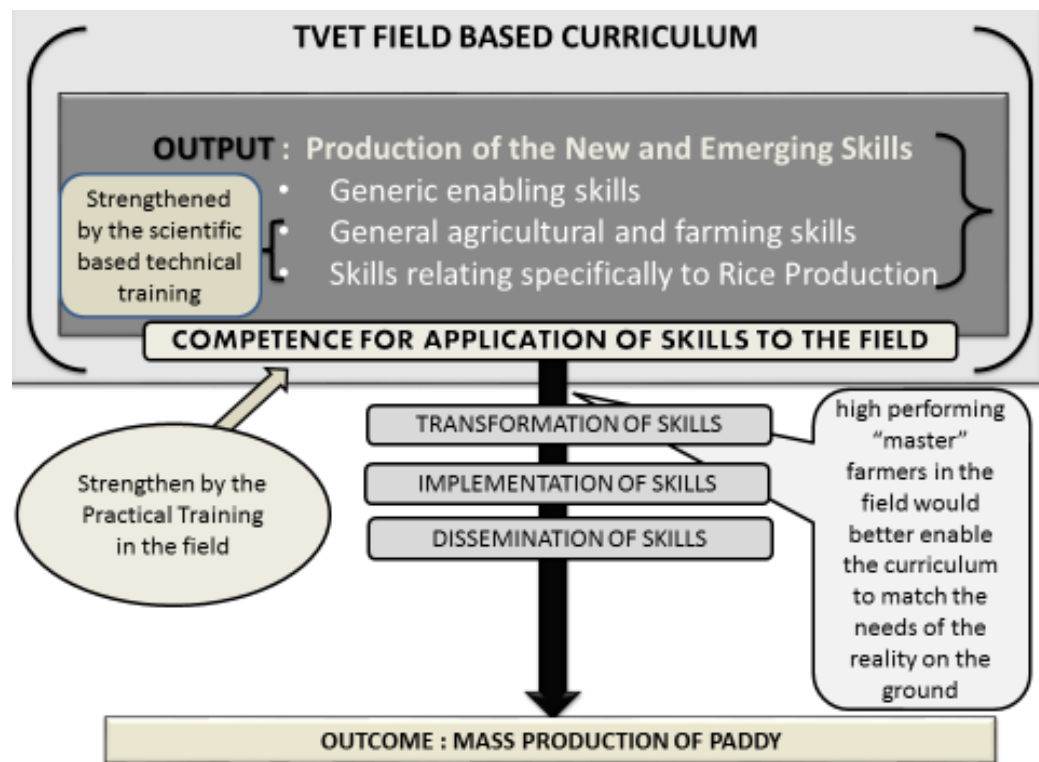


Figure 26: Framework: TVET Field Based Curriculum (Source: Author)

The problem with the existing curriculum is that it does not include a program for enhancing generic and enabling skills, nor does it have systematic methods for improving the quality and relevance of training. There is also no detailed introduction and guidance for adapting knowledge and skills from the classroom programme into the field.

A field-based curriculum for TVET would alternate periods in college and periods in production enterprises with structured experiences designed to promote competencies relevant to different sub sectors of economic activity. The field-based curriculum is meant to support the production of the skills listed above in Figure 25 in addition to the transformation, implementation and dissemination of knowledge and skills that apply to paddy production. These skills should be strengthened by the introduction of DACUM (see Figure 16 and 17). A systematic process, such as DACUM, of analysing the competencies of novice, average and high performing “master” farmers in the field, would better enable the curriculum to match the needs identified by those producing agricultural commodities.. Graduates need to be competent in the application of skills as well as demonstrate that that have acquired them in a TVET college environment.

6.4. Contribution to knowledge of this research findings

This thesis has contributed to knowledge in a number of ways and reached conclusions that can be used to shape future policy dialogue. It is clear that agricultural practices in Tanzania can benefit from efforts to reform the TVET system in ways which increase relevance, enhance the match between skills acquired and skills needed by employers, and develop more effective internship programmes that promote learning in and around work places. There are at least seven ways in which I believe this work advances the discussion of how to improve TVET programmes in agricultural and especially in relation to paddy farming.

First, the research confirms that there is a skills gap. Employers are dissatisfied with the capabilities of TVET graduates despite the perception of trainers that in general the TVET programmes are relevant and effective. It is also clear that trainees have mixed experiences, especially in relation to internships, which appear to be inconsistently managed and not well integrated into college based training. Though these may not be wholly new observations, they do provide specific insights into the problems and issues in Morogoro and synthesize perceptions from a unique set of employers receiving recent TVET graduates.

Second, my research leads to the conclusion that interventions are needed to strengthen the demand for more efficient practices in paddy farming, linked to new competencies and new technologies that can raise productivity. Part of the issue is that TVET institutions are at a distance from productive enterprises and may therefore promote production technologies that do not match those in real world enterprises. Another aspect of the problem is that demand from enterprises for improved technology may be weak amongst small scale producers who are risk averse and conservative in outlook.

Third, it is clear that training alone is insufficient to meet the challenges of making TVET more effective. There needs to be much greater integration of extension services at village level with internships and mentored first appointments for TVET graduates. If TVET graduates are to acquire capabilities related to more efficient production and support the spread of new practices they need to be part of more integrated rural development strategies that mobilise the existing agricultural extension infrastructure. TVET graduates may have more impact in modernising environments which are receptive to new practice as confirmed by earlier research (World Bank, 1993). Entry in to the labour market could be managed to recognize the importance of complementary inputs to support early career TVET graduates. If TVET graduates are partly to play the role of supporting innovation and strengthening links between training organisations and farmers they will need to develop leadership and communications skills linked both to context and to understanding of existing technologies of products and the potential for the adoption of better practices.

Fourth, the research shows that deeper analysis of training needs is needed in relation to different sub-sectors of agricultural employment. The research has detailed this in relation to paddy farming and similar enquiries are needed in other fields of specialization. Without a more systematic approach to identifying knowledge and skills grounded in actual production systems and their needs to adopt productivity enhancing innovations TVET programmes risk low levels of relevance in meeting employer's needs. DACUM is an attractive approach that provides a framework to generate curriculum material grounded in occupational context and has capabilities relevant to agricultural employment. Part of this need could be met through analysis of high productivity paddy farmers who can be compared with those who are less successful in terms of the capabilities and procedures they bring to the production process.

Fifth, the research draws attention to the importance of understanding the mix of capabilities new entrants into TVET bring with them from the school system. Higher level cognitive skills in both numeracy and literacy are desirable as is a secure grounding in biological and physical sciences. The TVET programmes observed do not systematically assess the capabilities of new students and may therefore develop with false assumptions about the starting points for more specific agriculturally related skills and capabilities. This important insight does not appear to have informed the development of the existing TVET curriculum even though rapidly expanding enrolments at school level are widely considered to have resulted in falling levels of achievement amongst school graduates.

Sixth, coordination across interested Ministries and employers was identified as problematic in this research. Communication and decision making appeared more often vertical within line Ministries rather than informed by lateral coordination focused on the TVET system or the needs of employers who relate to more than one Ministry. The research suggests that a more integrated approach is needed that increases a cross sectoral approach to TVET which brings together education policy, rural development, extension services, employment agencies and private sector employers.

Seventh, the research adds insight to some long-standing debates in TVET policy. As noted earlier McGrath (2011) has mentioned that many policy makers and implementers borrow from Foster's reasoning in "the vocational school fallacy" and conclude that academic schooling is always a more rational choice than vocation schooling at the level of the individual and by the employer. This research suggests that the problem may well lie in the quality of TVET and its articulation with employers' perceived and real needs for particular competencies in their workforce. If the TVET is not well fitted to purpose, or managed in ways in which TVET graduates cannot make full use of the skills and capabilities they acquire, then it is not surprising if the job market does not value TVET over general education. But if the TVET is more closely coupled to labour market needs, and if internships are managed to generate and reinforce capabilities related to productivity, rational employers will pay a premium to attract such graduates. Foster's fallacy is not that TVET is necessarily irrelevant, just that it may be if it is disconnected from employer's actual needs.

Hanushek's (2007) assertion that investing in enhanced resources for TVET and other educational programmes may have little or no effect on outcomes unless accompanied by institutional changes resonates with the findings of this research. It is also consistent with Johansen's advocacy of institutional reform as a critical accompaniment to physical investment in TVET facilities, and his insistence that effective TVET needs to be close to employment and informed by the actual technologies of production, rather than isolated in pre career training institutions with weak labour-market linkages. Curriculum development and improved pedagogy are needed in TVET but these need to be accompanied by attention to institutional reforms that can enhance more needs-based curriculum development and more coherent management of the transition from TVET to early career placements.

6.5. Lessons for external assistance from my professional experience (in relation to AfDB's funded projects)

Based on my professional experience and with the support of the analysis in this thesis, especially from literature review and national as well as the regional surveys, I have learnt how specific insights from my research will be useful in my work as a Task Manager of TVET operation and as a senior education economist at the AfDB. The key points are as follows:

(1) Support effective policy implication: strategic choices are needed related to the optimal size and shape of TVET systems appropriate for the labour markets involved. Given the prevailing constraints on public resources, choices need to be made to enable efficient training in TVET directed towards sectors that can add the most to economic growth and use DACUM, as indicated in chapter 5, to ensure relevant demand-led skills are acquired.

(2) Enhance the efficient use of funding resources for quality TVET: The efficacy of the use of training funds supported by the development partners and donors may depend on the framework of governance and control within which it functions (Ziderman, 2001, p.p.68-69). As noted above, Hanushek and Woessmann (2007) have argued that investing in resources—e.g. reducing class sizes, increasing teacher salaries, spending more on schools,—has little consistent impact on student performance when the institutional structure is not changed”. It is therefore crucial to have a new and strong institutional structure and well-elaborated field-based curriculum for TVET in Morogoro and elsewhere in Tanzania. This step forward needs to promote the development of generic skills within an institutional structure that should also involve more practical technological training with a science-based approach.

According to Ziderman in 2001, the central issue on how training funds can be used efficiently depends on how and for what purposes government control is used. Funds are more likely to be used more efficiently if the government uses them for economic objectives rather than political preferences (p.70). Increasing demand from the labour market for a higher level

of skills, and opportunities to increase practical skills e.g. through internships and apprenticeships linked to skills training are essential to economic growth strategies. In Tanzania, linkages are weak between national economic development strategies and the type, quality and number of tertiary graduates needed to implement them. Thus there is a need to redefine the development objectives for TVET, identifying the policy actions and resources necessary to achieve these aims, and agree a time frame for implementation and monitoring progress (World Bank, 2009, p.xxv). Any education and training strategy needs to engage with institutional reform designed to increase efficiency within different local contexts.

(3) Strengthen communications and provide cross-sector support between the Ministries: My professional work as a Task Manager of Tanzania TVET five-year operation project from 2014-2019, meant that during the identification stage of the project in 2012-2013 it became clear that there was a weak coordination between TVET institutions and the labour market as well as weak communication among the ministries themselves (as indicated in 5.1d). Hence, the MoEVT sector is isolated especially in decision-making related to policy and strategy due to a lack of communication with, for instance, the Ministry of Energy, Agriculture and Labour. This isolation is due to the normal character of Tanzanian government ministries where each has its own priorities and reports vertically with little horizontal information flow. This can lead to them to try to compete with the other ministries instead of cooperating. This organisational environment which lacks cross-sector support across Ministries, can lead to a lack of relevance when the Government of Tanzania launches its national policy, strategy and action plans related to TVET and building skilled human capital to promote the nation's economic growth.

(4) Job creation with adequate quality: Improving the quality and quantity of skills is part of any educational package, but the package will fail unless the issue of job creation is addressed. The supply of adequate jobs for the labour force is a central concern of any policy maker. The issue is not simply whether an adequate number of jobs exist, but whether these jobs are of adequate quality (Fasih, 2008, p. 5). A government's failure to create the conditions

for the growth in adequate jobs can also lead to a number of societal ills. Education and training, and more specifically, acquiring skills for which there is labour market demand can help reduce unemployment over time and reduce the social consequences of joblessness. “Youth who drop out of school early are vulnerable to unemployment, poverty, teen marriage, pregnancy, and delinquency” (African Development Bank, 2012).

(5) Efficient school to work transition: Recent events in North Africa have shown that even youth who have attended tertiary education and training are vulnerable to unemployment and extreme poverty. In some cases, this causes desperation and leads to self-immolation and other, even more violent, forms of resistance. The World Bank has addressed the problem of the lack of connection between education and work—as education does not always lead to employment – yet the Bank has not proposed very inventive solutions and limits its recommendations to “recognizing employers as key stakeholders” (Steven, Samoff and Stromquist, 2012, p.30). Broader analysis suggests that there are needs to consider issues of wealth distribution, power relations, or the possibility that education has become a tool to propagate disparities and continue patterns of injustice. The notion that education is a human right should be emphasised by strengthening the idea that it is a public good and that its provision is a responsibility to citizens that the state has assumed (Steven, Samoff and Stromquist, 2012, p.28). This implies that TVET for diminishing the skills gap should at least be widely available if not necessarily entirely a human right.

(6) Demand driven and practical curriculum: From my own experience, one of the approaches for solving the problem of a skills gap is to initiate a TVET operation project funded by the Tanzanian Development Partners (DPs) that is as practical and demand driven as possible. In fact, formal technical and vocational education favours relevant, practical skills-building over general, theoretical education. Internships can also help in building initial work experience and the skills of students who are still in school as well as of those who are unable to complete formal education. Likewise, employer training programs offer on-the-job skills-building in a non-formal setting.

Thus the new TVET project in Tanzania should be made as precise as possible by developing detailed information in the project with a result-based log frame, consisting of project objectives, project inputs and processes, project outputs, outcomes, and baseline information. The latter could include enrolment rates, and flows and numbers of graduates, teachers, trainers, and equipment. The information needs to be precise and accurate numbers, and the project should include frequent Monitoring and Evaluation (M&E) and supervision.

It is essential to have a TVET policy with economic objectives, education goals, and action plans, all of which are refined politically and economically as well as socially and about which there is consensus. One way to make enhance the project is to use the information provided in my thesis to provide essential information for a detailed log frame with appropriate performance indicators. Such a high quality log frame would define the heart of the project and would eventually help produce demand-driven skills formed according to labour-force market needs. Naturally, this would need to be done with the cooperation of stakeholders to recognise context and the specificities of content located in time and space.

(7) Develop a career service system in school: Career guidance programs both within and outside of schools can help individuals make informed decisions about their education and job choices, such as initial courses of study, university versus vocational options, initial job choice, job change and workforce re-entry. By helping ensure that individual decisions are based on self-assessment and labour market information, career guidance services can reduce market failures and increase economic efficiency. They also promote social equity and inclusion by providing equal access to information and enabling individuals to make free decisions about their own lives. Government needs to broaden labour market opportunities; for instance, a good investment climate, a well-functioning labour market, expanded alternatives in rural areas and sectoral and regional mobility can all increase the availability and accessibility of job opportunities across the economy (World Bank, World Bank Institute, 2007b, p.5).

All of the points indicated above will support my work as a senior education economist and as a task manager of the TVET project in Tanzania by providing efficient support to the government and an efficient operation which is more practical and demand driven. The project will produce relevant outputs which in turn produce outcomes that will have a significant impact on Tanzania's development. All of these outcomes were specified clearly in the project's design with a clear indication of output, outcome, impact, activities and indicators with regards to its local contexts. To produce such a project design, it is crucial to lay a foundation of in-depth analytical work, which has been the primary objective of this thesis.

6.6. Conclusion

Tanzania needs to establish the optimal size and shape of its tertiary education system. In addition, given the prevailing constraints on public resources, choices need to be made about what constitutes the appropriate strategy for raising enrolment. As a way of achieving a quantitative expansion of the sector without sacrificing quality, Tanzania should further differentiate the provision of higher learning by encouraging a variety of institutions- public and private, short and medium-duration programmes, incorporating both liberal arts programmes as well as technological, research and scholarship-based programmes which can be delivered either by means of campus-based or distance education modalities (World Bank, 2002, p.85). However, this approach will be successful only if there is a well elaborated needs assessment with regard to local context in terms of demand-driven curricula and effective policy implication as well as through a robust expenditure review which could produce high outputs in the future with regard to improving internal and external efficiency. This is the lesson learned from the case of TVET in Tanzania as discussed in my thesis.

Education and skills are important for growth and productivity but are also at the centre of a fair and inclusive globalisation in which broad access to opportunities is vital (Kingombe, 2011, p.69). Human capital, especially skilful youth, has been the single most important driver

of growth in most developing countries (McGrath, 2011) over the past three decades. To meet the skill needs of economies, societies and individuals, national training systems must be; a) effective - offering meaningful, quality skills development that avoids time-consuming and irrelevant training, b) efficient - avoiding high costs and inefficient provision, c) competitive: countering supply-driven training tendencies, d) flexible - technically able in the short term to change the scope and direction of training outputs, if necessary, and e) responsive - designed to meet the changing demands of the market and needs of the economy (Ziderman, 2001, p.1).

This thesis has argued that a national strategy for TVET needs to provide comprehensive policies to close the skills gap that has developed and that has been detailed in relation to a critical subsector of agriculture – paddy farming subsector. The need is for policies that (i) emphasise production capabilities and the skills that increase productivity in agriculture; (ii) generate new knowledge in research and development (R&D) related to the specific skill needs of enterprises; (iii) produce more relevant technical and vocational education and training (TVET) curricula and more demand-led modes of delivery; and (iv) improve achievement in education, particularly in science and mathematics and job-related skills (World Bank, 2009). These are necessary but not sufficient conditions for growth and for more effective TVET. Institutional reform must proceed in parallel to ensure that the skill gaps are understood, employers and trainers address the curriculum and pedagogic issues systematically, and government and development partners directs resources towards efficiently managed investment in demand-led TVET.

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ANNEX 1: Analytical Work - Data Collection

Tanzania Agriculture Skills and Development

10 agricultural produce companies were identified as the testing sample and sharing their knowledge about the Morogoro Region regarding the skills development in the agriculture sector. Of these 10 companies, 7 were able to respond to the survey's request to complete questionnaires mainly due to the absence of the company managers at the time the survey was conducted. The companies therefore participating in the survey were: (1) *African Fibres*, (2) *Agricultural Seed Agency*, (3) *Dimara Agricultural Trading Cooperative Society Ltd*, (4) *Godfrey Mkondya*, (5) *Kingolwira Dairy Farm*, (6) *Mpembwa Agriculture and General Business Limited*, and (7) *National Ranching Co. Ltd (NARCO)*.

The 10 companies varied in size from having 12 employees to 400. The total number of workers employed by the companies was 571, giving a range of workers from 12 to 400 and an average of 150 employees per company.

The findings from this questionnaire contributed to the analytical work on “Tanzania Youth and Employment, Producing Relevant Skills for Labour Market through Technical Vocational Education Training”.

No.1

Company's Name: African Fibres (T) Ltd/ Pangawe Sisal Estate
Profile of Company:- <ol style="list-style-type: none"> 1) What kind of agricultural commodities are produced in addition to rice? Agricultural Commodities Produced:- <ol style="list-style-type: none"> (i) Sisal Fibre – Ropes, Carpets etc (ii) Sisal Fibre Waste – Gunny bags, Animal feeds, Fertilizer etc 2) How many employees does the Company have? The Company has about 400 employees:- <ol style="list-style-type: none"> (i) 370 employees (unskilled labour) (ii) 30 employees (skilled labour) 3) Type of technology which is used? Most of the work is done manually. (Planning, welding, cutting drying) Mechanical Activities brushing, baling) 4) Any other information concerning the profile of the Company Most of the processing machinery is old and obsolete. The technology is around 30-40 years old.
Research Question:-

5) Specify what skills in the agricultural sector (especially for paddy production) are required by you as an employer in the labour market (in both formal and informal sectors)

Company's Response:

Skills required in many Agricultural Farms are as follows:-

- Mechanical Technicians to supervise mechanics
- Electricians for electrical work in auto division, electricians for agricultural machinery, electricians for production processes, and mechanics.

Research Question:-

6) Are the skills acquired through TVET relevant in the current employment market in the agricultural sector, especially for cash crop farming?

Company's Response:

- Acquired skills through TVET are partially relevant in the current employment market in the agricultural sector, especially for cash crop farming.
- There is a demand for agricultural machinery repair and maintenance as well as on type of other production machineries in use at a particular farm.

Research Question:-

7) What are the opportunities and challenges for TVET graduates in the agricultural sector, especially cash crop farming?

Company's Response:

- Opportunities for TVET graduates in the agricultural sector especially in large scale farms is rampant only that changes are to be conducted during training so that TVET Graduates become conversant with production machineries in use in different farms.
- A challenge for TVET graduates in agricultural sector is lack of experience on different production machineries in use in different farms and the lack of scientific approach of many peasant farmers.

Research Question:-

8) What are the TVET skills gaps that exist in the agricultural sector especially cash crop farming?

Company's Response:

TVET skill gap is significant in the agricultural Sector, especially in cash crop farming. What is required is to start new TVET training programmes to cope up with different types of machineries used in production and processing of different cash crops.

Research Question:-

9) How can TVET graduates transfer their knowledge and skills to people who don't have any training in the agriculture sector especially in paddy field, especially how can they make the agriculture in-formal sector more relevant for economic growth?

Company's Response:

TVET graduates can transfer their knowledge and skills to people who have no schooling in the agriculture sector especially in paddy production forming teams for which they elect leaders to seek financial support (e.g for venture capital for funding start-ups) to help them to start agricultural enterprises in which they can use agricultural machinery and fertilizers, which will increase production. This will enable many people to be involved in the production processes hence transforming it to be part of the formal sector.

Research Question:-

10) What types or categories of skills are expected to be developed as a result of your TVET Programmes and are relevant for developing entrepreneurship in the agriculture sector, especially for paddy production?

Company's Response:

Frame work for developed skills:-

- (i) Agricultural Machinery
 - Mechanical technicians
 - Mechanics
 - Auto electric mechanics
 - Agricultural machinery operators
- (ii) Processing and Production Machinery
 - Mechanics
 - Electricians
 - Machinery operators

Research Question:-

11) In your experience, what problems are faced by employers in filling vacant positions in the agricultural sector, especially cash crop farming? Are these problems only stemming from a lack of skills or are there other main problems?

Company's Response:

Vacant positions in the Agricultural Sector are not easily filled due to the fact that:-

- Skilled people are not ready to work in remote (rural) areas due to the poor infrastructure.
- Incentives and payments are not as good as one expects
- The profit margin depends on the type of the cash crop grown. This discourages people from going into some agricultural product areas and encourages them to enter others more profitable.

12) Any remarks/comments from the Company:-

No. 2

Company's Name: <i>Agricultural Seed Agency</i>
Profile of Company:- <ol style="list-style-type: none"> 1) What kind of agricultural commodities are produced in addition to rice? <i>Varieties of agricultural seeds such as maize, wheat, sorghum, sunflower, beans, vegetables etc</i> 2) How many employees does the Company have? <i>Permanent employees = 70</i> 3) Type of technology which is used? <ul style="list-style-type: none"> - <i>Machinery for seed processing</i> - <i>Seed technology</i> 4) Any other information concerning profile of the Company
Research Question:- 5) Specify what skills in the agricultural sector (especially for paddy production) are required by you as an employer in the labour market (in both formal and informal sectors) Company's Response: <ul style="list-style-type: none"> - <i>Certificate in Agriculture</i> - <i>Diploma in Agriculture</i> - <i>Degree in Agriculture or above</i> - <i>Unskilled labour</i>
Research Question:- 6) Are the skills acquired through TVET relevant in the current employment market in the agricultural sector, especially for cash crop farming? Company's Response: <ul style="list-style-type: none"> - <i>The skills acquired through TVET is nor recognised in formal sector of Agriculture (crop production).</i> - <i>TVET can be employed as machine operator, drivers if they are form four leaves.</i>
Research Question:- 7) What are the opportunities and challenges for TVET graduates in the agricultural sector, especially cash crop farming? Company's Response: Challenges <ul style="list-style-type: none"> - <i>Lack of enough capital for starting new farms/ enterprise</i> - <i>Lack of experience in agricultural sector</i> - <i>Labour competition</i> - <i>Land ownership</i> Opportunities

<ul style="list-style-type: none"> - Land availability - Enough water for irrigation
<p>Research Question:-</p> <p>8) What are the TVET skills gaps that exist in the agricultural sector especially cash crop farming?</p> <p>Company's Response:</p> <ul style="list-style-type: none"> - <i>New crop production technologies</i> - <i>Agricultural business awareness</i> - <i>Operation and management/maintenance of agricultural machinery and implement</i> - <i>Pests and weed control</i> - <i>Use of agro-chemicals</i>
<p>Research Question:-</p> <p>9) How can TVET graduates transfer their knowledge and skills to people who don't have any training in the agriculture sector especially in paddy field, especially how can they make the agriculture in-formal sector more relevant for economic growth?</p> <p>Company's Response:</p> <ul style="list-style-type: none"> - <i>Use of improved seeds</i> - <i>They should own their own farms</i> - <i>Conduct business farming</i> - <i>Use of irrigation water</i> - <i>Farms should have insurance cover</i> - <i>Use of improved technology (it should not be labour intensive)</i> - <i>Need to communicate better to farmers who are uneducated and don't understand new methods or why to use them.</i>
<p>Research Question:-</p> <p>10) What types or categories of skills are expected to be developed as a result of your TVET Programmes and are relevant for developing entrepreneurship in the agriculture sector, especially for paddy production?</p> <p>Company's Response:</p> <ul style="list-style-type: none"> - <i>A candidate should have at least secondary school education</i> - <i>Training must address market demand</i> - <i>Training should be market oriented</i> - <i>Trainees should be training on how to form co-operatives</i> - <i>Training should focus on self employment</i>
<p>Research Question:-</p>

11) In your experience, what problems are faced by employers in filling vacant positions in the agricultural sector, especially cash crop farming? Are these problems only stemming from a lack of skills or are there other main problems?

Company's Response:

- *Young generation is not interested in farming business*
- *Lack of commitment*
- *Demand of high salaries*
- *There is a gap between this knowledge and market requirement*
- *Diploma and Certificate holders in Agriculture are few.*

12) Any remarks/comments from the Company:-

Comments:-

- *Agriculture can contribute more to national income if immediate priorities are addressed.*
- *.*

No. 3

Company's Name:

Dimara Agricultural Trading Cooperative Society Ltd

Profile of Company:-

(Example)

1) What kind of agricultural commodities are produced in addition to rice?

- *Dairy Products – especially raw milk*

2) How many employees does the Company have?

24 – in August

3) Type of technology which is used?

- *Hand milking*
- *VET Technologies*
- *Milk Technology*
- *Pasture Establish Technology*

4) Any other information concerning profile of the Company

The farm is working on dairy Husbandry and Management

Research Question:-

5) Specify what skills in the agricultural sector (especially for paddy production) are required by you as an employer in the labour market (in both formal and informal sectors)

Company's Response:

- *Animal Husbandry*
- *VET*
- *Pasture Establishment and Management*
- *Sales and Accounts System*
- *Milk Technology*

Research Question:-

6) Are the skills acquired through TVET relevant in the current employment market in the agricultural sector, especially for cash crop farming?

Company's Response:

- *Yes – not relevant in current employment especially in dairy farms*
- *Skills – especially in dairy farming*
- *Vetinarian science (Vet)*
- *Husbandry*
- *Milk technology*
- *Pasture establishment and Management*
- *Seal control*
- *Irrigation and dairy farming*
- *Water availability*

Research Question:-

7) What are the opportunities and challenges for TVET graduates in the agricultural sector, especially cash crop farming?

Company's Response:

Technical know how on the dairy farming which include vet, posture, milk etc.

Research Question:-

8) What are the TVET skills gaps that exist in the agricultural sector especially cash crop farming?

Company's Response:

- *Dairy husbandry*
- *Milk technology*
- *Vet knowledge*
- *Pasture establishment and management*

Research Question:-

9) How can TVET graduates transfer their knowledge and skills to people who don't have any training in the agriculture sector especially in paddy field, especially how can they make the agriculture in-formal sector more relevant for economic growth?

Company's Response:

- *They can transfer the knowledge by staying with the farmer within the area and work together and understanding how they think and behave.*
- *Give funding to them to enable them to construct businesses which will be more technical and scientific than the ones existing in the nearby villagers (shamba mfano).*

Research Question:-

10) What types or categories of skills are expected to be developed as a result of your TVET Programmes and are relevant for developing entrepreneurship in the agriculture sector, especially for paddy production?

Company's Response:

A Framework which will result in self-employment and to become independent after some period.

Research Question:-

11) In your experience, what problems are faced by employers in filling vacant positions in the agricultural sector, especially cash crop farming? Are these problems only stemming from a lack of skills or are there other main problems?

Company's Response:

Problem facing employees are lack of skills especially from VETA graduates who go straight to dairy product and husbandry area and don't understand how local people think and act.

12) Any remarks/comments from the Company:-

Comments:-

- *Raise graduates who will manage to work in dairy farm, vet, husbandry, pasture, soil etc. and communicate well with local workers.*
- *Give loan to graduates to start their own business close to villagers in order to transfer knowledge to the other people.*

No. 4

Company's Name:

Godfrey Mkondya

Profile of Company:-

(Example)

1) What kind of agricultural commodities are produced in addition to rice?

Cows, Goats, Sheep and Doves

2) How many employees does the Company have?

15 Employees

3) Type of technology which is used?

Both traditional skills and modern technology

4) Any other information concerning profile of the Company

We started long time ago. We usually move our animals from Mkundi area to Mikese area grass for the animals to grow.

Research Question:-

5) Specify what skills in the agricultural sector (especially for paddy production) are required by you as an employer in the labour market (in both formal and informal sectors)

Company's Response:

- *He/she should know how to graze animals and also how to milk them.*
- *He/she should know the types of grass that animals feed on and the type which animals do not feed on. For instance, he/she should know that if animals eat cassava leaves, then their health will be affected and can even die of the poison.*

Research Question:-

6) Are the skills acquired through TVET relevant in the current employment market in the agricultural sector, especially for cash crop farming?

Company's Response:

There are important skills which are not provided through TVET. For instance, Types of grass which is animals feed on and behaviour of animals are not provided through TVET. So there is no direct match between what is provided through TVET and what is required in the labour market for farming and cattle keeping. There is also local knowledge such as plants that can be poisonous which is not taught.

Research Question:-

7) What are the opportunities and challenges for TVET graduates in the agricultural sector, especially cash crop farming?

Company's Response:

To train animals, to milk animals, to slaughter animals etc. Many of TVET graduates do not know much about animals since they are not given work experience.

Research Question:-

8) What are the TVET skills gaps that exist in the agricultural sector especially cash crop farming?

Company's Response:

<ul style="list-style-type: none"> - <i>There is a big gap! Many graduates know about farming equipment but not much about farming products (animal products and crops) for business purposes or local customs and knowledge that are essential for keeping animals.</i>
Research Question:- 9) How can TVET graduates transfer their knowledge and skills to people who don't have any training in the agriculture sector especially in paddy field, especially how can they make the agriculture in-formal sector more relevant for economic growth? Company's Response: <ul style="list-style-type: none"> - <i>They should first be taught so that they get the required knowledge on farming.</i> - <i>Then they can teach others who are not educated by doing (or through practical demonstrations).</i>
Research Question:- 10) What types or categories of skills are expected to be developed as a result of your TVET Programmes and are relevant for developing entrepreneurship in the agriculture sector, especially for paddy production? Company's Response: <i>They should be able to conduct farming classes.</i>
Research Question:- 11) In your experience, what problems are faced by employers in filling vacant positions in the agricultural sector, especially cash crop farming? Are these problems only stemming from a lack of skills or are there other main problems? Company's Response: <ul style="list-style-type: none"> - Improper milking of animals - Improper feeding of animals - Late coming to work - Damaging of equipment and tools - Indiscipline <i>Inadequate skills is the main source of all those problems.</i>
12) Any remarks/comments from the Company:- Comments:- <i>TVET should place priority in providing skills in cattle keeping and cash crop farming. This will enable graduates to get employment.</i>

No. 5

Company's Name: <i>Kingolwira Dairy Farm.</i>
Profile of Company:-

<p>(Example)</p> <ol style="list-style-type: none"> 1) What kind of agricultural commodities are produced in addition to rice? <i>In the farm we deal with dairy farming (Milk production)</i> 2) How many employees does the Company have? <i>The company have 22 employees</i> 3) Type of technology which is used? <i>Machinery - tractor, milking machinery</i> 4) Any other information concerning profile of the Company
<p>Research Question:-</p> <p>5) Specify what skills in the agricultural sector (especially for paddy production) are required by you as an employer in the labour market (in both formal and informal sectors)</p> <p>Company's Response:</p> <ul style="list-style-type: none"> - <i>Certificate in Animal Health and Production</i> - <i>Diploma in Animal Health/Production and</i> - <i>Bachelor in Animal Science or Bachelor of Veterinary Medicine</i> - <i>Agro Mechanics</i>
<p>Research Question:-</p> <p>6) Are the skills acquired through TVET relevant in the current employment market in the agricultural sector, especially cash crop farming?</p> <p>Company's Response:</p> <p><i>May be for Agro Mechanics. The skills acquired through TVET is not relevant in the current employment in agricultural even in dairy farming because the TVET base in courses like driving, tailoring, masonry, carpentry, welding etc, but not for agricultural sector. The agricultural benefit from TVET only in agro mechanization.</i></p>
<p>Research Question:-</p> <p>7) What are the opportunities and challenges for TVET graduates in the agricultural sector, especially cash crop farming?</p> <p>Company's Response:</p> <ul style="list-style-type: none"> - <i>Most of the graduates from TVET are not good in skills of Dairy farming/Agriculture.</i> - <i>They cannot self-employed in agriculture or dairy faming</i> - <i>Employment. They cannot get loan from financial institution dealing with agriculture.</i>
<p>Research Question:-</p>

8) What are the TVET skills gaps that exist in the agricultural sector especially cash crop farming?

Company's Response:

The TVET do not tutor agriculture like:-

- *Disease diagnosis and treatment of the farm animal*
- *Nursery establishment*
- *Pasture establishment*
- *Calf rearing*
- *Poultry farming*

Research Question:-

9) How can TVET graduates transfer their knowledge and skills to people who don't have any training in the agriculture sector especially in paddy field, especially how can they make the agriculture in-formal sector more relevant for economic growth?

Company's Response:

On farm station (shamba darasa)

That, the graduates should establish their farm field (shamba la mfano) that the non-schooling agricultures should learn how to cultivate and doing all the agricultural activities from farm cleaning up to harvesting and taking these knowledge to their own farm and even storage of their crops. And by doing these the farmers could make agriculture informal sector more relevant for economic growth. This is going parallel with supporting in economic and supporting from government on NGO's.

Research Question:-

10) What types or categories of skills are expected to be developed as a result of your TVET Programmes and are relevant for developing entrepreneurship in the agriculture sector, especially for paddy production?

Company's Response:

The farms develop a framework of skills that the calves instead of grazing at the grazing area the farm develop the special paddock for training the calf and these paddocks have irrigation systems with the aim of producing many heifers so as to increase the milk production by a large quantity.

Research Question:-

11) In your experience, what problems are faced by employers in filling vacant positions in the agricultural sector, especially cash crop farming? Are these problems only stemming from a lack of skills or are there other main problems?

Company's Response:

The many employers faced the problem in filling the vacant position includes:-

- *The graduates lack working experience*

- *Graduates cannot explain things clearly to local farm workers who don't understand new and modern ideas*
- *The graduates whose mostly wanted to be employed faced the changing of curriculum in the institution which do not fulfill their skills*

12) Any remarks/comments from the Company:

Comments:-

After filling these questionnaires, I comment that the TVET programme should include "agricultural studies" in their teaching curriculum. Also, TVET should see how their graduates can get jobs in different regions or countries, the TVET should help their graduates to get loans from different financial institutions so that they could be self-employed.

No. 6

Company's Name:

Mpembwa Agriculture and General Business Limited.

Profile of Company:-

(Example)

1) What kind of agricultural commodities are produced in addition to rice?

Maize (corn), Animals keeping and environment keeping.

2) How many employees does the Company have?

12 Employees(Experts) and non-experts

3) Type of technology which is used?

Tractors for farming and local irrigation in rice farming

4) Any other information concerning profile of the Company

We have opened our own bank account and that is what we use for our business.

Research Question:-

5) Specify what skills in the agricultural sector (especially for paddy production) are required by you as an employer in the labour market (in both formal and informal sectors)

Company's Response:

We usually employ standard seven and form four leavers and teach them -- then we also allow them to upgrade their knowledge both in farming and business.

Research Question:-

6) Are the skills acquired through TVET relevant in the current employment market in the agricultural sector, especially for cash crop farming?

Company's Response:

Yes they are relevant. (Engineering, Computer, Driving) and anything else that involves modern farming are relevant.

<p>Research Question:-</p> <p>7) What are the opportunities and challenges for TVET graduates in the agricultural sector, especially cash crop farming?</p> <p>Company's Response:</p> <ul style="list-style-type: none"> - <i>Computer</i> - <i>Driving</i> - <i>Some employers like to employ unskilled labour force.</i> - <i>Some employers do not like skilled labour they will demand big salaries.</i>
<p>Research Question:-</p> <p>8) What are the TVET skills gaps that exist in the agricultural sector especially cash crop farming?</p> <p>Company's Response:</p> <p><i>VETA provides skills and education as well but the rest do not do so.</i></p>
<p>Research Question:-</p> <p>9) How can TVET graduates transfer their knowledge and skills to people who don't have any training in the agriculture sector especially in paddy field, especially how can they make the agriculture in-formal sector more relevant for economic growth?</p> <p>Company's Response:</p> <p><i>By teaching them using text books and through practical work in groups.</i></p>
<p>Research Question:-</p> <p>10) What types or categories of skills are expected to be developed as a result of your TVET Programmes and are relevant for developing entrepreneurship in the agriculture sector, especially for paddy production?</p> <p>Company's Response:</p> <p><i>We should use the media to advertize farming just like other subjects are advertised and to educate also the local peasants in new ideas.</i></p>
<p>Research Question:-</p> <p>11) In your experience, what problems are faced by employers in filling vacant positions in the agricultural sector, especially cash crop farming? Are these problems only stemming from a lack of skills or are there other main problems?</p> <p>Company's Response:</p> <ul style="list-style-type: none"> - <i>Yes there are problems. The government neglects farmers.</i> - <i>Unfaithfulness is a problem.</i> - <i>Other problems are related to poor economy and poverty of the country.</i>

12) Any remarks/comments from the Company:-**Comments:-**

VETA should collabourate with experts of my company so that we can bring progress in the country through farming especially by using the youth.

No. 7**Company's Name:**

National Ranching Co. Ltd (NARCO)

Profile of Company:-

(Example)

1) What kind of agricultural commodities are produced in addition to rice?

- *Livestock keeping*
- *Beef and milk products*

2) How many employees does the Company have?

28 (twenty eight)

3) Type of technology which is used?

National Ranching Company Ltd deals with Beef Cattle keeping mainly.

4) Any other information concerning profile of the Company**Research Question:-**

5) Specify what skills in the agricultural sector (especially for paddy production) are required by you as an employer in the labour market (in both formal and informal sectors)

Company's Response:

Ruvu Ranch employ/recruited the workers for both grades from Primary School to University level.

Research Question:-

6) Are the skills acquired through TVET relevant in the current employment market in the agricultural sector, especially for cash crop farming?

Company's Response:

Absolutely yes.

Research Question:-

7) What are the opportunities and challenges for TVET graduates in the agricultural sector, especially cash crop farming?

Company's Response:

- *TVET graduates in the Agricultural Sector faces a lot of challenges such as poor technology,, incompetence etc.*

<ul style="list-style-type: none"> - <i>To the side of opportunities, the Agricultural Sector has a lot of opportunities compared to any sector in Tanzania, excluding Education Sector.</i>
<p>Research Question:-</p> <p>8) What are the TVET skills gaps that exist in the agricultural sector especially cash crop farming?</p> <p>Company's Response:</p> <ul style="list-style-type: none"> - <i>Unavailable of proper and reliable technology for the sector.</i> - <i>Lack of spread of ideas to people who have no education and have different ways of thinking.</i>
<p>Research Question:-</p> <p>9) How can TVET graduates transfer their knowledge and skills to people who don't have any training but no training in the agriculture sector especially in paddy field, especially how can they make the agriculture in-formal sector more relevant for economic growth?</p> <p>Company's Response:</p> <ul style="list-style-type: none"> - <i>Through Seminars, full cooperation between TVET graduates and non-schooling in agriculture sector on doing/conducting the specific works.</i>
<p>Research Question:-</p> <p>10) What types or categories of skills are expected to be developed as a result of your TVET Programmes and are relevant for developing entrepreneurship in the agriculture sector, especially for paddy production?</p> <p>Company's Response:</p> <p><i>Practical experience including working with local farmers and working in teams to understand new ideas.</i></p>
<p>Research Question:-</p> <p>11) In your experience, what problems are faced by employers in filling vacant positions in the agricultural sector, especially cash crop farming? Are these problems only stemming from a lack of skills or are there other main problems?</p> <p>Company's Response:</p> <p><i>Problems faced by employers in filling vacant positions in the agricultural sector are:-</i></p> <ul style="list-style-type: none"> - <i>Lack of experience to many workers</i> - <i>Incompetence on their duty/duties</i> - <i>Choosing of working place - most of the workers prefer town more than villages.</i>

12) Any remarks/comments from the Company:**Comments:-**

NARCO - Ruvu Ranch require more skilled person/people/graduates to work with. Having TVET graduates will enable us and many other companies to facilitate the production.

ANNEX 2: Questionnaire for Labour Market Study of TVET Employers

Questionnaire for Labour Market Study of TVET, Crop Farming Sector, Agricultural Department Employers

City/Municipal/Town.....
.....

Dear Sir/Madam,

You are kindly requested to spare few minutes to complete a questionnaire on the Labour Market Study. The results of the study is intended to provide feedback to the Government for informed decision making in planning and quality control and quality assurance efforts of the TVET system, especially crop farming sector in “paddy subsector(s)”, Agricultural Department. All information obtained with utmost confidentiality.

Name of interviewee (optional) ----- or

Employer ID number-----

Employer phone number-----

Position held by
interviewee.....

Name of Organisation
.....

Physical Address of
Organization.....

Telephone/cellphone
.....

1 Please describe your organisation (function and contribution towards Agriculture, crop farming Sector especially in paddy)

Main business field _____

Main products (just list of products) _____

Number of employers _____

Size of landholding _____

Is the business on one site? _____

Who owns the business or how is it owned – is it individually owned or private company or foreign-owned? _____

2 What was the turnover/volume of production of your company in 2012?

Turnover _____

Volume of production _____

3 The majority of your stakeholder capital (in percentage) is

Domestic

Foreign (African / Global / Both)

- 4** How many employees (production workers) are employed fulltime by your company in Tanzania and how many are from Tanzania, East Africa, other African countries and from outside Africa?

Numbers of production workers _____

From Tanzania () East Africa ()

Other African Countries () Outside of Africa ()

how many women () and how many men ()

Numbers of management and the higher level technical and engineering staff

From Tanzania () East Africa ()

Other African Countries () Outside of Africa ()

- 5** How many of your employees are graduates from TVET institutions (either from Agriculture related Department, crop farming sector or non-Agriculture related Department in TVET institutions) as well as total number of employees?

Total number of employees _____ -

How many employees did you recruit in each of the last three years ? _____

How many of these employees were TVET graduates? _____

- 6** Do you cooperate with TVET institutions (internship for example)? If yes, which Department of TVET institutions do you cooperate with?

Yes (Name of Department _____)

If Yes, list the type of cooperation (ex). Internship programs...

(_____)

No

7 Please list the kind of cooperation that you had this year:

.....

8 What is the number of female/male TVET graduates, crop farming sector especially in the area of “paddy” with regard to all employees having graduated from a TVET institution?

Total Numbers of male and female graduates () out of this numbers, how many male and female graduates are from TVET institutes ()?

9 Do you try to support in promoting female applicants?

Yes, if so, how? (_____)

No

No answer

10 Do you have a mentoring program in place for newly recruited graduates?

Yes

No

11 If you do have a program in place, how do you support newly recruited graduates such as in-service training or pre-service training?

What problems are there in crop farming? _____

Do any of these problems arise from aspects of education and training and levels of technical skill?_____

If they do what is the problem and why has it not been resolved and what role does TVET training play?_____

Where do you think the gaps between what is needed to increase productivity and what are provided in training?_____

- 12** Which changes would you suggest (technical emphasis, ways of education, etc.) to TVET education to enhance crop farming, especially in the area of “paddy” subsector(s)? (Multiple reply possible)

Skills Development (Specify the skills here: _____)

Practical Training (Specify :(ex) Internship training_____)

Teacher improvement (Specify:_____)

Workshop training

Research training

Workshop facilities improvement (Specify:_____)

Other (Specify:_____)

- 13** Overall, are you satisfied with the newly hired TVET graduates from crop farming sector and do you think they are value added for the area of “paddy” production?

Yes

No - If no, explain here.

- 14** On average, how many months does it take for a TVET graduate from crop farming sector to become fully efficient/useful and operational in his/ her position in the area of “paddy”?

□□

- 15** From your viewpoint, how efficient/relevant is the current TVET institution curriculum/strategy in Agriculture sector? Please answer “yes” or “no” if the listed programmes based on the curriculum/strategy are efficient enough to equip right skills for employees?

(From Curriculum)

- Irrigation
Yes () No ()
- Water management
Yes () No ()
- Fertilization method improvement
Yes () No ()
- Harvesting
Yes () No ()
- Marketing
Yes () No ()
- Agro-mechanics
Yes () No ()
- Methods of Food Processing
Yes () No ()
- Process Sanitation
Yes () No ()
- Physical and Chemical Contamination
Yes () No ()
- Food Quality
Yes () No ()
- Food Safety
Yes () No ()
- Food Security
Yes () No ()

- Thermal Processing
Yes () No ()
- Finished Product Storage and Handling
Yes () No ()
- Food Spoilage
Yes () No ()

(Strategy)

- a) Are informal vocational training programmes relevant or not?;
Yes () No ()
- b) Are apprenticeship training programmes, which are normally arranged between school terms or are carried out by industries for their employees, useful?;
Yes () No ()
- c) Are skills upgrading programmes, which cater mainly for those already employed but who would like to upgrade their skills, useful?

Yes () No ()
- d) Are technical and commercial programmes, which are normally carried out in schools with intermittent apprenticeship attachments, relevant?

Yes () No ()

16 Overall, from your viewpoint, is current TVET system actually well-organised enough to meet with the following objectives from the TVET curriculum, especially in the Agriculture sector?

- To establish a vocational education and training system which includes both basic and specialized training to meet the needs of both the formal and informal sectors;

Yes () No ()

- To satisfy the demand of the labour market for employees with trade skills in order to improve production and productivity of the economy;

Yes () No ()

- To promote or provide vocational education and training according to needs, within the framework of overall national socio-economic development plans and policies;

Yes () No ()

- To promote the balance between supply and demand for skilled labour in both wage employment and for skills needed for self-employment in rural and urban areas;

Yes () No ()

- To promote and to provide short tailor-made course programmes and in-service training in order to improve the performance, both of quality and productivity, of the national economy.

Yes () No ()

17. Please state your opinion on the knowledge and skills needed and whether or not new TVET graduates have them and if it is also easily transferred into the paddy field.

.....

.....

.....

.....

ANNEX 3: Questionnaire for Labour Market Study of TVET Employees

Questionnaire for Labour Market Study of TVET Employees

City/Municipal/Town.....

Dear Sir/Madam,

You are kindly requested to spare some few minutes to help complete an instrument on the Labour Market Study. The results of the study is intended to provide feedback to the Government for informed decision making in planning and quality control and quality assurance efforts of the TVET system. All information obtained with utmost confidentiality.

Name (optional) ----- or

Employee ID number-----

Age-----

Sex.....

Telephone/cellphone

.....

Date-----

Location-----

Name of Interviewer -----

A 1 Gender

Male

Female

A 2 Year of birth

A 3 Place of birth (including province)

A 4a Primary nationality

A4b If you do not live in your country of birth at present, please indicate the reasons for this: (Multiple reply possible)

Further higher education

Further professional education

Better employment conditions in Tanzania

Political circumstances in my home country

Other

A 5 Marriage status

Married

Single

Divorced

Widowed

A 6 Please state the number of your children

()

A7 Approximate income of the household you are living in during October 2012

A8 Do you own land?

Yes -- if yes, how much ()

No

B 1 Why did you join TVET institute especially crop farming sector, Agricultural Department? (please rank them 1 to 3 in order of importance)

Positive future prospects

Practical orientation

Convinced by parents/ family

Due to positive experiences from friends/ family

Impossibility to go to university

Other (please specify)

B 2 Why did you choose Agriculture as a field of study, especially crop farming?(multiple answers possible)

Positive future prospects of the chosen industry

Personal interest

Due to positive experiences from friends/ family

Vicinity to place of living

Other (please specify _____)

B 3 Source of funding for your TVET education: (one answer only)

Parents

Scholarship

Savings from previous employment

Extended Family

Partner

Employment during TVET education

Student loan

Other (please state)

B 4 How much did your TVET education cost you in total (please factor in all costs such as school fees, stationaries and transport) per year?

--	--	--	--	--	--	--	--	--	--

(Cost Per Year)

B 5 How do you rate the study provision and study conditions you experienced at your TVET institution, especially crop farming for your current job in “paddy” sub-sector(s)?

Scale of answers from 1=very good to 5=not adequate

Very good					Not adequate
1	2	3	4	5	

Academic curriculum in general

Variety of courses offered

Design of program

Testing/ grading system

Skills Development

Opportunities to choose courses and area of specialization

Practical emphasis of learning

Teaching quality

Provision of work placement and other professional exposure

Equipment of IT labs (leave blank if there were none)

B 6 Did you obtain any relevant skills related with crop farming from your TVET institution based on the goals from curriculum and strategy regarding the skills development as below? (Please do not consider training offered by your employer - rank them in terms of importance 1 to 3)

(From Curriculum)

Irrigation

Water management

Fertilization method improvement

Harvesting

Marketing

Agro-mechanics

Methods of Food Processing

Process Sanitation

Physical and Chemical Contamination

Food Quality

Food Safety

Food Security

Thermal Processing

Finished Product Storage and Handling

Food Spoilage

(From Strategy)

To establish a vocational education and training system which includes both basic and specialized training to meet the needs of both the formal and informal sectors;

To satisfy the demand of the labour market for employees with trade skills in order to improve production and productivity of the economy;

To promote or provide vocational education and training according to needs, within the framework of overall national socio-economic development plans and policies;

To promote the balancing of supply and demand for skilled labour in both wage employment and for skills needed for self-employment in rural and urban areas; and

To promote and to provide short tailor-made course programmes and in service training in order to improve the performance, both of quality and productivity, of the national economy.

C 1 When did you start looking for a job related with crop farming (especially in “paddy” sub-sector (s))? Exclude search for casual and vacation jobs.

Prior to graduation, months earlier

Around the time of graduation

After graduation, months later

C 2 Did you receive any support from your TVET institution (crop farming sector) during your studies with regards to your search for your first job?

Yes

No

C 3 Did you receive any support from your TVET institution (crop farming sector) after graduation with regards to your search for your first job?

Yes

No

C 4 If yes in C2 and C3, please specify the support received after your studies in TVET (crop farming sector) – Multiple answers possible -

Career counselling

Internship schemes

Contacts with the private sector established

Support with regards to access to finance for self-employment

None of the above

C5 How useful was the support received from your TVET institution, crop farming sector? Scale of answers from 1=very useful to 5=not at all useful.

Very useful			Not useful at all	
1	2	3	4	5

C6 How did you apply for your first job?(Multiple reply possible)

I applied for an advertised vacancy

I contacted employers without knowing about a vacancy

I launched advertisements by my self

I was approached by an employer

I contacted a commercial employment agency

Through my institution

Through contacts established during or shortly after my studies

Through other personal connections

I started my own business

Other (please specify)

D 1 Overall, do you feel that your TVET institution, crop farming sector prepared you adequately for your professional life? If not why not

Yes No

List of things that could be improved to prepare you of your professional life

D 2 Overall, do you feel that the curriculum of your TVET institution, crop farming sector and the pedagogy applied was adequate to meet the demand of your first professional activity, especially for your current job in “paddy subsector(s)”? Also do you have any problems communicating with existing farmers especially transforming the new knowledge and skills to improve the skill for paddy farming?

Yes If, Yes please explain

(_____)

No if No, please explain

(_____)

D 3 In which topic would you like to receive further professional training in crop farming sector if you had the opportunity to participate? (Multiple reply possible)

Reinforcement of technical basic knowledge/skills (Please specify _____)

Workplace-orientated technical knowledge

Personnel management

Finance management

Law

Preparation for management functions

Economics

Accounting

Other (please specify) _____

D 4 Looking at your present professional experiences, which changes would you suggest (technical emphasis, ways of education, etc.) in your TVET education in crop farming sector, especially in the area of “paddy subsector(s)”? (Please rate one to three with one being most important)

Facilities

Labouratory facilities

Library

Pedagogy

Classroom space

Computer facilities (hardware)

Computer facilities (software)

Skills Development (which skills? _____)

Curriculum (How ? _____)

Workshop training

Practical work

Research

Counseling

Teaching and learning

Methods of teaching

Availability of lecturers

Other (please specify)

D 5 Does the company/organisation support the recruitment of female TVET graduates especially from crop farming sector, especially in the area of “paddy subsector(s)”?

Yes

No

ANNEX 4: TVET Colleges Instructors/ Teachers/Administrators Questionnaire

Questionnaire for Labour Market Study of TVET Crop farming sector, Agriculture Department

City/Municipal/Town.....
.....

Dear Sir/Madam,

You are kindly requested to spare some few minutes to help complete an instrument on the Labour Market Study. The results of the study is intended to provide feedback to the Government for informed decision making in planning and quality control and quality assurance efforts of the TVET system, especially crop farming sector, Agricultural Department. All information obtained with utmost confidentiality.

Name (optional)----- or

Staff ID number-----

Age-----

Sex.....

Telephone/cellophane
.....

Date-----

Location-----

Name of Interviewer -----

Name of TVET College-----

Name of Interviewee.....

A 1 Gender

Male

Female

A 2 Year of birth

A 3 Place of birth (including province)

A 4 Primary nationality

B 1 How does your TVET College (especially, cash crop farming, Agriculture Department) have a partnership with the private sector? If yes, please specify.

Yes (Please specify_____)

No

B 2 Is an internship scheme or other placement service in place at your TVET College, especially in cash crop farming, especially in the area of “paddy subsector(s)”?

Yes

No

B 3 Does your TVET College have a career service, especially crop farming, especially in the area of “paddy subsector(s)”?

Yes

No

B 4 Do you receive any supports from your government with regards to the development of internship or career service?

Yes

No

B 5 How do you rate the study provision and study conditions at your TVET College, especially crop farming, in the area of “paddy subsector”?

Scale of answers from 1=very good to 5=not adequate

Very good			Not adequate	
1	2	3	4	5

Academic curriculum in general

Variety of courses offered

Curriculum

Testing/ grading system

Design of the program

Opportunities to choose courses and area of specialization

Practical emphasis of teaching and learning

Teaching quality

Provision of work placement and other professional exposure

Equipment of IT labs (leave blank if there were none)

C 1 When do you recommend your TVET College students to start looking for a job related with crop farming? Exclude search for casual and vacation jobs.

Prior to graduation, months earlier

Around the time of graduation

After graduation, months later

C 2 Do you receive any support from paddy sector/industries to update your TVET College curriculum or teacher training to be more demand driven?

Yes

No (If not, what kind of knowledge/skills do you think students need to acquire? _____)

C 3 Please specify the support receive from cash crop farming sector (especially in the area of “paddy subsector(s)”)/industries in your TVET College.

Career counseling/Internship schemes

Curriculum reform/Teacher training

Contacts with the private sector established

None of the above

C 4 How useful is the support receiving from cash crop farming sector/industries especially in the area of “paddy subsector(s)” for your TVET College? Scale of answers from 1=very useful to 5=not at all useful.

Very useful					Not useful at all
1	2	3	4	5	

C5 How do you recommend your students to apply for his/her first job related with crop farming? (Please rank from 1 to 3 in order of importance)

- To apply for an advertised vacancy
- To contact employers without knowing about a vacancy
- To launch advertisements by him/her self
- To be approached by an employer
- To contact a commercial employment agency
- Through your college network
- Through contacts established during or shortly after his/her studies
- Through other personal connections
- To start his/her own business
- Other (please specify)

C 6 How many employers do you recommend to your students to contact for their employment?

1-5

5-10

More than 10

C 7 In your own opinion, how important in general are the following aspects for the recruitment of TVET College graduates especially crop farming sector? Scale of answers from 1=very important to 5=not at all important.

Field of study

Main focus of subject area/specialization

Final examination (subject/form)

Grades

Practical experience acquired during course of study

Practical experience acquired prior to course of study

Reputation of the TVET institute

Experience abroad

Recommendations/references from third persons

Results of recruitments tests

Behavior during interview

Personality

Other

D 1 Are you teaching a national curriculum? If so, please state your opinion about the relevance, difficulty, and effectiveness of different parts of the curriculum.

ANNEX 5: Ethics Clearance

For the ethics clearance, I have considered key ethics questions from University of Sussex and officially approved by the supervisor, University of Sussex and Government of Tanzania, Ministry of Education Vocational Training (VETA) for my research. The followings are the clearance proof on 1) Social Sciences & Arts Cross- School Research Ethics Committee CERTIFICATE OF APPROVAL and 3) VETA approval to use their national labor market survey. If further information is needed on the Ethics Clearance, please contact with Prof Keith Lewin.

1) Social Sciences & Arts Cross- School Research Ethics Committee CERTIFICATE OF APPROVAL :


Social Sciences & Arts Cross-School Research Ethics Committee
CERTIFICATE OF APPROVAL

Reference Number:	ER/KT97/1
School:	ESW
Title of Project	Technical Vocational Educational Training Graduates: The Case of School-to-Work Transition in the Agricultural Sector in Tanzania
Principal Investigator: (Supervisor)	Keiko Takei (Prof K Lewin)
Expected Start Date:*	14/02/2013 given on original application
<p>*NB. If the <u>actual</u> project start date is delayed beyond 12 months of the <u>expected</u> start date, this Certificate of Approval will lapse and the project will need to be reviewed again to take account of changed circumstances such as legislation, sponsor requirements and University procedures</p>	
<p>This project has been given ethical approval by the Social Sciences/Arts Research Ethics Committee (C-REC). Please note the following requirements for approved submissions:</p> <p>Amendments to research proposal - Any changes or amendments to the approved proposal, which have ethical implications, must be submitted to the committee for authorisation prior to implementation.</p> <p>Feedback regarding any adverse and unexpected events - Any adverse (undesirable and unintended) and unexpected events that occur during the implementation of the project must be reported to the Chair of the Social Sciences C-REC. In the event of a serious adverse event, research must be stopped immediately and the Chair alerted within 24 hours of the occurrence.</p>	
Authorized Signature	
Name of Authorised Signatory (C-REC Chair or nominated deputy)	Professor Stephen Shute 14/05/2013

2) VETA approval to use their national labor market survey