

**THE EFFECTS OF CAPACITY BUILDING PROGRAMMES ON INCOME LEVEL  
AMONG CASSAVA SMALLHOLDER FARMERS IN SOUTH-KIVU, DEMOCRATIC  
REPUBLIC OF CONGO (DRC)**

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## DECLARATION

I hereby declare that this is my original work and has not been previously submitted and approved for the award of a degree by this or any other learning institution. To the best of my knowledge and belief, this dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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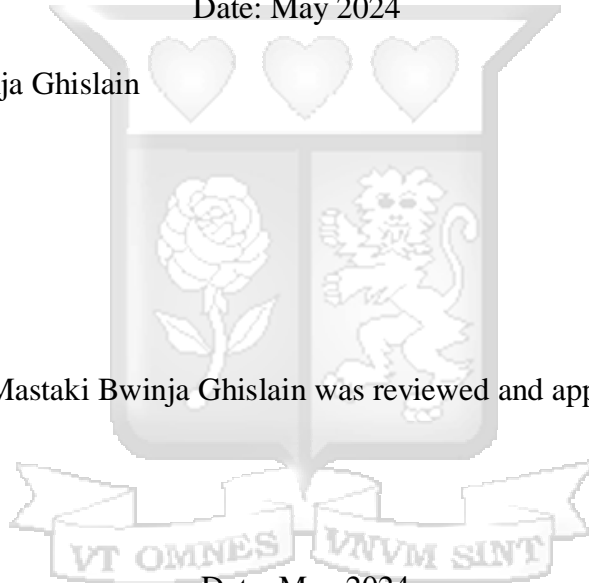
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## DEDICATION

To the most loving, supportive, caring parents, Mastaki Muhasha Justin and Aimérance Namulisa Mastaki, I dedicate this work to you, and to all my siblings. I am very grateful for all your support; may God bless you all.



## ABSTRACT

The majority of farmers are smallholder farmers in the world who were about 608 million in 2021. Smallholder farming dominates the agricultural sector in Africa, majorly relying on family labor; with more than 30 million farms that are less than 2ha; and 80 percent of farms are small-scale farms. The Democratic Republic of Congo (DRC) has close to 80 million arable land, and agriculture employs close to 70 percent of the population while contributing 40% to the nation's Gross Domestic Product (GDP). In the Democratic Republic of Congo (DRC), Cassava (*Manihot esculenta Crantz*) is the most widely grown and the main staple crop; and in 2016 alone, approximately 14.7 million tons of cassava tuberous roots were produced, which represented close to 71 percent of the DRC agricultural production. This study employed the Constructivist Learning theory which studies how people understand knowledge from their past experiences, and the Income and Employment theory to understand how entrepreneurs use their income in terms investments, expenditure and savings. This study employed a descriptive research design using an empirical approach. Data was collected from 394 farmers which was obtained using the Slovin's formula. Primary data was collected by use a structured questionnaire, and was later be examined using a descriptive analysis and a quantitative approach with the help of Microsoft Excel. The study determined the effect of training, community of practice and coaching (which are forms of capacity building and independent variables ) on income level among cassava smallholder farmers in South-Kivu in DRC. From the sample size, 326 (or 82.74% response rate) farmers participated in the study, of which 56% were female and 44% were male. The findings of the research indicated that 59.2% were training participants, 49.69% were community of practice participants and 49.94% were coaching participants who saw their income increase by at least 10% after participating in those capacity building programmes. From the findings, of all three variables analized, coaching activity with an expert had greater impact on smallholder farmers' income. Study findings suggested that further research is should be conducted, covering more capacity building programmes, covering a larger geographical area, and clearly showing how in different regions capacity building programmes influence smallholder farmers income. The study was limited in terms of accessibility of data due to poor weather in South-Kivu. Furthermore, given the nature of the questions and data collected, inferential analysis was not carried out for more insight.

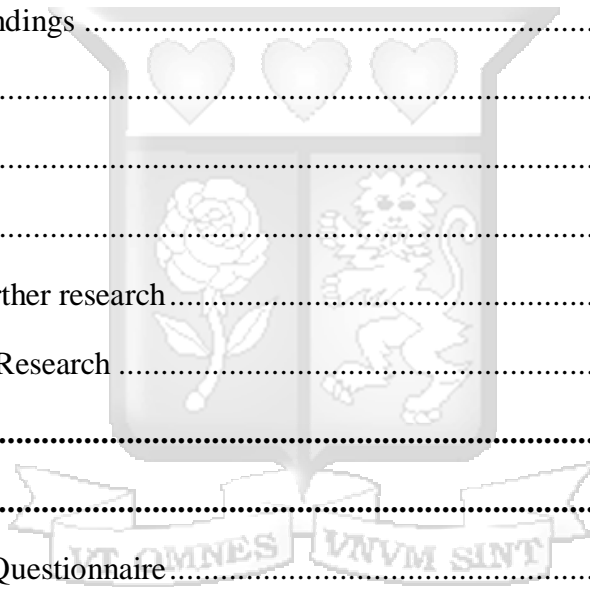
**Keywords:** *Income, capacity building, cassava, smallholder farmers, training, coaching, community of practice.*

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## **List of Abbreviation**

COP: Community of Practice

DRC: Democratic Republic Congo

FTCs: Farmers Training Centres

GDP: Gross Domestic Product

NGO: Non-Governmental Organization

SMEs: Small and Medium Enterprises



## DEFINITION OF TERMS

<b>Income</b>	Cash received for employment or investments, particularly on a regular basis
<b>Capacity Building</b>	This is the process of enhancing the knowledge, instincts, capacities, and procedures that individuals and organizations require in order to change and improve (United Nation Academic Impact)
<b>Cassava</b>	Cassava ( <i>Manihot esculenta Crantz</i> ) commonly called cassava manioc, or yucca, is a woody shrub of the spurge family, originating in South America. Euphorbiaceae is widely grown as an annual crop in tropical and subtropical areas for its delicious starchy root tuber which is a significant source of carbohydrates (Free encyclopedia)
<b>Smallholder Farmers</b>	This is a farmer who cultivates crops, raises fish, or rears livestock, on a limited scale (Knight, 2022). According to Munyakazi (2022), the majority of farming householders in South-Kivu farms between 0.35 hectares and 1 hectare; the country average is between 1 and 1.5 hectares
<b>Training</b>	The process of teaching a person or animal a particular pattern, specific skill or type of behavior
<b>Coaching</b>	a cooperative, goal-oriented, solution-based and methodical process wherein a coach helps their coachee or clients enhance their life experiences and achieve their goals in their personal or professional live (Collins & O'Rourke, 2012).
<b>Community of Practice</b>	This refers to a group of individuals that have something in common that concerns them, or interest for something that they practice; and they come together to learn how to do it better and more effectively as they interact on a regular basis (Goodhure & Seriamlu, 2021)

## CHAPTER ONE: INTRODUCTION

### 1.1. Background Information

According to a detailed research by FAO (2021), one-third of the world's food is produced by smallholder farmers, and that five out of every six farms worldwide are less than two hectares in size. Together, these farms operate on less than 12% of all agricultural land and produce approximately 35% of the world's food. Another research from the Food and Agriculture Organization conducted in 2014, determined that 570 million farms, or 9 out of 10 of them, were family farms that produced about 80% of the food consumed worldwide. In 2019, the world produced around 300 million tons of cassava root with Nigeria producing 20 percent as the largest producer and the Democratic Republic of Congo come second with 14 percent of the world total (Adebayo, 2023).

Most Africans living in poverty rely on agriculture, primarily small-scale farming, as their primary means of subsistence (Holphe-Ginindza & Mpandeli, 2020). Smallholder farming dominates the agricultural sector in Africa, majorly relying on family labor; with more than 30 million farms that are less than 2ha, and 80 percent of farms are small-scale farms (NEPAD, 2013). The role that smallholder farmers play in ensuring sustainable development, food security and nutrition in Africa is becoming more important as the globe faces serious climate change challenges (Holphe-Ginindza & Mpandeli, 2020). According to FAO (2021), there are around 608 million family farms around the world, and small-scale farms make up 70 percent of those farms, operating on only 7 percent of global farmland, while 70% of farmland is occupied by a small majority of farmers who operate up to 1000 hectares.

With close to 80 million hectares of arable, the Democratic Republic of Congo (DRC)'s agricultural sector contributes 40% to the country's GDP while giving work to almost 65% of the people, with only 21% value added to the country's economy (AfDB, 2021). The majority of people employed by agriculture in the DRC are dominated by smallholder farmers who make up 80 percent of farmers that depend on income from agriculture for their livelihoods (Yenkasa, 2022). According to Munyakazi (2022), the majority of farming householders in South-Kivu farms between 0.35 hectares and 1 hectare; the country average is between 1 and 1.5 hectares. There are various factors that affect the productivity of smallholder farmers in DRC as far as their agricultural yield (income and harvest) is concerned. In particular, apart from the decrease in soil fertility and

parasite infestations in South-Kivu, just like in the rest of the country, the low productivity of smallholder farmers in the province is due to a number of factors; the main ones include the practice of agriculture with lack of quality inputs (fertilize, farming equipment, seeds, etc.), low technical level, and lack of access to agricultural credit (Angélique, Stany, Lebailly, & Azadi, 2022). Results from a study conducted by Munyakazi (2022), showed that the net average annual income of a smallholder farmer in South-Kivu is \$628 which means a farmer is able to earn only \$1.7 per day from their farming activities.

In the Democratic Republic of Congo (DRC), the primary and most extensively cultivated staple crop is cassava (*Manihot esculenta Crantz*), and in 2016 alone, production of cassava reached over 14.7 million tons of tuberous roots, or almost 71 percent of the agricultural production in DR Congo (Mondo, et al., 2019). Cassava is also widely consumed with an average consumption rate of 353 kg per person per annum, making it the highest consumption in the world (Chausse, Kembola, & Ngonde, 2012). Due to the fact that cassava required minimum inputs and soil conditions, and could be harvested on flexible dates, in eastern DRC, particularly in South Kivu, where cassava is farmed for both its roots and leaves, smallholder farmers have taken a keen interest in the crop. However, in recent years, there has been low average yields of 8 to 9 tons per hectare while DRC potential with the crop is exceeding 50 tons per hectare (Mondo, et al., 2019).

### **1.1.1. Capacity Building**

Farming households' capacity building is very important by providing training to farmers in order to update and enhance their knowledge (Yaseen, Hassan, Tunio, & Abbas, 2015). The same article considers capacity building to be a transfer of knowledge, attitude, behavior, technology and skills to nurture and strengthen the farmer's ability to carry out their farming activities more resourcefully and efficiently. Training and Learning allow individual to escape poverty by getting knowledge that will help them increase their production and income; ultimately improving their livelihoods (Ogundele, Akingbade, & Akinlabi, 2012). A review of past studies and experiences suggested that trainings in agriculture play a key role in facilitating smallholder farmers to overcome social, financial, environmental and other market related problems that farmers face (Yaseen, Hassan, Tunio, & Abbas, 2015). With increased income, farmers are a bit stable and this allows them to continually use those extra resources for basic family necessities, education, health, and nutrition (Esper, London, & Kanchwala, 2013).

There are various methods used by different people and organizations to carry out a capacity building such as a training, mentoring, coaching, exchange programs, facilitated workshops, internships, community of practice, peer support groups, etc. (Buss, 2010). Posthumus, Martin, & Chancellor (2013) argued that in order for Africa to actively work on improving their agricultural productivity and hence food security in this fast changing world, innovations and skill development will be important, and hence capacity building on agricultural competencies. Capacity building in the agriculture, food, forestry and fisheries industries mainly involves the establishment or strengthening of informal (community groups, NGOs, etc.) and formal (Government) institution to do better in carrying out their responsibilities in decision making and policy, and in putting in place rural development programs (FAO, n.d.). Usually, the positive impact of capacity building affect performance, competitiveness and revenue (Wassem, et al., 2019). capacity building helps improve products and services' quality, productivity, business development and profitability. Trainees get many benefits such as competence, confidence and higher income (Ojokuku & Adegbite, 2014). With training, farmers are able to increase their household income, improve their farms and the surrounding environment (Yaseen, Hassan, Tunio, & Abbas, 2015).

For the purpose of this study, training, coaching and community of practice were used as independent variables while income level was the dependent variable. Capacity building of farmers and other workers through training in the agricultural field on agricultural topics helps improve farm and general agricultural productivity (Gondwe, Alamu, Musonda, Geresomo, & Maziya-Dixon, 2017). Coaching refers to a collaborative result-oriented, systematic and solution based process wherein a coach helps the improvement of the lives and fulfilment of goals in professional or personal life of their coachee or clients (Collins & O'Rourke, 2012). A community of practice refers to a group of individuals who have something in common that concerns them or interest for something that they practice, and they come together to learn how to do it better and more effectively as they interact on a regular basis (Goodhure & Seriamlu, 2021).

### **1.1.2. Cassava Smallholder farmers in South-Kivu, DRC**

In the Democratic Republic of Congo (DRC), the primary and most extensively cultivated staple crop is cassava (*Manihot esculenta Crantz*), and in 2016 alone, production of cassava reached over 14.7 million tons of tuberous roots, or almost 71 percent of the agricultural production in DR

Congo; there has been low average yields of 8 to 9 tons per hectare while DRC potential with the crop is exceeding 50 tons per hectare (Mondo, et al., 2019).

In South-Kivu, cassava is typically farmed constantly on small plots of land that slopes because of the dense population and limited space in the province's steep region (Munyahali, Vanlauwe, Swennen, Pypers, & Walangululu, 2017). Due to the fact that cassava required minimum inputs and soil conditions, and could be harvested on flexible dates, cassava has gained popularity among smallholder farmers and consumers, particularly in South Kivu where it is farmed for its leaves and root tubers (Mondo, et al., 2019). In a study conducted in South-Kivu regarding the nutritional needs of cassava under various management schemes, Munyahali, Merckx, Swennen, & Walangulu (2018) found that the growth and output of cassava are not significantly impacted by harvesting immature leaves for vegetables, and does not affect storage roots when harvesting is done every two weeks. In their study conducted in North and South-Kivu provinces on informal markets and seed systems analysis of the eastern DRC's value chains for cassava and beans, Birachi, et al. (2021) found that dry cassava was more profitable in South-Kivu going at \$67 per ton while cassava leaves were more profitable in North-Kivu selling for \$300 per ton. In their market systems assessment report on South-Kivu food security project conducted in Kabare and Kalehe territories of South-Kivu, USAID & Mercy Corps (2018) found that the average cassava production cost is estimated to \$0.17/kg with a selling price of \$0.20/kg leading to a margin of \$0.03/kg at that time.

### **1.1.3. Income**

Income can have different meanings depending on the context, either in financial accounting, taxation or economic analysis. According to Scott (2023), income can simply be defined as the money that someone receives in exchange for labor or products. In economics, income can be defined as the net total flow of payments received in a given span of time (Britanica Money, 2023). Not only a farmer's income can be influenced by how much agricultural products they produce, but also by the market dynamics such as prices, demand and supply, in which a farmer operates, as well as the political, social and economic context of where they live (Oxfam; Mars Inc.; Dalberg Advisors; Wageningen Univeristy & Research , 2018). For this study, income was measured by looking at income level of farmers and by how much it increased

## 1.2. Problem Statement

Smallholder farming dominates the agricultural sector in Africa, majorly relying on family labor; with more than 30 million farms that are less than 2 hectares, and 80 percent of farms are small-scale farms (NEPAD, 2013). Stimulating agricultural productivity can be among the most successful way to reduce poverty and improve food security as the agricultural sector creates more jobs than other sectors (Laptante, 2014). Unlike larger farming enterprises, smallholder farmers have little to no access to training, information, farm inputs and financial support which would help improve their knowledge on agricultural practices and eventually improving their yields (Bread for the World, 2023).

From an organizational perspective, capacity building is important in facilitating individual and organizational learning which develops knowledge, skills and is part of an organization's strategy in improving the overall productivity of the organization (Ojokuku & Adegbite, 2014). Similarly, farmers need training and capacity building to increase their production output on their lands because agriculture-related knowledge and technology is changing on a constant basis and farmers need to stay updated with new information and knowledge (Yaseen, Hassan, Tunio, & Abbas, 2015). In a study conducted in Nigeria by Obaniyi, Fabiyi, Adewole, Iyilade, & Onikoyi (2014), it is reported that training farmers for development is one of the multiple actions that need to be taken in order to sustain production of food and enhance self-efficiency in food production by ensuring that farmers acquire the right knowledge, information and develop abilities or attitudes that will greatly improve their competence in carrying out their work. According to a report by the FAO, there is need for investment in human capacity building in order to develop new production capacity that meet potential demand of agricultural products consisting of the distribution and multiplication of planting materials, agricultural extension and capacity building.

Although training of farmers in many African countries is still work in progress, current training programmes too often focus on the use of one technique or a specific technical skill (Dolinska & d'Aquino, 2015). Training and capacity building programs are rarely undertaken by the public sector but the purchasing power of agricultural products' buyers should motivate the government to introduce support mechanisms for farmers such as training, pricing and investment in public infrastructure that can provide support to smallholder farmers to increase their incomes (OXFAM, 2018). In Zambia, a study conducted on constraints affecting smallholders' participation in cassava

value chain, it was concluded from the respondents' data that apart from lack of access to planting materials and distribution channels, lack of technical capacity and knowledge to grow and process cassava was another major thing that affected small scale production of cassava (Poole, Chitundu, Msoni, & Tembo, 2013).

In South-Kivu, apart from other factors that affect small-scale farmers yield and productivity such as the degradation of the soil, many farmers in the Congolese province face low productivity because of low technical level and access to agricultural credit (Angélique, Stany, Lebailly, & Azadi, 2022). To increase productivity in DRC and more specifically in South-Kivu, the government has advocated for more intensive agricultural activities but this will only increase inequalities, leaving large farms with more technical expertise and more capital to dominate the agricultural sector; hence the importance to increase knowledge and financial ability of smallholder farmers who produce 70% of the food in South-Kivu (Heri-Kazi & Biedlers, 2020). Many training programs carried out in South-Kivu for farmers is usually done by NGOs who do not follow up after they have achieved their intended performance (Angélique, Stany, Lebailly, & Azadi, 2022). Sefu, et al. (2020) suggested that in order to increase productivity of small-scale farmers, the government should increase their participation in terms of providing financial incentives to farmers, connecting to free services in the region, helping them with better extension services, and opportunities for training should also be provided.

Many studies have focused more on capacity building programs' effects on organizational performance which includes output, profitability and efficiency. There is no particular focus on the effect of capacity building programmes on entrepreneurs' income which is different from organizational profitability. Studies conducted on capacity building of farmers are elaborate but fail to examine the view of individual farmers as the main subject of interest. They instead examine the views of groups of farmers who might have different characteristics. Many studies are mostly academic and very technical and very difficult for the farmers to use in order to understand and learn from them. There are several studies carried out in DRC, particularly in South-Kivu on capacity building but none had looked at it from the smallholder farmer's perspective, not even evaluating how their income can be affected by capacity building programmes.

Therefore, this study looked at how capacity building programmes affect smallholder farmers in South-Kivu, DRC. It also focused on capacity building programs' effects on income among

entrepreneurs (smallholder farmers), clearly collected and examined the views of individual farmers on capacity building programs' effect on their individual wellbeing, and summarized the results in a way and form that can be easily interpreted by farmers who need to understand how capacity building programmes affect their financial performance.

### **1.3. Research Objectives**

The general objective is to study the effect of capacity building programmes on income level among cassava smallholder farmers in South-Kivu, Democratic Republic of Congo.

- i. To describe the effect of training programmes on income level among smallholder cassava farmers in South-Kivu, DR Congo
- ii. To investigate the effect of a community of practice on income level among smallholder cassava farmers in South-Kivu, DR Congo
- iii. To determine the effect of coaching programmes on income levels among smallholder cassava farmers in South-Kivu, DR Congo

### **1.4. Research Questions/Hypotheses**

- i. What is the effect of training on income level among smallholder cassava farmers in South-Kivu, DR Congo?
- ii. How does community of practice affect income level among smallholder cassava farmers in South-Kivu, DR Congo?
- iii. What is the effect of coaching on income level among smallholder cassava farmers in South-Kivu, DR Congo?

### **1.5. Significance of the Study**

Capacity building of farmers is a global concern and therefore significant to the global research community. On the other hand, the portion of the society that contributes an important share to the global economy is led by farmers, and in Africa that is close to 70% of people who are employed by the food industry; therefore, they need to have individual knowledge and skills that will contribute to better their livelihoods and improve the overall wellbeing of their communities. This study will also be helpful to:

Many small-scale farmers who participate in training programs in Africa; and many are those who might not have a comprehensive idea on how to quantify the impact that those programs have on their incomes. This study gave a comprehensive idea to farmers, from their own perspective, on how important training and capacity building are in increasing their wellbeing. Some entrepreneurs are involved in agricultural activities either at a small or large scale and this study will help them understand how best they can improve their productivity and income by training and capacity building their workers so that they can keep up with new developments in the agricultural field.

This study provides more insight to government authorities (policy makers) in charge of matters related to agriculture and rural development. The study aims to help them gain more understanding on capacity building's impact on smallholder farmers productivity and hence provide more insights in policy formulation that could help improve the knowledge and technical level of those farmers. This study also helps scholars to understand more South-Kivu cassava smallholder farmers' characteristics and how capacity building programmes affect their income level.

### **1.6. Scope of the Study**

This study focused on the role of capacity building programmes on smallholder farmers' income level in South-Kivu in the DR Congo. This study was based on data collected from a number of small-scale farmers selected from two territories (Walungu and Kabare) of South-Kivu province. It only considered cassava farmers who have ever participated in any capacity building programmes related to the study independent variables.

The study considered three independent variables: Training, Coaching and Community of Practice; and one dependent variable: Income. These independent variables were considered because they are a form of capacity building programmes. The dependent variable aligned along the income level of smallholder farmers. With the help of the Constructivist Learning Theory and the Income and Employment Theory, the research gained more understanding on how to view and analyze different aspects of the subject of the study.

Primary data of this study was gathered with the use of a standardized questionnaire, using a quantitative design rather than a mixed method where the view of the farmers were also analyzed. The data collected were analyzed with the help of Microsoft Excel tool in order to characterize features of the population under investigation. Data was collected in April 2024.

## 1.7. Chapter Summary

Around the world, the majority of farmland is occupied by smallholder farmers and in Africa, close to 70 percent of the population live in poverty and depend mostly on small-scale agricultural and other non-farming activities for their livelihood. Nearly 65% of the workforce in the Democratic Republic of the Congo (DRC) is employed in agriculture which generates 40% of the nation's GDP. Smallholder farmers make up the majority of farmers in South-Kivu province, farming between 0.35-1 hectare of land, while the country's average is between 1-1.5 hectares. In 2022, the average annual income of a smallholder farmer in South-Kivu was \$628 which means a farmer was able to earn an average of \$1.7 per day from farming activities. Cassava is the main and most widely grown staple crop in DRC where in 2016, it made up 71% of the whole country's agricultural production. In South-Kivu, cassava yields are on average between 8 to 9 tons per hectare, grown for both root tubers and leaves consumption.

Capacity building programmes can be viewed as the transfer of knowledge, attitude, behavior, technology and skills to nurture and strengthen a farmer's ability to carry out their farming activities more resourcefully and efficiently. Capacity building can be carried out in different forms, and for the purpose of this study, Training, Coaching and Community of Practice were considered as independent variables; while Income was used the dependent variable. There is a problem in terms of research gaps where many studies carried out on capacity building focus more on organizational performance and not individual effects it has on an entrepreneur's income level. The general objective of the paper is to study the effect of capacity building programmes on income level among cassava smallholder farmers in South-Kivu, DRC. The study was limited to two territories in South-Kivu, and data was collected in one month's time and results of the study has significance to policy makers, industry players and scholars.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1. Introduction**

This chapter reviews earlier literature on studies related to the topic under consideration. A review of existing studies makes it possible to come up with a broad understanding of the variables under investigation. This chapter also includes the identification and knowledge gaps found in past studies.

### **2.2. Theoretical Background**

This study is based on two theories and one model, namely: The Constructivist Learning Theory, and the Income and Employment Theory. A detailed discussion of each of the above is presented in text below.

#### **2.2.1. Constructivist Learning Theory**

To better understand the Constructivist Learning Theory, the word “Constructivist” or “Constructivism” should be clearly understood where it is defined as the notion that learners create their own knowledge, at different levels either individually or as a group (Hein, 1991). The idea about Constructivism is that learners build on their prior knowledge to acquire new information while maintaining their own point of view (Western Governors University, 2020). This implies that the teacher gives the main ideas and then the learners, based on their own knowledge and experience will go on to get more details (Suhendi & Purwarno, 2018). According to Dr. Bada (2015), teachers cannot just transmit knowledge to learners but the learners should be able to construct knowledge in their own mind by checking and comparing new information with old one and update their on what works and what no long applies.

The Constructivist Learning Theory finds its roots in the works of Dewey (1930), Bruner (1961), Vygotsky (1962), and Piaget (1980) suggesting that learning should be focused on learning outcomes which is based on the construction process of knowledge and that learning expected outcomes should be based on specific objectives which should be accomplished with specific tasks. Similarly, Von suggested that learning is an activity that calls for self-regulation and the development of structures that allow for better understand what is being taught (Glaserfeld, 1995). From the analysis of the works of Dewey, Piaget and Vygotsky, it can be observed that they approached constructivism from their own perspective and it can be concluded from that, that the

student's knowledge is their own style based on their life experiences; so, it is import to plan training and learning practices so that students and teachers can actively exchange their knowledge and experiences (Suhendi & Purwarno, 2018). This theory is without criticisms. VocalKirschner, Sweller, & Clark (2006), have posited the belief that constructivism promotes a teaching style with unguided or minimally guided instructions for student. Another concern held by critics of constructivism is that learners need to connect their knowledge to tangible objects in order to ensure that they have acquired the knowledge, and constructivist approaches do not support learning-related needs (Alanai, 2016).

According to Driscoll (2000), Constructivist Learning Theory is a learning philosophy which increase the students' logical and conceptual growth. The same study identifies two key concepts that create construction of an individual knowledge as Assimilation and Accommodation. Suhendi & Purwarno (2018) defined Accommodation as based on the fact that students reframe the world into a mental capacity that they already have i.e. people see the world in a particular way and if things don't operate within that context, they must accommodate the expectations with the outcomes. Dr. Bada (2015) also defined Assimilation as what causes a person to match new and old experiences, analyzing what was once misunderstood, evaluate what is important and ultimately change their perceptions. Matthews (1993) criticised this theory and argued scientific ideas are abstractions of reality and that what constitutes science is a set of ideas or philosophical propositions, and these are not lying around to be discovered but must be explicitly introduced to children and this requires the teacher to be competent in the domain in which they teach and accountabke for presenting the commonly accepted knowledge in that domain.

This theory is relevant to the study where it relates to capacity building. People usually get trained or coached by experts but they would understand the knowledge from the basis of their past experiences. These people might have a biased understanding of the concepts learned depending on their background and past experiences; which can affect how they use that knowledge and therefore affect the outcome of what the knowledge is used for. All in all, this theory will inform the dependent

### **2.2.2. Income and Employment Theory**

This theory is a part of economic analysis which relates to the relative levels of output, employment, and prices in the economy (Britanica, 2023). From his publication on the General

Theory of Employment, Interest and Money in 1936, John Maynard Keynes brought new ideas and thinking on income and employment theory by stressing the relationship between income, output, and expenditure (Archibald, 1967). Keynes stressed that there is a relationship between income and expenditure, given that an individual's income is either spent or saved;  $Y = C + S$ , where Y is income, C is consumption and S is savings (Britanica, 2023). More scholars and economists later continued to criticize this theory by going back to the classical theory and saying that the income and employment theory as developed by Keynes, was only applicable in the situation of perfect economic equilibrium and more applicable to the conditions of advanced countries (Karan, 2023).

Keynes argues that output can either be invested into inventory or sold to customers; and that costs are covered by proceeds from sales, where income (or profits) is the surplus value of the final product over the sum of its factor and user expenses (Keynes, 1936). In terms of employment, Keynes showed that employment and output did not depend on an entrepreneur's ability to produce or his current level of income but instead depended on his capacity to produce which in turn depend on his investment decisions and the expected or prospective consumption (Keynes, 1936). From mid-1970s onward, this theory has been criticized heavily. And Milton Friedman rejected most of the ideas claiming that prices are generally affected by inflation and so is every monetary phenomenon (Economics Concepts, 2015).

Keynes's main goal in developing this theory was a way to demonstrate that, given certain situations, the economy could go into disequilibrium, with income and output unstable to rise sufficiently to get to an equilibrium even if there is surplus with the productive resources (Archibald, 1967). This theory is pertinent to the research because it helps understand how income is treated by entrepreneurs in terms of investment, production or employment (wages). It also gives an idea on how individuals use their income or profits, either for spending or saving.

### **2.3. Empirical Review**

Studies of the effect of capacity building or training programs on individual income have been conducted in the past and many of them have focused on very targeted topics (Roman & Popescu, 2014). In this section, the examination of previous literature is discussed using the variables under investigation.

### **2.3.1. Training and Income**

Training can be defined as the process or exercise of learning new skills or gaining more knowledge needed to accomplish a particular task, job or activity (Cambridge Dictionary, n.d.). A study conducted in Iran by Shahabadi, Nemati, & Hosseinidoust (2018) on the effect of education on income inequality in selected Islamic countries, discovered that indirect link between education and poverty reduction, and as a result, the impact of training on income distribution; as a result, investing in human capital is the most effective strategy to enhance income distribution over the long term among individuals. Another study conducted by Wordofa & Sassi (2017) on the impact of farmers' training on household income in Ethiopia indicates that farmers' household income increased when they had access to training facilities that offered guidance on crop and technical information, livestock, and natural resource management. The level of income for an individual is related by their investment in education which means that as rate of investing in education and its outcomes increases, personal income goes up also (Shahabadi, Nemati, & Hosseinidoust, 2018).

Training programs for rural households especially farmers are crucial in developing and improving their skills, productivity and eventually increasing their income-generating capabilities (Wonde, Tsehay, & Lemma, 2022). From a study conducted in Bucharest, although calculating farmers' income involves a lot of econometrics on their crop income, farmers also invest in other activities that generate some income which also require training in order to increase those earnings (Roman & Popescu, 2014).

A farmer's household's crop income can be computed by taking into account the value of crops they sell, utilize, and store for their own use, as well as agricultural residues related to their output (Wordofa & Sassi, 2017). A study conducted in Bangladesh on farmers' training on adoption of new technology found that 30 percent of trained farmers who continued to use the technology increased their net household income by 48 percent (Schreinemachers, Wu, Uddin, Ahmad, & Hanson, 2016).

Training and human capital improvement in a society not only improves the overall wellbeing of the community but also reduces unequal distribution of income in the whole country since low income individuals who might not have the same opportunities as the high-income individuals have access to more or less the same knowledge as their high-earning country mates (Shahabadi, Nemati, & Hosseinidoust, 2018). According to Wonde, Tsehay, & Lemma (2022) farmers who participate in training programs at Farmers Training Centers (FTCs) improved their level of ling

based on the conclusion from their study. However, there are other studies carried out on the impact of training on either income, technology adoption, saving, productivity or livelihood which lacked empirical evidence and depended on descriptive analysis (Wonde, Tsehay, & Lemma, 2022). For instance, a study conducted on farmers' training centers' performance in Ethiopia by Abebe (2013) was based on responses from key informants' opinions and focus groups rather than comparing data from people who were trained and those who were not trained. However, the study conducted in Ethiopia by Wonde, Tsehay, & Lemma (2022) found no evidence of a relationship between training and productivity other than household income. USAID & Mercy Corps (2018) found that in South-Kivu, it was important for the government and other organizations to develop appropriate materials and provide timely trainings agriculture best practices so that farmers can reduce post-harvest loss, improve farm output and increase their income.

### **2.3.2. Coaching and Income**

Coaching can be defined a form of activity in which someone with experience on certain matter, called a coach, supports and guides another with experience or a learner, sometimes referred to as a coachee, in achieving a specific professional or personal goal (Passmore, Stopforth, & Lai, 2018). The coach helps the learner develop skills and knowledge to enhance their productivity or solve a certain problem (TalentLyft, 2017). The use of coaching techniques has proved to be efficient in enhancing performance in organizations due to individual improvements as a result of coaching (Theeboom, Beersma, & Vianen, 2013). A study conducted in Pakistan on the link between coaching and organizational performance discovered that there is positive impact on workers' productivity; hence increasing the overall company performance such as income generation and competitive advantage (Bashir & Shah, 2017). A study conducted in Spain by Utrilla, Grande, & Lorenzo (2015) on the effects of coaching in workers and company's performance suggest that employee performance as a result of coaching practices have positive impact on the overall company profitability or growth in turnover.

In their study on business coaching in Iran, Pour & Herat (2016) suggest that coaches should have the ability to think about the approaches to business coaching which will lead their coachee to earn money by using the transferred knowledge and experience especially for entrepreneurs and self-employed individuals who need to gain as much knowledge as possible to increase their revenue. In their study conducted in Bucharest on the impact of business coaching on entrepreneurial

outcomes, Dobrea & Maiorescu (2015) concluded that there is a great impact on the development of an entrepreneur's focus and self-efficacy which leads to improving their businesses' outcomes and growth of financial performances in the organization. For coaching to be effective in affecting company performance, it is very crucial to set specific goals of ambitious levels because SimmyGrover & AdrianFurnham (2016) in their study on Coaching as a developmental intervention in organisation found that setting those goals is linked to increased company performance and increased productivity, leading to organizational productivity. Enhancing employee performance can enable a company to achieve their goals and objectives, overall organizational values, and increase the firm's productivity and profitability Neupane (2015). Many companies and entrepreneurs use coaching as a development tool and Gannon (2014) suggested that coaching can see increased profitability of the business if the entrepreneurs invests time and money in coaching programmes.

### **2.3.3. Community of Practice and Income**

A community of practice (COP) refers to a group of individuals who have something in common that concerns them or interest for something that they practice, and they come together to learn a more effective way to do it and more effectively as they communicate on a regular basis (Goodhue & Seriamlu, 2021). The central aspect of a community of practice is knowledge-sharing and over the years, many organizations have established communities of practice as a virtual instrument for knowledge management in this globalized economy (Aljuwaiber, 2016). Knowledge-sharing can be viewed as process of exchanging information among people, organizations, or teams in order to create more understanding on a certain topic (Carruthers B. G., 2020). In his book on knowledge preservation through community of practice, Agrifoglio (2015) highlighted that many companies create an atmosphere of knowledge-sharing like a community of practice because they think that raising their average income is the best way to keep employees connected by properly sharing knowledge amongst themselves leading to increased productivity in the organization.

Margaretha & Supartika (2016) did a study on the variables influencing the profitability of small and medium-sized enterprises (SMEs) in Indonesia found that it is very crucial for young firms to put in place mechanisms that will allow their employees to share knowledge more effectively so that they can help achieve the company's goals and objectives. There are two forms of knowledge: one is explicit knowledge which means that knowledge can be expressed in words and can easily

be transferred among people; another one is tacit knowledge which means that people have skills, personal experiences and wisdom which can be transferred through the interaction between people (Aljuwaiber, 2016). According to Wang, Wang, & Liang (2014) study on knowledge sharing, intellectual capital, and financial performance conducted in China, operational performance is more impacted by tacit knowledge sharing than financial performance; while financial success is more impacted by explicit knowledge-sharing than operational performance. Results from another study conducted by Lopez-Cabarcos, Srinivasan, & Vázquez-Rodríguez (2020) on how to transform explicit and tacit knowledge into profitability suggested that both forms of knowledge have direct impact on profitability but managers should invest more in explicit knowledge-sharing to gain instant results since this form of knowledge is easier to implement than tacit knowledge sharing which require more human interaction to implement.

## **2.4. Conceptual literature**

This section highlights the literature on the key concepts of the study, informed with the chosen variables.

### **2.4.1. Training**

Capacity building of farmers and other workers through training in the agricultural field on agricultural topics helps improve farm and general agricultural productivity (Gondwe, Alamu, Musonda, Geresomo, & Maziya-Dixon, 2017). The same study concluded that for better improvement of agronomic practices and diet of farmers, it is crucial that farmers are trained on dietary diversification, processing and food production. Farmers that are supported in agricultural practices and well trained tend to produce a variety of crops and realize high yields, hence high income (Bread for the World, 2023). In a study carried out in Ghana on the impact of aquaculture training on farmers' income, Ragasa, Amewu, Agyakwah, Mensah, & Asmah (2022) found that after one year of trainings, there was a positive impact of good agricultural and managerial practices on productivity and incomes of farmers.

### **2.4.2. Coaching**

Coaching refers to a collaborative result-oriented, systematic and solution based process wherein a coach helps the improvement of the lives and fulfilment of goals in professional or personal life of their coachee or clients (Collins & O'Rourke, 2012). Since a coach gives their coachee the ability to become more self-aware in order to formulate an evaluation of the circumstance, and analyze

the effects of their performance, coaching can result in increased profitability for the coachee (Salazar, Vilchez, & Pozo, 2012). Findings from another study carried out in the New Zealand on the achievement of coaching in agriculture found farmers welcomed the idea of using a coach because it was adding value to their businesses and themselves in the areas of growth in the uptake of new skills, development of critical thinking, staff engagement and the implementation of new knowledge in improving their farms (Pickering, 2013).

### **2.4.3. Community of Practice**

A community of practice refers to a group of individuals who have something in common that concerns them or interest for something that they practice, and they come together to learn how to do it better and more effectively as they interact on a regular basis (Goodhure & Seriamlu, 2021). Many smallholder farmers do not have enough interaction with people from other sectors which may lead to less access to information, hence affecting their ability to innovate and access appropriate knowledge which can spur creativity; or else a farmer by themselves lack the clout to start the reforms required for a broad community development (Dolinska & d'Aquino, 2015). Many studies emphasized on the importance of exchange between farmers and learning of new things together that they can produce knowledge on their own; especially for farmers engaged in intensive agriculture (Dolinska & d'Aquino, 2015). A community of practice is very important for farmers in sharing information and knowledge, in increasing their overall performance hence increasing their incomes (Kotu, Alene, Manyong, Hoeschle-Zeledon, & Larbi, 2017).

### **2.4.4. Income**

Income can have different meanings depending on the context, either in financial accounting, taxation or economic analysis. According to Scott (2023), income can simply be defined as the money that someone receives in exchange for labor or products. In economics, income can be defined as the net total flow of payments received in a given span of time (Britanica Money, 2023).

The income theory of money, a theory of nominal prices with the goal of explaining how monetary prices are determined in market economics, was introduced in the 20<sup>th</sup> century and gave rise to the concept of income (Menšík, 2015). From his publication on the General Theory of Employment, Interest and Money in 1936, John Maynard Keynes brought new ideas and thinking on income and employment theory by stressing the relationship between income, output, and expenditure (Archibald, 1967). Keynes stressed that there is a relationship between income and expenditure,

since a person can either spend or save their income;  $Y = C + S$ , where Y is income, C is consumption and S is savings (Britanica, 2023). From investing in financial markets like in the stock market, this can also be a source of income where shares pay dividends when companies decide to distribute part of its profits to shareholders, shares also can increase in price which is capital gains and considered as income (Menšík, 2015)..

Not only a farmer's income can be influenced by how much agricultural products they produce, but also by the market dynamics such as prices, demand and supply, in which a farmer operates, as well as the political, social and economic context of where they live (Oxfam; Mars Inc.; Dalberg Advisors; Wageningen University & Research, 2018). According to the United States Income Tax Act, agricultural income is the entire amount of money received by a person or organization by carrying out different agricultural operations on agricultural land (Das, 2023). In their study conducted in the northern part of Burundi on agricultural income determinants among smallholder farmers, Nzabakenga, Feng, & Yaqin (2013) found that among smallholder farmers, the only factors that significantly impacted agricultural income were family size and farm size. On the other hand, a research paper from Oxfam, et al. (2018) suggests that long-term ability of smallholder farmers to earn increased income is not only influenced by their farming activities and actions taken to improve farm output, but also by socio-economic and political dynamics at the national and community level. Another study conducted in southern Ethiopia on determinants of smallholder farmers' income diversification by W/kidan & Tafesse (2023) suggest that adding income-generating activities to mixed households, such as nonfarm, crop, livestock, and off-farm activities, is necessary for the farm-level income diversification; while these activities provide income portfolios with varying levels of risk, liquidity, projected returns and seasonality.

## **2.5. Summary of Knowledge gaps**

This section provides an understanding of key knowledge gaps for the study, how they will be addressed through research priorities as well as the authors, aim and findings of study that informed those gaps. This is summarized in *Table 2.3*.

Table 2.3. Summary of Knowledge gaps

Approach	Key Knowledge gaps	Research Priorities	Author, study aim and findings
Capacity building studies on its effect on income level	<ul style="list-style-type: none"> <li>• Many studies have focused more on organizational performance effect due to capacity building programmes which includes output, profitability and efficiency.</li> <li>• There is no particular focus on the effect of capacity building programmes on entrepreneurs' income which is different from organizational profitability.</li> </ul>	<ul style="list-style-type: none"> <li>• Study the effect of capacity building on income among entrepreneurs (smallholder farmers)</li> </ul>	<p>(Ojokuku &amp; Adegbite, 2014)</p> <p><u>Aim:</u> to examine the impact of capacity building on staff performance in selected organizations in Nigeria</p> <p><u>Findings:</u> Capacity building is considered important management issue in any organization because capacity building inputs and activities contribute to the realization of skills, management capacity, etc.</p>
Smallholder farmers studies around capacity building	<ul style="list-style-type: none"> <li>• Studies conducted on capacity building of farmers are elaborate but fail to examine the view of individual farmers as the main subject of interest. They</li> </ul>	<ul style="list-style-type: none"> <li>• Clearly collect and examine the views of individual farmers on the effect of capacity building programmes on</li> </ul>	<p>(Obaniyi, Fabiyi, Adewole, O., &amp; Onikoyi, 2014)</p> <p><u>Aim:</u> to examine the participation of rice farmers in capacity building programmes in Kwara State, Nigeria</p>

	<p>instead examine the views of groups of farmers who might have different characteristics</p>	<p>their individual wellbeing</p>	<p><i>Findings:</i> the results showed that farmers' participation level was in certain programmes but low in others</p>
<p>Focus on smallholder farmers knowledge</p>	<ul style="list-style-type: none"> <li>• Many studies are mostly academic and very technical and very difficult for the farmers to use in order to understand and learn from them.</li> </ul>	<ul style="list-style-type: none"> <li>• Summarize the results in a way and form that can be easily interpreted by farmers who need to understand how capacity building programmes affects their financial performance.</li> </ul>	<p>Author, 2023</p>

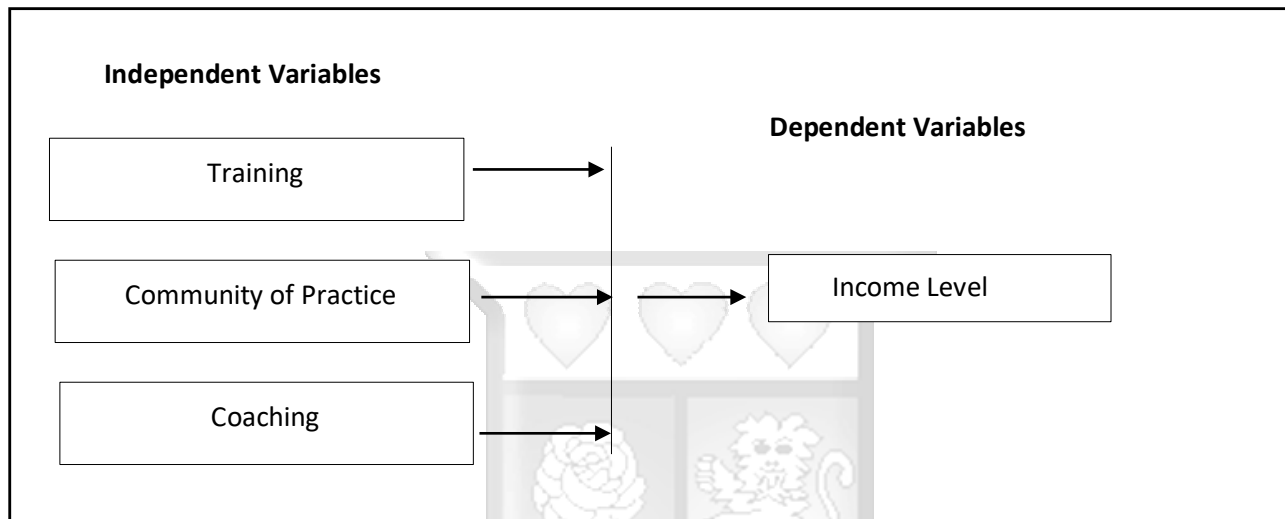
(Source: Author, 2023)



## 2.6. Conceptual Framework

The figurative illustration of dependent and independent variables if the study is shown below in the conceptual framework *Figure 2.3*.

*Figure 2.3. Conceptual Framework*



(Source: Author, 2023)

## 2.7. Operationalization of variables

This section highlights the variables, research indicators and measurements to be used, as well as the authors used as reference for the description of variables in *Table 2.4*.

*Table 2.4. Description of Variables*

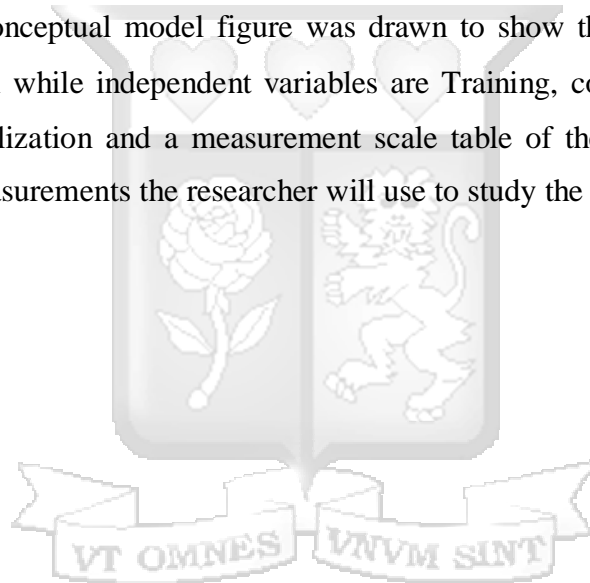
Variable	Indicators	Measurement	Author
<b>Training</b>	<ul style="list-style-type: none"> <li>□ Availability of farmers' training programs</li> <li>□ Farmers' participation in training programs</li> </ul>	<ul style="list-style-type: none"> <li>• Number of training programmes participated in</li> <li>• Duration of training programmes participated in</li> </ul>	(Wonde, Tsehay, & Lemma, 2022)

	<input type="checkbox"/> <i>Frequency</i> of farmers' training programs  <input type="checkbox"/> <i>Impact</i> of farmers' training programs	<ul style="list-style-type: none"> <li>• Number of training programmes available annually</li> </ul>	
<b>Community of Practice</b>	<input type="checkbox"/> <i>Knowledge-sharing</i> activity used among farmers  <input type="checkbox"/> Farmers' <i>participation</i> in community of practice  <input type="checkbox"/> <i>Frequency</i> of meetings between farmers for knowledge-sharing  <input type="checkbox"/> <i>Impact</i> of a community of practice among farmers	<ul style="list-style-type: none"> <li>• Number of community programmes available for farmers</li> <li>• Number of knowledge-sharing programmes participated in</li> <li>• Duration of community programmes for farmers</li> </ul>	(Aljuwaiber, 2016)
<b>Coaching</b>	<input type="checkbox"/> <i>Availability</i> of coaches for smallholder farmers  <input type="checkbox"/> <i>Engagement</i> of farmers with a coach  <input type="checkbox"/> <i>Impact</i> of coaching among farmers	<ul style="list-style-type: none"> <li>• Number of coaches had</li> <li>• Duration of interaction with a coach per session</li> <li>• Number of meetings with a coach annually</li> </ul>	(Neupane, 2015)
<b>Income</b>	<input type="checkbox"/> <i>Household income</i> of farmers  <input type="checkbox"/> <i>Crop income</i> of farmers per crop production  <input type="checkbox"/> <i>Impact</i> of other variables on farmers' income	<ul style="list-style-type: none"> <li>• Income generated during capacity building programmes participation</li> <li>• Sales, purchases and losses</li> </ul>	(Menšík, 2015)

(Source: Author, 2023)

## 2.8. Chapter Summary

This chapter summarized different theories that will be used a reference to the study and highlighted how they are relevant to the study. The study will consider two theories: The Constructivist Learning Theory which is relevant to capacity building, and the Income and Employment Theory which is relevant to Income variable. The chapter includes an empirical review section of different studies done on the relationship between Training, community of practice and coaching and income. The studies included were conducted in different parts of the world like in Ethiopia, Pakistan, Iran, Bangladesh, China and Indonesia. A table on the summary of knowledge gaps shows that many studies conducted on capacity building programmes focused more on organizational performance than individual or entrepreneurial income which the study will try to address. A conceptual model figure was drawn to show that the study's dependent variable is Income Level while independent variables are Training, community of practice and coaching. An operationalization and a measurement scale table of the variables clearly shows which indicators and measurements the researcher will use to study the different variables.



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1. Introduction**

The population sample, data collection, data analysis, and research design that will be used in the study are all presented in this chapter. It also describes the procedures for gathering and evaluating data in order to answer research questions and accomplish study goals.

### **3.2. Research Philosophy**

This study took the form of positivism research. Positivism. As a research paradigm, positivism typically is seen in methodologies that make use of quantitative data, and more often adopt experimental or quasi-experimental research (Jansen, 2023). Positivism relates to the idea that researches need to concentrate on facts, that the researcher is independent from the research and the research can be very objective (Business Research Methodology , 2022). This study employed this research philosophy because it considers that the research should remain objective in the interaction with participants so as to avoid influencing their responses. This study therefore employed quantitative analysis of data collected.

### **3.3. Research Design**

Greener (2018) defines research design as a plan of approach to answering research questions more effectively. A descriptive research design was employed in this study. This kind of study design seeks to gather data in a methodical manner in order to characterize a scenario, population or phenomenon without manipulating any variables, unlike in experimental research (Voxco, 2021). The “what” of the research topic is given greater weight in this approach than the “why” of the subject (Bhat, 2020). This study employed a descriptive research design because it will focus on describing the research subject without covering and investigating why a particular phenomenon happened. A descriptive cross-sectional design was used which, according to Bryman and Cramer (2011), this is a design utilized to get an overall picture of what is going on in a group at a specific moment in time. Quantitative research was also employed where the opinions of the targeted population will be collected, summarized and linked to specific research questions and objectives.

### 3.4. Population and Sampling

This study was carried out in South-Kivu/DRC with an area of 69,139 square kilometers. Sampling was conducted in two of the eight territories (administrative units) of South-Kivu province, namely Kabare and Walungu. These two territories were chosen; first given that they are easily accessible from the city of Bukavu which is the administrative capital of South-Kivu, second because the majority of farming activities are concentrated in those areas, and third because many programs to empower farmers have been carried out by several organizations in those areas. There is an estimated 25.000 farmers in Kabare and Walungu combined according to the Inspection Provinciale de l'Agriculture Pêche et Elèveage (South Kivu Provincial Inspectorate for Agriculture, Fishing and Animal Husbandry (Bonnke, et al., 2022). Slovin's formula (Ellen, 2020) was utilized to estimate the sample size for the population under investigation at a 95% confidence level.

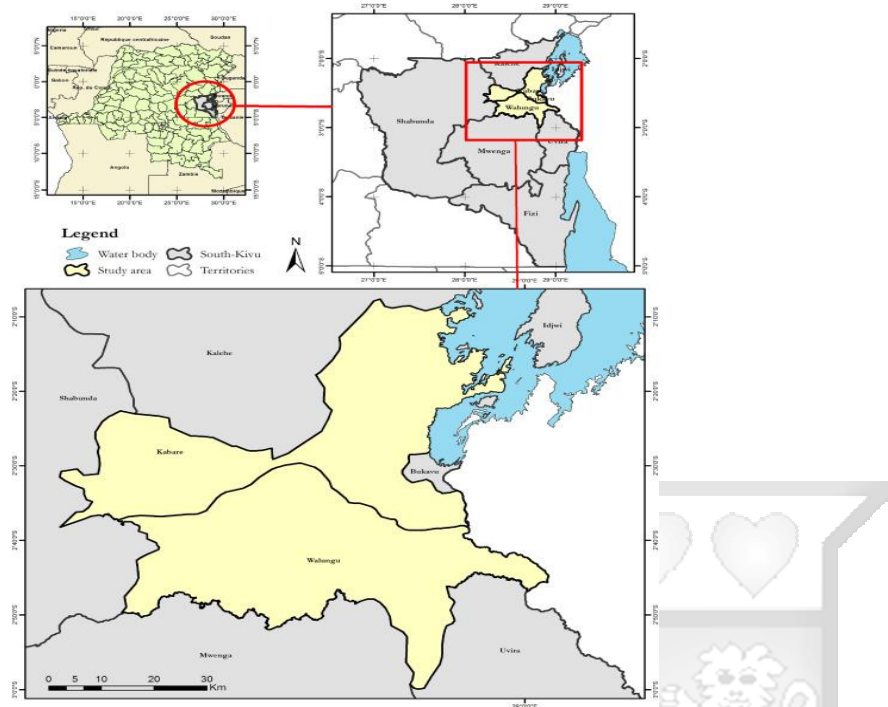
$n = \frac{N}{1+N(e)^2}$  where N is the population, e is the error tolerance level, and n is the sample size.

The estimated sample size of the population determined using the Slovin's formula is as follows:

$$n = \frac{25000}{1+25000(0.05)^2} = 393.7$$

The sample size was therefore of 394 farmers. A convenience sampling technique was applied in identifying participants where they were selected based on their accessibility and availability. This technique was used because the researcher did not know preexisting cassava farmers in the identified locations, and made any available cassava farmer part of the research based on also on accessibility.

Figure 3.4. Study Site (Walungu and Kabare)



(Source: Mondo, et al., 2021)

### 3.5. Data Collection methods

Primary data sources provided the data for this study. Primary data are facts directly collected by a researcher from the sources, using techniques such as interviews, surveys, or experiments (Stephanie, 2018). Primary data was obtained from smallholder farmers by use of a structured questionnaire which was translated in French and/or Kiswahili. The questionnaire was subdivided into six sections, namely: the introduction, personal characteristics questions, questions on Income level, questions on Training, questions on Coaching and questions on Community of practice. The researcher made use of trained research assistants to improve response rate, and used the drop-and-pick-later questionnaire distribution technique. There were two research assistants, one in Kabare and another one in Walungu. In some instances, the research assistants found respondents in their farmers and asked them to fill in the questionnaire immediately, and some farmers preferred to go fill it at their own time then return it later. Since the questionnaires were hard copies, the researcher later on filled in the responses from the participants in Microsoft Forms in order to have a digital copy of the responses which were later analyzed using appropriated tools.

## 3.6. Research quality

### 3.6.1. Validity

Validity is the extent to which the employed tools clearly estimate the element they are supposed to measure. Content validity was used to test the legitimacy of the instruments utilized. Content validity is a measurement tool used to evaluate how well an instrument covers all relevant aspects of the construct it aims to measure; here, a construct is a theme, idea or concept that cannot be measured directly (Kassiani, 2022). The content validity index (CVI) and the content validity ratio (CVR) were used in a pilot survey to minimize bias.

*Content Validity Ratio* =  $\frac{(ne - \frac{N}{2})}{\frac{N}{2}}$  where N is the total number of participants, and ne is the number of participants saying the research to be relevant (Kassiani, 2022).

*Content Validity Index* =  $\frac{CVR}{N}$  where CVR is the average CVR scores; N is the sum of all participants (Kassiani, 2022).

Results from the CVR and CVI helped the researcher improve the quality and reduce biases of the study by conforming the questionnaires to the objectives of the study and reality of the population under investigation.

### 3.6.2. Reliability

Reliability measures how consistently instruments give comparable results over a number of repeated trials without differences in the outcomes given that the driving factors are unchanged (Ng'ang'a, 2017). The researcher used the Internal Consistency. This is a reliability measure that is applied to assess the extent to which questions that explore the same construct produce similar results on different occasions (Dudovskiy, 2018). Should the answers to the several questions show a negative correlation with one another, then it would no longer make sense to say that these questions are all trying to measure the same underlying factor (Price, Jhangiani, & Chiang, 2012). The Cronbach's alpha coefficient was used as reliability test. This is a measure of the extent to which questions are related to each other, and thus giving an estimate on how good or bad the measurement accuracy (the so called reliability) of a group of questions/items is (Collins L. M.,

2007). The researcher used the online statistics calculator found on the website *datatab.net* to find the Cronbach's coefficient alpha with the use of data from the pilot research.

### **3.7. Data Analysis**

Data analysis is the process of obtaining meaningful insights through the evaluation of data using statistical and analytical tools. A descriptive analysis was performed for the study to sum up the social, economic and demographic characteristics of smallholder cassava farmers, in a meaningful way so that it can be used to describe features that characterize the population. A descriptive analysis was done using Microsoft Excel based on data collected in Microsoft Forms. Data was analyzed, interpretations and conclusions were made based the empirical review of literature and the research objectives.

Given the nature and structure of the questionnaire which included non-numerical inputs, the research did simple descriptive analysis looking at how many respondents participated in any capacity building programmes and how many of them increased their income to some extent after participating in those programmes.

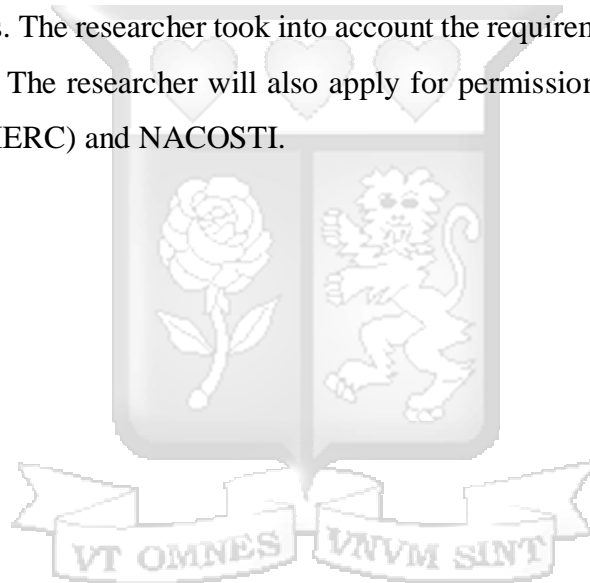
### **3.8. Ethical Issues**

Ethics in research involves the requirements on professional work, the protection of the dignity of authors and the citation of their work in the research. The researcher used ethical considerations in research like the respect of copyrights, intellectual property, being aware of the positions of concerned parties, following legal provision, tapping into ethical resources for more guidance, and respecting confidentiality and privacy. Additionally, the research applied for permission from NACOSTI (National Commission for Science, Technology & Innovation) and the Strathmore University Institutional Ethics Review Committee (SU-IERC).

Informed consent of the participants was sought in advance using the participant's information as provided by the SU-IERC, and the supervisor was notified prior to actual field work. Consent forms and debrief forms were presented to the participants who were required to append their signatures before taking part in the study. All materials used in the study was appropriately cited and later referenced as a means of countering possible plagiarism.

### 3.9. Chapter Summary

The investigation employed a positivism research philosophy, which means that the researcher will concentrate on facts and will remain objective in the collection of data. A descriptive research design will be used, focusing on the “what” and not the “why” of the research object. The sample size of the population was determined using the Slovin’s formula given as  $n=N/(1+Ne^2)$ . From the 20.000 population size of Kabare and Walungu smallholder farmers, a sample size of 394 participants was determined. Primary data was obtained with the use of an organized questionnaire. To ensure research quality, the validity was tested using the Content Validity Index (CVI) and the Content Validity Ratio (CVR), while the reliability was tested using the Cronbach’s alpha coefficient. Descriptive analysis will be done to determine the socioeconomic and demographic aspects of the participants. The researcher took into account the requirements of professional work for ethical consideration. The researcher will also apply for permission from Institutional Ethics Review Committee (SU-IERC) and NACOSTI.



## CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATIONS

### 4.1. Introduction

This chapter represents analysis and interpretation of data collected from primary sources from the population. The data collected came from cassava smallholder farmers in Kabare and Walungu territories in South-Kivu, DRC through a structured questionnaire. The validity, accuracy and reliability of the survey questions was tested through a pilot survey in order to clearly represent the elements that the survey was supposed to measure. Data collected was fed in Microsoft Excel and was used to carry out a descriptive analysis of the sample results.

### 4.2. Demographics

The sample population for the study was 394 cassava smallholder farmers and 326 responses were received, which represents 82.74% of the target sample. From *Figure 4.1* we can see that 56% of the respondents were female whereas 44% were male. It is also observed that 49% of the respondents were between 22-25 years, 40% were above 25 years, 11% were between 18-22 years, and only 1 respondent was below 18 years. From the data collected, 33% of respondents had a primary school level of education, 32% did not go to school, 18% went to secondary school, 13% attended a higher education, and 5% went to a technical school. 54% of the respondents do crop farming, while 46% did a mixed farming. All the respondents were cassava farmers.

*Table 4.1. Demographics*

		Number	Rate		
Respondents		326	82.74%		
Gender	Male	142	44%	Male	Female
	Female	184	56%		
AGE	Below 18 years	1	0.31%	0%	100%
	Between 18-22 years	36	11%	33%	67%
	Between 22-25 years	158	48%	42%	58%
	Above 25 years	131	40%	49%	51%
Education	Primary School	106	33%	35%	65%
	Secondary School	58	18%	50%	50%
	Technical School	16	5%	56%	44%
	Higher Education	41	13%	41%	59%
	None of the above	105	32%	48%	52%
Type of Farming	Crop Farming	176	54%	39%	61%
	Mixed Farming	150	46%	49%	51%

### 4.3. Descriptive Analysis

#### 4.3.1. Training and Income level

From data collected, although 40.8% of respondents did not participate in training programmes, 70.25% of respondents agreed that there were training programmes available for them, and 59.2% of respondents agreed that have participated in those training programmes; while 58.2% and 57% of participants agreed that the knowledge gained and training received was relevant to them as farmers as well as helped them in their farming activities, respectively. However, only 50.9% of respondents agreed that the training programmes helped them increase their household income, while 55.8% agreed that the training programmes helped increase their farm income. From those who participated in training programmes, 36.29% of respondents had an annual income above 1500 USD, 29% of respondents had an annual income between 1000-1500\$, 22.8% had an annual income between 500-1000\$, and only 10.88% of respondents had an annual income below 500\$. From those who participated in training programmes, 50.25% of respondents said that their income increased between 10-25%, while 18.65% of respondents' income increased between 25-40%, and 31.09% of respondents increased below 10% after the training programmes. It is also observed that the majority (57.14%) of respondents who had annual income above 1500\$ increased their income between 10-20% after the training programmes. It is also observed that respondents who had at least a technical education level up to higher education, had increased their income above 10% after participating in training programmes, see *Table 4.4*. From the findings, age is not a big factor in the whether training programmes increased smallholder farmers' income after participating in those programmes.

*Table 4.2. Annual income and income growth rate for Training participants*

<b>Annual Income</b> <b>Growth Rate</b>	<i>Below</i> <i>10%</i>	<i>Between</i> <i>10-25%</i>	<i>Between</i> <i>25-40%</i>	<i>Above</i> <i>40%</i>	<b>TOTAL</b>
Below 500 USD	19	2	0	0	21
Between 500-1000 USD	9	26	11	0	46
Between 1000-1500 USD	20	27	9	0	56
Above 1500 USD	12	42	16	0	70
<b>TOTAL</b>	<b>60</b>	<b>97</b>	<b>36</b>	<b>0</b>	193

**Table 4.3. Training data**

### Training Data

	There are training programs available for farmers	I have participated in a training program for farmers	The knowledge gained from the training program has helped me in my farming activities	The training received was relevant to me as a farmer	Whenever available I participate in the training programs for farmers	The training program helped increase my household income	The training program helped me increase my farm income
1. Strongly Disagree	2	5	5	5	5	5	5
2. Disagree	81	113	116	116	116	119	119
3. Neutral	14	15	19	15	15	36	20
4. Agree	5	41	70	69	44	63	70
5. Strongly Agree	224	152	116	121	146	103	112
Mean	4.129	3.681	3.540	3.567	3.644	3.429	3.506

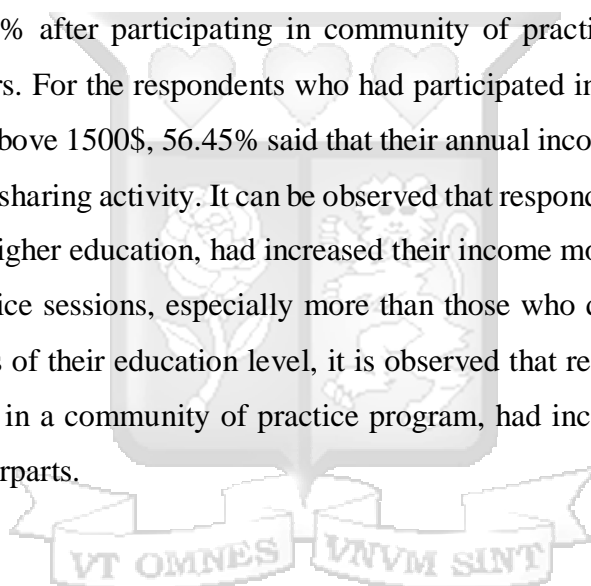
**Table 4.4. Training programmes, Income growth, education, and age**

		Training participation		
		Below 10%	10-25%	25-40%
<b>Education</b>	Primary School	32%	58%	9.9%
	Secondary School	52%	42%	6%
	Technical School	11%	44%	44%
	Higher Education	10%	57%	33%
	None of the above	33%	42%	25%
<b>Age</b>	Below 18 years		100%	
	Between 18-22 years	27%	40%	33%
	Between 22-25 years	39%	49%	12%
	Above 25 years	23%	52%	24%

#### 4.3.2. Community of Practice and Income level

From the data collected, 49.69% of respondents agree that as farmers they organize themselves in groups to share their experience and knowledge, 44.17% of respondents agreed that they have participated in a knowledge-sharing activity with other farmers. Only 42.63% and 41.72% of

respondents agreed that the received and gained from their meetings was relevant to them as farmers and helped them in their farming activities, respectively. However, only 39.26% of respondents agreed that the community of practice activity helped them increase their farm income, while 37.12% of respondents agreed that the community of practice activity helped increase their household income. From the respondents who agreed to had participated in a community of practice activity, 38.27% of respondents had an annual income above 1500 USD, 25.3% had an annual income between 1000-1500\$, 21.6% had an annual income between 500-1000\$, and 14.81% had an annual income below 500 USD. Data from the same respondents who agreed to have participated in a community of practice activity, 51.85% said that their income increased between 10-25%, 34.5% said their income increased below 10%, and 13.58% said their income increased between 25-40% after participating in community of practice or knowledge-sharing activity with other farmers. For the respondents who had participated in a community of practice activity and had income above 1500\$, 56.45% said that their annual income increased between 10-25% after the knowledge-sharing activity. It can be observed that respondents who attended at least a technical school up to higher education, had increased their income more than other respondents after community of practice sessions, especially more than those who did not attend any school, see *Table 4.7*. Regardless of their education level, it is observed that respondents above 25-year-old who had participated in a community of practice program, had increased their income more than their younger counterparts.



**Table 4.5. Annual income and income growth rate for community of practice participants**

<b>Annual Income</b> <b>Growth Rate</b>	<i>Below</i> <i>10%</i>	<i>Between</i> <i>10-25%</i>	<i>Between</i> <i>25-40%</i>	<i>Above</i> <i>40%</i>	<b>TOTAL</b>
Below 500 USD	21	2	1	0	24
Between 500-1000 USD	5	24	6	0	35
Between 1000-1500 USD	11	23	7	0	41
Above 1500 USD	19	35	8	0	62
<b>TOTAL</b>	<b>56</b>	<b>84</b>	<b>22</b>	<b>0</b>	<b>162</b>

**Table 4.6. Community of practice data**

### Community of practice Data

	As farmers, we organize ourselves in groups to share our experience and knowledge	I have participated in a knowledge sharing activity with other farmers	The knowledge gained from the community of practice has helped me in my farming...	The knowledge received from our meetings was relevant to me as a farmer	Whenever there is an activity for knowledge-sharing between farmers, I...	The community of practice or knowledge-sharing activity has helped increase my household...	The community of practice or knowledge-sharing activity has helped me increase my farm income
1. Strongly Disagree	3	4	4	4	4	4	5
2. Disagree	119	136	139	137	136	140	139
3. Neutral	42	42	47	46	43	61	54
4. Agree	8	13	35	34	16	29	32
5. Strongly Agree	154	131	101	105	127	92	96
Mean	3.59	3.40	3.28	3.30	3.39	3.20	3.23

**Table 4.7. Community of practice, Income growth, education and age**

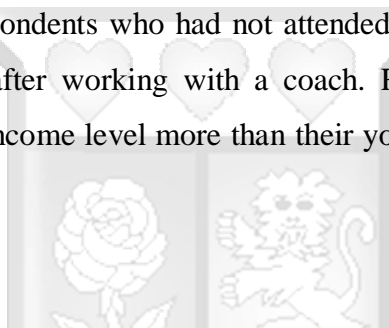
		Community of practice		
		Below 10%	10-25%	25-40%
<b>Education</b>	Primary School	38%	52%	9.5%
	Secondary School	42%	53%	6%
	Technical School		57%	43%
	Higher Education	5%	65%	30%
	None of the above	41%	44%	15%
<b>Age</b>	Below 18 years			
	Between 18-22 years	33%	42%	25%
	Between 22-25 years	40%	51%	9%
	Above 25 years	26%	55%	19%

#### 4.3.3. Coaching and Income level

Data collected shows that 52.45% of participants agreed that they are aware that there was coaching activities for them as farmers, while only 42.94% of participants agreed to have initiated and participated in a coaching activity with an expert from their field. On the other hand, 42.94% of

respondents or 100% of coaching sessions participants agreed that the knowledge gained and received from the coaching session with the expert was relevant to them as farmers and helped them in their farming activities. However, only 42% of respondents or 97.85% of coaching sessions participants agreed that the coaching activity increased their household income, while 100% of coaching session participant or 42.94% of the respondents agreed that the coaching activity increased their farm income. Of the respondents who agreed to have initiated and participated in a coaching activity with an expert, 32.14% said they had an annual income above 1500\$, 26.42% had an annual income between 500-1000\$, 25.71% had an annual income between 1000-1500\$, and 15.71% had an annual income below 500 USD. It is observed from the findings that coaching activities had a greater impact on income of those who had at least a technical school education up to higher education. 66% of respondents who had not attended school also expressed growth in their income between 10-40% after working with a coach. Respondents above 25 years old expressed more growth in their income level more than their younger counterparts after working with a coach.

**Table 4.8. Coaching Data**



### Coaching Data

	As a farmer, I am aware that there are coaching opportunities for us	I have initiated and participated in a coaching activity with an expert in my field of farming	The knowledge gained from the coaching sessions has helped me in my farming activities	The knowledge received from the coaching sessions with the expert helped me achieve my targeted...	Whenever there is an activity for knowledge-sharing between farmers, I participate in...	The coaching activity with the expert has helped increase my household income	The coaching activity with an expert has helped me increase my farm income
1. Strongly Disagree	3	6	7	7	7	7	7
2. Disagree	118	144	143	143	142	143	143
3. Neutral	34	36	36	36	36	39	36
4. Agree	6	11	23	25	15	30	31
5. Strongly Agree	165	129	117	115	126	107	109
Mean	3.65	3.35	3.31	3.30	3.34	3.27	3.28

**Table 4.9. Annual income and income growth rate for coaching activity participant**

<b>Annual Income</b>	<i>Below</i>	<i>Between</i>	<i>Between</i>	<i>Above</i>	
<b>Growth Rate</b>	<i>10%</i>	<i>10-25%</i>	<i>25-40%</i>	<i>40%</i>	<b>TOTAL</b>
Below 500 USD	20	1	1	0	22
Between 500-1000 USD	6	20	11	0	37
Between 1000-1500 USD	6	21	9	0	36
Above 1500 USD	8	21	16	0	45
<b>TOTAL</b>	<b>40</b>	<b>63</b>	<b>37</b>	<b>0</b>	<b>140</b>

**Table 4.10. Coaching, income growth, education, and age**

		<b>Coaching</b>		
		<b>Below</b>	<b>10-</b>	<b>25-</b>
		<b>10%</b>	<b>25%</b>	<b>40%</b>
<b>Education</b>	Primary School	26%	50%	24%
	Secondary School	47%	43%	10%
	Technical School	9%	45%	45%
	Higher Education	5%	43%	52%
	None of the above	35%	43%	23%
<b>Age</b>	Below 18 years		100%	
	Between 18-22 years	40%	33%	27%
	Between 22-25 years	30%	49%	21%
	Above 25 years	25%	43%	33%

#### **4.4. Chapter Conclusion**

The findings summarized in this chapter show that cassava smallholder farmers' income level is influenced by different determinants of capacity building such as training programmes, community of practice or knowledge-sharing activities and coaching sessions for farmers. The reported results indicate that farmers' income increases to some extent after participating in some form of capacity building programmes. The implications of these results are discussed in chapter five.

## CHAPTER FIVE: SUMMARY, AND RECOMMENDATIONS

### 5.1. Introduction

This chapter provides summary and discussions of findings, conclusions, recommendations and the possible limitations of the study.

### 5.2. Summary of the findings

These sections provide summary of the findings based on the research objectives that are under investigation.

#### *5.2.1. Summary of Objective 1: To describe the effect of training on income among smallholder cassava farmers' in South-Kivu, DR Congo*

Income level is often seen as the money received from employment, and/or an economic or financial activity especially from a regular or consistent basis. Training is the process of teaching a person or animal a particular pattern, specific skill or type of behavior. Based on the study's findings, farmers who had participated in training programmes said that their income increased after participating in such programmes. Although other factors such as education, age and farm size can be taken into account, the farmers who had participated in training programmes indicated that those programmes were very helpful in their farming activities as they provided important and useful insights that later on translated into improved yields and therefore improved farm income. The data collected shows that 68.9 percent of respondents who had participated in training programmes increased their income between 10-40 percent after participating in those programmes. It is also observed that age played a major role for respondents but could not affect the results on its own. However, those who had at least a technical education level up to higher education, had increased their income above 10% after participating in training programmes. This indicates that training improved farmer's income level to a great extent after participating in training programmes.

#### *5.2.2. Summary of Objective 2: To investigate the effect of a community of practice on income among smallholder cassava farmers in South-Kivu, DR Congo*

Community of practice refers to a group of individuals that have a something in common that concerns them or interest for something that they practice, and they come together to learn how to it better and more effectively as they interact on a regular basis. Findings for the study indicate that

many farmers do not meet in groups to share knowledge on farming practices, and those who participated in knowledge-sharing activities did not truly recognize the impact that such activities have on their household or farm incomes. Nonetheless, those farmers who had participated in a community of practice activity indicated that even though their income growth could not be directly linked to their participation in such activities, they recognized that the knowledge gained in those activities helped improve their farm outcomes. However, data collected shows that 65.6 percent of respondent who had participated in community of practice with other farmers increased their income level between 10-40 percent after participating in knowledge-sharing programmes. Age alone could not affect the results on whether older or younger respondents had increased their income more than the other age group. However, education played a key role in increasing income level for those who had participated in knowledge-sharing activities because the more educated the respondent, the higher was the possibility that they increase their income between 10-40 percent after participation in community of practice programmes. This shows that although farmers themselves could not quantify the impact of community of practice to their income, data shows that people who participated in such programmes had increased their income level afterwards.

***5.2.3. Summary of Objective 3: To determine the effect of coaching on income among cassava smallholder farmers in South-Kivu.***

Coaching is a cooperative, goal-oriented, solution-based and methodical process wherein a coach helps their coachee or clients enhance their life experiences and achieve their goals in their personal or professional live. The study findings indicate that a good number of farmers was not aware of coaching opportunities available to them as farmers. However, those who had initiated and participated in a coaching activity with an expert, all agreed that the knowledge gained from the coaching sessions was relevant to them as farmers and that it helped improve their farm outcomes. After applying the knowledge gained from the expert, all those who had participated in a coaching activity agreed that there was a significant increase in their farm income afterwards. This indicates that knowledge from an experienced expert or coach has great impact on farmers' income if applied thoroughly. Although age and education alone should not be seen as influencing results since all those who participated in coaching activity agreed that they increased their income afterwards. Even if 100 percent of educated respondents increased their income level, more that 66 percent of uneducated respondents also increased their income level after working with a coach. It can be

concluded that working with a coach had significant impact on income level regardless of farmers' individual characteristics.

### **5.3. Discussions**

This section discusses results of the findings with regard to the empirical findings in literature review.

#### ***5.3.1. Training and Income***

Wordofa & Sassi (2017), Shahabadi, Nemati, & Hosseinidoust (2018), and Wonde, Tsehay, & Lemma (2022) from their different studies found that there is a strong relationship between training programs and increase in income especially for the rural population and smallholder farmers. This is confirmed by the results of this study that indicated that the majority of respondents who participated in training programmes saw their income increase by more than 10% after participating in those programmes. Looking at the constructivist learning theory, results show that those who were older and had life experience with farming, did well after participating in training programmes. This shows that they had constructed the knowledge received through training based on their previous experiences. However, based on criticism of this theory, data collected could not inform more on that. The theory of Income and employment as brought out by Keynes stated that income is money received for a product or service, which could be invested, saved or spent. Respondents got income more from their farming activities after participating in training programmes.

#### ***5.3.2. Community of practice and Income***

In their different studies on knowledge-sharing and financial performance of SMEs and entrepreneurs, Agrifoglio (2015), Margaretha & Supartika (2016), and Wang, Wang, & Liang (2014) argued that knowledge-sharing is crucial in order to increase financial performance and operational performance. Although less than 40% of respondents thought that community of practice activities increased their farm income, 66.7% of those who had participated in community of practice activities increased their income between 10-40% after those activities. This is to show that if applied well, the knowledge-sharing activities can have greater impact on increased income or better financial performance. Looking at the constructivist learning theory, for farmers to share knowledge among themselves, they had to rely on previous experience in their own farming

activities. This shows that they had constructed the knowledge received from their fellows based on what they already knew, and could interpret that knowledge from that point of view. This is clearly seen where those who had more formal education increased their income level. . However, based on criticism of this theory, data collected could not inform more on that. The theory of Income and employment as brought out by Keynes stated that income is money received for a product or service, which could be invested, saved or spent. Respondents got income more from their farming activities after participating in community of practice programmes.

### ***5.3.3. Coaching and Income***

Maiorescu (2015) concluded that coaching has a great impact on the development of an entrepreneur's focus and self-efficacy. In their studies on company performance and coaching, Bashir & Shah (2017), Lorenzo (2015) showed that if coaches apply the right technique and transfer that right knowledge, there is great impact on company performance, especially people's performance which translates to increased profitability. From the data collected, 100% of respondents who had worked with a coach said they increased their income afterwards. Of those respondents, 71.14% increased their income between 10-40% after working with an expert coach. Given that all respondents involved with a coach said they increased their income level afterwards, the criticism of the constructivist learning theory by Mathews (1993) could be better understood where he stated that scientific knowledge should be explicitly transmitted to students who should not subject it to their own understanding. This is because, a coach as an expert could have better understanding of things, and farmers applied them as given without trying to apply the knowledge based on their previous experience. So, for coaching, the constructivist learning theory is not fully accurate here. The theory of Income and employment as brought out by Keynes stated that income is money received for a product or service, which could be invested, saved or spent. Respondents got income more from their farming activities after participating in coaching activities.

## **5.4. Conclusions**

The researcher concluded that there is a clear effect of capacity building programmes on income level of smallholder farmers which can be seen from the investigation of capacity building determinants or forms under the research objectives. Furthermore, based on the identified gaps in knowledge, it is concluded that studying the effect of capacity building programmes on smallholder farmers' income indicate some aspects that could be studied further even though the results show a

strong relationship between training, community of practice and coaching on farmers' income. This relationship allows us to say that any individual variable alone cannot fully determine the growth in farm income.

For objective one, the findings could conclude that training improved farmer's income level to a great extent after participating in training programmes. For objective two, results show that although farmers themselves could not quantify the impact of community of practice to their income, data shows that people who participated in such programmes had increased their income level afterwards. And for objective three, data analyzed indicate that working with a coach had significant impact on income level regardless of farmers' individual characteristics, and that coaching had more impact on farmers' income level than community of practice and training.

### **5.5. Recommendations**

The results of this study indicate that for farmers' income to see some improvement, there are many aspects such as location, soil properties or farm size that also need to be considered in order to clearly determine the effect of capacity building programmes on income level for smallholder farmers. And just like in many cases, formal or informal (life & family) education play a key role in shaping a person's knowledge and perceptions about the world, therefore creating behaviors that are beneficial to them. The government authorities (policy makers), NGOs and the research community or scholars, and other stakeholders concerned with the financial well-being of smallholder farmers should: recognize the role that knowledge plays in shaping a person's perceptions about income, risk, uncertainty and overall financial wellbeing; smallholder farmers should seek to participate in as many capacity building programmes as possible so that they can increase their overall farm income wellbeing; teachers, trainers and coaches should also recognize that the way knowledge is transferred is very important to smallholder farmers as many of them have a very low level of education, and that they should focus on what is truly important in improving farmers' income and yields.

The findings of this study as highlighted informs government authorities and policy makers on the importance of capacity building programmes for farmers' financial wellbeing and productivity. Policy makers should be able to design laws and programmes that promote capacity building programmes. These findings also inform researchers and theorists who can carry out more studies using this as a starting point in understanding smallholder farmers and how capacity building could

be viewed as a poverty reduction factor. In practice, this study shows farmers how important it is for them to participate in capacity building programmes in order for them to increase their income to some extent.

### **5.6. Suggestions for further research**

The findings of this research set a ground for further research to be done in the area of smallholder farmers' income and capacity building programmes. This study was based on some variables or determinants of capacity building programmes, and was limited to cassava smallholder farmers in two territories from South-Kivu, DRC. It is suggested that further research is conducted covering more capacity building programmes, covering a larger geographical area, and clearly showing how in different regions capacity building programmes influence smallholder farmers income.

### **5.7. Limitations of the Research**

The researcher came across a number of limitations which majorly influenced the accessibility of data. The collection of data was done through a sequenced program given the heavy rains that rendered inaccessible the two concerned territories of Kabare and Walungu due to poor road infrastructure. Given that the majority of smallholder farmers who qualified for the research had little to no level of education, translating and gathering responses was a very tedious process. The research was also limited geographically given that it only targeted two territories from South-Kivu where there are eight territories.

Furthermore, the nature of the questions and data collected did not allow for inferential analysis which could have brought more insights to the topic under investigation; and there was limited time to collect data. Also, the study could have extended to other variables informed by the theoretical foundation of the study.

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## APPENDICES

### Appendix I: Research Questionnaire

#### A. INTRODUCTION

My name is Mastaki Bwinja Ghislain, a student pursuing a Masters of Management in Agribusiness Degree at Strathmore University Business School, located in Nairobi Kenya. This study will be done for academic purposes and submitted in partial fulfillment of the award of my master's degree.

The aim of the study is to *examine the effect of capacity building programmes on income level among cassava smallholder farmers in South-Kivu, Democratic Republic of Congo*. Kindly take a few minutes of your time to answer the questions with the instructions provided. Thank You!

#### B. PERSONAL CHARACTERISTICS

1. Kindly Indicate your gender.

Male

Female

2. What is your age?

Below 18 years

Between 18-22 years

Between 22-25 years

Above 25 years

3. What is your level of education?

Primary School

Secondary School

Technical school

Higher education

None of the above

4. What type of farming do you do?

Crop farming

Livestock Farming

Mixed Farming

**C. ON TRAINING**

The following statements relate to Training as one form of capacity building. Indicate to what extent you agree or disagree with the statements using the Likert scale provided where (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly agree.

<b>Statement</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
There are training programs available for farmers					
I have participated in a training program for farmers					
The knowledge gained from the training program has helped me in my farming activities					
The training received was relevant to me as a farmer					
Whenever available I participate in the training programs for farmers					
The training program helped increase my household income					

The training program helped me increase my farm income					

#### D. ON COMMUNITY OF PRATCTICE

The following statements relate to Community of Service as one form of capacity building. Indicate to what extent you agree or disagree with the statements using the Likert scale provided where (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly agree.

Statement	5	4	3	2	1
As farmers, we organize ourselves in groups to share our experience and knowledge					
I have participated in a knowledge sharing activity with other farmers					
The knowledge gained from the community of practice has helped me in my farming activities					
The knowledge received from our meetings was relevant to me as a farmer					
Whenever there is an activity for knowledge-sharing between farmers, I participate in them					

The community of practice or knowledge-sharing activity has helped increase my household income					
The community of practice or knowledge-sharing activity has helped me increase my farm income					

### E. ON COACHING

The following statements relate to Coaching as one form of capacity building. Indicate to what extent you agree or disagree with the statements using the Likert scale provided where (1) Strongly Disagree, (2) Disagree, (3) Neutral, (4) Agree, (5) Strongly agree.

Statement	5	4	3	2	1
As a farmer, I am aware that there are coaching opportunities for us					
I have initiated and participated in a coaching activity with an expert in my field of farming					
The knowledge gained from the coaching sessions has helped me in my farming activities					
The knowledge received from the coaching sessions with the expert helped me achieve my targeted farming outcome					

Whenever there is an activity for knowledge-sharing between farmers, I participate in them					
The coaching activity with the expert has helped increase my household income					
The coaching activity with an expert has helped me increase my farm income					

#### F. ON INCOME

The following statements relate to your level of income as a Household especially from farming activities.

1. What is your annual income from farming activities?

Below 500 US Dollars

Between 500-1000 USD

Between 1000-1500\$

2. Kindly indicate by how much your income increased after a capacity building activity.

Below 10%

Between 10% - 25%

Between 25% - 40%

Above 40%

***Thank you for participating in this survey.***

## Appendix II: SU-ISERC Clearance



15<sup>th</sup> March 2024

Mr Mastaki Ghislain,  
bwinja.mastaki@strathmore.edu

Dear Mr Mastaki,

**RE: The Effect of Capacity Building Programs on Income Level among Cassava Smallholder Farmers in South-Kivu, Democratic Republic of Congo**

This is to inform you that SU-ISERC has reviewed and **approved** your above SU-masters research proposal. Your application reference number is SU-ISERC2101/24. The approval period is from 15<sup>th</sup> March 2024 to 14<sup>th</sup> March 2025.

This approval is subject to compliance with the following requirements:

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
- iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
- v. Clearance for the export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke/> and obtain other clearances needed.

Yours sincerely,

**Mr Ambrose Rachier,**  
Chairperson; SU-ISERC

