Master's degree thesis

LOG950 Logistics

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From Bazil James

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From Patrick Singogo

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Abstract

Purpose - This study aims at making contribution to the literature on principal agent relationship by focusing at the relationship between coffee growers (agents) and principals (buying organizations). The study investigates factors that influence quality performance between two farmers' groups (KNCU and AKSCG) such as: information sharing, monitoring and negative external influence.

Method/Approach – Literature review with respect to principal agency theory guides this study. The principal agency theory is used in formulating research model and hypotheses which provide foundation for testing developed associations between coffee quality performance and information sharing; monitoring and negative external influence. Data used in this study were collected from one hundred and thirty two (132) primary societies' managers in Tanzania through personal interviews.

Findings - The empirical findings shows that information sharing has a more significant positive effect with agents' performance on quality in KNCU than in AKSCG. Monitoring has a more significant positive effect with agents' performance on quality in KNCU than in AKSCG. The findings further indicate that there is a stronger negative association between negative external influence and agents' performance on quality in KNCU than in AKSCG. Therefore, to improve performance in KNCU there should be high information sharing and monitoring while KNCU farmers should also learn how to respond positively to negative external influence.

Limitation – This study deals with a single industry analysis and hence its findings cannot be generalized to other industries. Also, this research is based on cross sectional research design which implies that hypotheses are tested only once at a time and thus difficult to demonstrate causality.

Managerial implication – Quality management is the key driving factor of coffee price in the global market thus all coffee supply chain actors should emphasize quality management aspect in all business processes. To ensure quality management among famers then buying organizations should establish strong information sharing and monitoring systems. Also, farmers should learn how to positively respond to negative external influence in ensuring that coffee quality is not impaired by negative external influence.

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List of abbreviations

AKSCG   Association of Kilimanjaro Specialty Coffee Growers

KNCU   Kilimanjaro Native Co-operative Union

TSHS   Tanzania Shillings

TACRI   Tanzania Coffee Research Institute

TCB   Tanzania Coffee Board

USAID   United States Agency for International Development

CPUs   Central Puplery Units

GDP   Growth Domestic Product

Contents

CHAPTER ONE

INTRODUCTION

1.1 Background information

No one in Tanzania particularly people from Kilimanjaro region will ever forget the so called ''coffee grace era'' that lasted from 1970s to late 1990s. Coffee production used to be a major economic activity in Kilimanjaro region due to its massive financial impact to farmers and other actors involved in coffee supply chain like transporters, fertilizers sellers, processing companies, pesticides sellers and exporters.

Initially, KNCU used to be the sole buyer of coffee in the region, however (after adoption of free trade policy), other private buyers entered the industry. Nowadays Coffee farmers are complaining on the enormous decline in price and particularly the fact that some other private buyers like AKSCG are able to pay a substantial higher price compared to KNCU. Tanzania Daima, one of the leading newspapers in Tanzania, reported on the 2nd October 2012 opinions raised by different stakeholders in coffee supply chain concerning decrease in coffee production, quality and price

According to Tanzania Daima, the coffee farmers that were interviewed complained on declining selling price and rising production cost of coffee. They associated the situation to less support on farm implements and finance from primary associations under KNCU or other private coffee buyers. Table below shows reported figures of production cost and selling price of coffee for two seasons.

Table 1.1 Overall average Price decline and increase in Cost of production

Season	Price per 1 kg of coffee (Tshs)	Cost of production per 1 kg (Tshs)	Profit per 1 kg in Tshs	Loss per 1 kg in Tshs	Remarks
1997/1998	1500	800	700	-	Profitable season to farmers as they made 87.5% profit markup on cost
2002/2003	500	1200	-	700	Unprofitable season to farmers as they ended up with140% loss markup. They could not even breakeven

From table 1.1 above, price per kilogram has declined by 67% in 2002/2003 season as compared to 1997/1998 while cost of production per kilogram has increased by 50% in 2002/2003 season as compared to 1997/1998.

According to the same newspaper, Chairman of KNCU Mr. Mynard Swai (main coffee buyer in Kilimanjaro) hinted on decline in coffee quality from farmers as the main reason for them to pay lesser price to its farmers group. Also the chairman added that, the main reason for some buyers like AKSCG to be able to pay a higher price to their farmers than KNCU was mainly due to high level of coffee quality from AKSCG farmers as compared to KNCU farmers.

During 2002/03 season KNCU paid 668Tshs/kg while other coffee buyers like AKSCG paid 847Tshs/kg which is 27% higher than price paid by KNCU (Parrish, Luzadis, and Bentley 2005). AKSCG was and is able to pay higher price to farmers as its final output fetches higher price in the world market compared to KNCU solely due to difference in quality. Figure 3.3 illustrates different prices paid by KNCU and AKSCG over eight seasons. Thus, the main challenge facing coffee industry in Tanzania is continuous price decline due to oversupply in the global market and low quality of coffee supplied from some of Tanzania's coffee actors.

Coffee is the second most important commodity in global market after oil. Coffee generates more than 70 million USD yearly in the global market (Brown, 2004). Africa and Asia produce one third of global coffee supply while the rest is supplied by Latin America (Brown, 2004). The main global markets of coffee are found in USA, EU and Japan altogether importing 80% of global coffee supply. Coffee has experienced global price crisis in 2000s' mainly due to oversupply in the global market (from countries like Brazil and Vietnam) and low quality. Many studies that have addressed coffee global crisis have pinpointed that quality improvement is the only feasible solution for farmers to fetch premium price (Rienstra, 2004; Brown, 2004; Hulm, Scholer, and Domeisen, 2007; Parrish et al., 2005; Lin, 2010; and Velmourougane et al., 2011).

Since quality is the only key driving factor for global price, then we focus on quality management as the only competitive advantage area that can be exploited by Tanzania coffee actors in addressing price decline. In this study we want to investigate factors affecting quality performance between two main coffee buyers in Tanzania (KNCU and AKSCG) by focusing

on relationship between primary societies/associations and farmers in form of principal and agent relationship.

1.2 Research problem

Studies conducted in Brazil, Taiwan, Rwanda on coffee quality management reported the following factors in addressing coffee quality management but did not test the effect of the named factors on coffee quality performance (Rienstra, 2004; Hulm et al., 2007; Lin, 2010, Velmourougane et al., 2011).

Rienstra (2004) highlights efforts undertaken in Brazil, Ethiopia and Rwanda in addressing global coffee crisis through quality improvement. Introduction of ''cup of excellence program'' in Brazil tailored at quality revolution in Brazil (use of internet auction in selling coffee); Ethiopian coffee quality project (2004-2006) supporting farmers in training and special seeds production and USAID coffee project in Rwanda (from 2000) as the way forward to revive quality by establishing central washing centers and fermentation units, training farmers and monitoring farmers when performing key critical coffee quality activities.

Both Lin (2010) in Taiwan and Hulm et al., (2007) in Rwanda revealed key activities that ensure coffee quality such as picking, sorting and cleaning, pulping, washing, fermentation, washing and drying. Of all these activities, fermentation is pointed out as the most important activity that if it is improperly performed then coffee quality would critically be affected. From this ground, farmers should be trained and monitored on how they perform the named activities to ensure quality. Also, to ensure coffee quality then farmers should be aware that any delay in these activities or in any harvesting and processing activities can impair coffee quality (Velmourougane et al., 2011).

As the named factors in the studies were not tested and studies have been conducted in a different setting (Brazil and Taiwan), this study focuses on examining (and testing) factors affecting quality performance between two coffee farmers groups in Tanzania. The differences on quality between KNCU and AKSCG are observed due to differences in price paid to coffee growers (Parrish et al., 2005). According to current situation, AKSCG has been successful in purchasing coffee of higher quality and paying a relatively higher price to farmers than KNCU consistently in ten seasons as illustrated in figure 3.3. In order to explain

factors affecting performance, this study will focus on relationship between primary societies/associations and farmers in form of principal and agent relationship.

Knowing factors affecting performance would help us to identify rooms for improvements in organizing relationship between farmers and primary societies/associations (either for KNCU or both KNCU and AKSCG). With respect to this study performance of the two buyers' organizations is restricted on how each organization can influence its farmers to produce coffee of high quality that fetch more attractive price in the global market. Our study will be dedicated to answer the following research question:

What are the factors affecting quality performance between KNCU and AKSCG?

1.3 Objective of the study

The primary objective of this study is to understand the organization of farmers and primary societies/associations relationship in enhancing coffee quality. Specifically, this study is tailored to understand how factors such as monitoring, information exchange and negative external influence can affect agents' (coffee growers') performance in the relationship between farmers and primary societies/associations. Thus, this study aims at knowing if the effects of these three variables (monitoring, information sharing and negative external influence) are different in the two organizations. The main purpose of this study is to provide an insight on how farmers and buyers relationships can be enhanced in a better way to improve farmers' performance on coffee quality. Therefore, determining the effects of information sharing and monitoring would help us to know how these variables should be integrated in farmers-buyers relationships for coffee quality improvement. Also, determining the effect of negative external influence would help us to know how farmers should respond to negative external influence without impairing coffee quality.

1.4 Relevance of the study

As mentioned earlier, several studies conducted on global coffee price crisis point out quality improvement as the only and the best solution for farmers to attain premium price. With respect to Tanzania, this can be reflected on how AKSCG has been able to pay higher price to its farmers than KNCU solely due to high quality of coffee supplied by its farmers. As after global coffee crisis, many studies have been conduced in different countries showing how quality management could be done with respect to those countries (Brazil, Taiwan) then doing a study on the same theme would provide more concise ways on how information sharing,

monitoring and negative influence could easily be incorporated among Tanzania farmers for more coffee quality improvement.

1.5 Organization of the study

This study is organized into nine chapters. The introduction chapter gives an overview of the background information-practical problem, research problem, objective and relevance of the study. Chapter two focuses on theoretical perspective of the study while chapter three provides an overview of Tanzania coffee industry. Chapter four presents research model and hypotheses of the study while chapter five is based on research methodology applied in this study. Chapter six gives an overview of operationalization and measurement of variables followed by chapter seven which provides an overview of data analysis. Chapter eight tests the hypothesized research model. The last chapter gives conclusion of this study: summary of the findings; managerial implications; limitations and areas for further research.

CHAPTER TWO

THEORETICAL PERSPECTIVES

2.1 Introduction

This chapter gives an overview of the theoretical framework of the study. The study focuses on how agency theory can be used to provide a theoretical framework on factors affecting quality performance between the two main coffee buyers. Agency theory can be categorized into two main branches: Principal agent theory and Positivist agency theory (Eisenhardt, 1989). Application of positivity agency theory is more suitable in intra-organizational relationships mainly in situations involving corporate managers (Bergen, Dutta, and Walker, 1992). The main difference between positivist agency theory and principal agent theory is that positivist agency theory propounds that agents are risk neutral than risk averse (Bergen, Dutta and Walker, 1992). This study is only based on principal agency theory and its variables are presented in this chapter in examining the factors affecting performance of the two organizations.

2.2 The concept of principal agent relationship (Primary associations and farmers)

As mentioned above, the agency theory is used in this study whereby farmers who are suppliers of coffee are viewed as agents and primary societies/associations who are buyers of coffee are viewed as principals. For better performance of principal-agent relationship strong information sharing system should be established. Also, when information sharing system is not well established then a principal could go for more monitoring in enhancing performance of the relationship. The presence of performance based pricing can highly encourage agents to positively respond to negative external influence and hence improve performance. Primary societies operate under KNCU while primary associations operate under AKSCG.

Figure 2.1: Principal – Agent Relationship

Source: Own source

2.3 Agency theory

Agency theory attracted people's attention as far back as 1960's. It originated from informational economics and it is related with risk sharing among cooperating parties (Arrow, 1971; Eisenhardt, 1989). Agency theory is suitable in assessing legal and social aspects of the contract signed by principal and agent (Eisenhardt, 1989). This theory tries to come up with solutions for both motivational and measurement problems when both principal and agent face goal conflicts and principal is not in position to validate the performance of his/her agent (Tate et al., 2010).

Example of research studies that have used agency theory on marketing perspective of agricultural products a: (Allen and Lueck, 1995; Menard, 1996; Bandiera, 2002). In respect to this study farmers (coffee supplier) are regarded as agents while primary associations under the two main buyers are considered as principals

Jensen and Meckling (1976) view the principal-agent relationship as the situation whereby the principal delegates authority to the agent to perform assigned work on his/her behalf. Delegation of authority to agents means that agents are given power to make decisions on behalf of principals. Several studies point out delegation of authority as the main reason for rise of agency problems like goals conflict and Information asymmetry (Eisenhardt, 1989; Jensen and Meckling, 1976; Barney and Ouchi, 1988).

According to Woodbine (2008), the agency problem is due to adverse selection and moral hazard. Adverse selection occurs as agents have private information which hinders principal from making right selection of agents (Woodbine, 2008) . Moral hazard occurs when the principal is unable to observe agent's efforts when performing the assigned task as a result the agent is tempted to shrink. Researchers have pointed out three types of risk attitudes in this theory: risk loving; risk neutral and risk averse. These risk attitudes have different degrees of influence on contractual relation between two cooperating parties.

Agency theory provides a better platform for solving agency problems (asymmetric information and goal conflict) through different mechanisms like monitoring and rewarding/incentives systems (Jensen and Meckling, 1976). Further discussion of these mechanisms is presented in the section below.

2.4.0 Agency assumptions

2.4.1 Human assumptions

The theory highlights problems that can arise when human beings are working together. Different human beings have different risk attitudes (some are risk averse, neutral, and loving). The bounded rationality, self interest and goal conflict are the variables under agency theory that are highly associated with the nature of different human beings (Eisenhardt, 1989).

2.4.1.1 Bounded rationality

Human beings entrusted with power to make decisions face problems of having limited cognitive capabilities and incomplete information. These two limitations affect cooperating parties from writing and signing a comprehensive contract that takes into account all possible contingencies (Gulbrandsen, 1998). Bounded rationality entails that it is difficult for people either to have complete information or even difficult to process all the information they may have. Although decision makers like managers would like to make rational decisions, they find themselves unable to do so due to less information and communication inability. In real situations, business environment is very dynamic and it is difficult for contracting parties to include all contingency events that may happen in the future when signing a contact ex ante (Rindfleisch and Heide, 1997). To sum up, bounded rationality implies that people find it hard to process all information even if they have the required information when making decisions. This compromises the ability to make rational decisions when signing a contract for the cooperating parties.

2.4.1.2 Self interest

This is the attitude of human beings which implies seeking individual benefit at the expense of another party in the cooperation. In the absence of sanction each partner will strive to work to achieve his/her own interest (Logan, 2000).The performance of any collaboration/partnership is enhanced if all partners have common interest. Presence of asymmetrical information provides a room for opportunism for one partner to exploit benefits of cooperation at the expense of another (Parker and Hartley, 2003) .The situation can be resolved through behavior based contractual form.

Some studies relate the problem of self interest to free riding problem. That is, how free riding among particular value chain members leads to failure to achieve value chain's objectives (Heide and John, 1990). Also in other perspectives like transaction cost theory, self interest problem is related to opportunism which is mainly caused by bounded rationality, asymmetrical information and uncertainty (Williamson, 1975 and 1985)). According to Williamson, opportunism refers to self-interest seeking with guile.

2.4.2 Organizational and Informational assumptions

2.4.2.1 Information Asymmetry

This refers to a situation whereby information is available but not equally shared among the parties (principal and agent). This creates problems to parties engaging in a particular relationship (Douma and Schreuder, 2008). According to Eisenhardt (1989), asymmetric information leads to two main informational problems: Adverse selection and moral hazards.

Adverse selection

Refers to the ex ante informational problem whereby one party has more information than the other party when dealing with a certain task (when signing a contract). In Principal-agent perspective, adverse selection is regarded as to when agents misrepresent information on their performance ability or qualification criteria (Arrow, 1985). It is more challenging for a principal to determine the real ability and knowledge of agent ex ante before signing a contract for a specific task. Examples of this situation are: when a job candidate hides some of his / her information during a job interview purposely in order to get the job; When a person going for health insurance gives wrong information about his/her health in order to be charged less insurance premium.

Moral hazard

Refers to an ex post informational problem that is revealed on actions that take place after the two parties have agreed to perform a certain task. It is difficult for a principal to observe actions / behavior of the agent in performing a contracted task (Holmstrom, 1979). Some agents portray behavior like shirking and free riding whose impacts are to reduce the welfare of principal (Holmstrom, 1979).

Taking into account of both, inability of principal to observe agent's actions and natural self interest of human behavior (agent), then the principal faces more challenges in ensuring that his/her objectives are achieved in a specific collaboration (Eisenhardt, 1989). Eisenhardt (1989) ascribed this situation to two factors that are explained in the next section: Goal conflict and uncertainty.

2.4.2.2 Goal conflict

The existence of goal conflict is centered on thirsty of one party to attain the highest utility/return while dissatisfying the counterparty (Saam, 2007). Difference in goals of the parties in a contract lead to goal conflict between them. Generally, many studies reveal that agents strive to maximize their utility at the expense of principals (Barney and Quchi, 1988; Brown and Potoski, 2003) . In absence of goal conflict each party sticks to agreed obligation and benefits one another.

Goal conflict can be obscured in different situations like: when two parties have conflicting rules and practice in governing a relationship (Thompson and Jones 1986; Braun 2003) or having conflicting objectives to be attained in a relationship (Blomberg, 2001; Penska and Thai, 2000).

Agency theory provides a number of mechanisms that can be used by principal to solve agency problems. Examples of such mechanisms are: establishing a board of directors, reporting system and monitoring.

2.4.2.3 Uncertainty

Williamson (1975) explained uncertainty as the situation whereby the contracted parties are unable to forecast unforeseen future contingencies that may have impact on their contracted transaction. One party can take advantage of the unforeseen contingency in contractual terms that results into opportunism (Ellram and Billington, 2002). The concept of uncertainty is related to risk aspects in principal agent theory. Performance of the agent depends on two

factors: situational factors and weather conditions (external uncertainty) and the effort of the agent (behavioral/internal uncertainty). Both principal and agent make ex ante consideration of the risk from a particular collaboration and their own risk preferences before signing a contract (Bergen et al., 1992). Uncertainty can be categorized into two streams: internal and external uncertainty

Internal Uncertainty

Under principal agent perspective, internal uncertainty is the behavioral uncertainty of the agent whose main causative is asymmetric information. Principal cannot determine ex ante if the agent has the right ability to deliver expected performance and also sometimes the principal cannot observe agent's behavior during execution of the assigned task (Fama and Jensen, 1983). Asymmetric information leads to false information been communicated to principal by the agent (Bergen et al., 1992). With respect to this study, some farmers (agents) can deliver false information to buyers (principals) like:

➢ Pretending to have used the required long drying time while they (farmers) have used shorter drying time.
➢ Using other cheap pesticides and sending reports to buyers showing that they have used the prescribed pesticides.
➢ Sending reports showing that they have used the required fermentation, warehousing and transportation facilities while in reality they have gone for cheap facilities.

External uncertainty

This is also refereed to environmental uncertainty whereby performance of the agent is subject to some situational factors and weather conditions (incase of agricultural products-coffee). Factors like changes in demand/marketing situations, changes in technology, changes in weather conditions and changes political factors contribute significantly to external uncertainty (Bergen et al., 1992). It is difficult for the principal to evaluate his/her agent's performance due to the surrounding uncertainty and attitudes of human beings like self-interest and bounded rationality (Noordewier, John, and Nevin, 1990). Also the presence of external uncertainty leads to more challenges between principal and agent in designing a complete contract (Bergen et al., 1992). In this study both, principal and agent face external uncertainty with respect to changing global coffee price and global coffee supply. This makes it more difficult for both parties to forecast the price of coffee.

2.5 Mechanism of Agency theory to solve agency problems

2.5.1Mechanism for solving adverse selection problems

2.5.1.1 Screening

Establishment of clear strategies helps the principal to determine a real behavior of agent and enables him/her to make a decision according to principal's needs. Some studies point out the usefulness of observation through tracing back the history of the agent, extensive interview between agent and principal and establishment of centers to be used for assessment even though the costs is upon the principal (Bergen et al., 1992; Spence, 1974).

2.5.2 Mechanism for solving moral hazard problems

2.5.2.1 Monitoring systems

Activities done by agent can be monitored through a well established monitoring system. Effective monitoring system binds agent to perform his/ her duties in accordance to principal interest. Principal needs to monitor agent with respect to behavior and output by using frequent reports, inspection and additional levels of management. It is cost-full to ensure all these mechanisms in place, some researchers like Saam (2007) propose that the use of incentives compensation systems as a method of monitoring agent performance, is better and less costful.

2.5.2.2 Bonding

In this mechanism the agent takes an initiative to bind himself to certain obligations and monitoring. Agent makes commitment for sharing certain information with the principal. Farmers could make commitment to timely deliver reports and required information to buyers like drying time, pesticides used and reporting any new insects affecting coffee plants. Agent could sign agreement stipulating sanctions that will take place in case of commitment violations (Jensen and Meckling, 1976).

2.5.3 Mechanism for solving both adverse selection and moral hazards

2.5.3.1 Incentive compensation schemes

Several researchers insist the use of well designed incentive systems to solve agency problems (Jensen and Meckling, 1976). Incentive systems give a room for both principal and agent to co-align their interest as both get rewarded from their actions. When it is more expensive and

challenging to use monitoring, the principal is advised to go for incentive systems. The principal should make tradeoff between agency cost and increase in returns as implementation of incentive system brings some costs to principal and distribute risk to the agent as well (Saam, 2007)

2.5.3.2 Signaling

Signaling refers to the situation whereby the agent is doing some activities in order to convince the principal that he/she is the right type of the agent the principal is looking for (Bergen et al., 1992). This helps the principal to know his agent's risk preference and ability to deliver expected performance. Signaling helps the principal to know hidden characteristics of the agent which determines agent's ability to deliver the required performance (Spence, 1974; Grinblatt and Hwang 1989; Saam, 2007). Under Signaling, agent is the one that incurs costs such as paying for training costs in order to acquire required knowledge by principal so as to be considered for selection.

2.6 Chapter Summary

In this chapter, an overview of agency theory has been discussed as the main theory guiding this study. Historical context and assumptions of principal agent theory have been presented. Agency problems with their recommended mechanisms have also been discussed. Coffee supply chain in Tanzania is presented in the next chapter.

CHAPTER THREE

AN OVERVIEW OF COFFEE INDUSRTY IN TANZANIA

3.1 Introduction

This chapter gives an overview of origin, production capacity, domestic consumption and the marketing system of coffee in Tanzania. Also, historical overview and characteristics of the two main buyers from Kilimanjaro are discussed.

3.2 Origin of Coffee

Coffee crop was firstly introduced in Kilimanjaro region by Catholic missionaries in 1898. Later on coffee production was introduced to Kilimanjaro's nearby regions that have relative weather conditions, an example of such regions is Arusha. In Kilimanjaro region coffee plantations are mainly grown on the slopes of Mount Kilimanjaro while in Arusha region coffee is mainly grown on the slopes of Mount Meru. Due to the growing economic importance of the crop, government conducted research on other areas where coffee could be introduced. This led to further introduction of coffee to southern highlands of Mbeya and Ruvuma, and to Lake Victoria zone in Kagera region. Robusta grows better in altitude ranging from 800 to 900 meters above sea level while Arabica plantations grow well in altitude ranging from 1000 to 2500 meters above sea level.

3.3 Tanzania Production and Consumption of coffee

90% of coffee production is done by small holders (farmers) while 10% of the coffee is grown by estates. It is estimated that 2.4 million of Tanzania's population represents stakeholders dealing with coffee production, among others such stakeholders include farmers.

In 2000s, production of coffee in Tanzania varied from season to season due to farmers being discouraged by lower price on the previous seasons and weather changes. Average production of coffee in Tanzania from 2001-12 is illustrated in figure 3.1 below.

Figure 3.1 Tanzania's coffee production 2001-2012
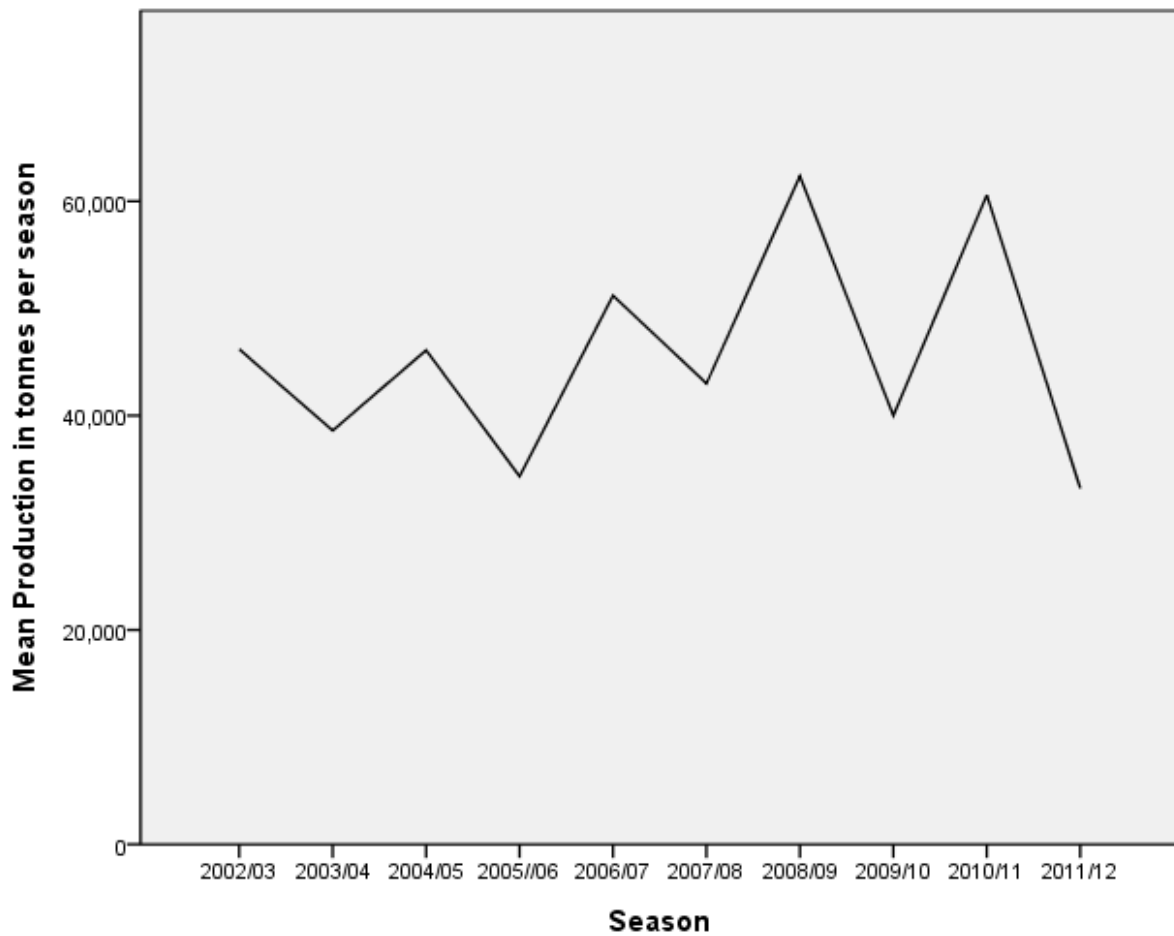
Tanzania experienced highest coffee production during late 1990s as price of coffee was very high by then. Due to the declining price, less incentives from buyers and less support in terms of tools from buyers, production of coffee in Kilimanjaro region dropped significantly by 69% in 2007/08 season as compared to 1997/98 season (11325 tonnes were produced 1997/98 while in 2007/08 only 3495 tonnes were produced).

The leading Coffee growing regions in Tanzania are Kilimanjaro, Arusha, Mbeya, Ruvuma and Kagera. 70% of Tanzania coffee production is Arabica type which is grown in Kilimanjaro, Arusha, Mbeya and Ruvuma and only 30% of country's coffee production represents Robusta type of coffee which is grown along lake Victoria areas in Kagera region.

These regions have favorable weather conditions for growing coffee and they are shown in figure 3.2 below.

Figure 3.2 Coffee cultivation in Tanzania
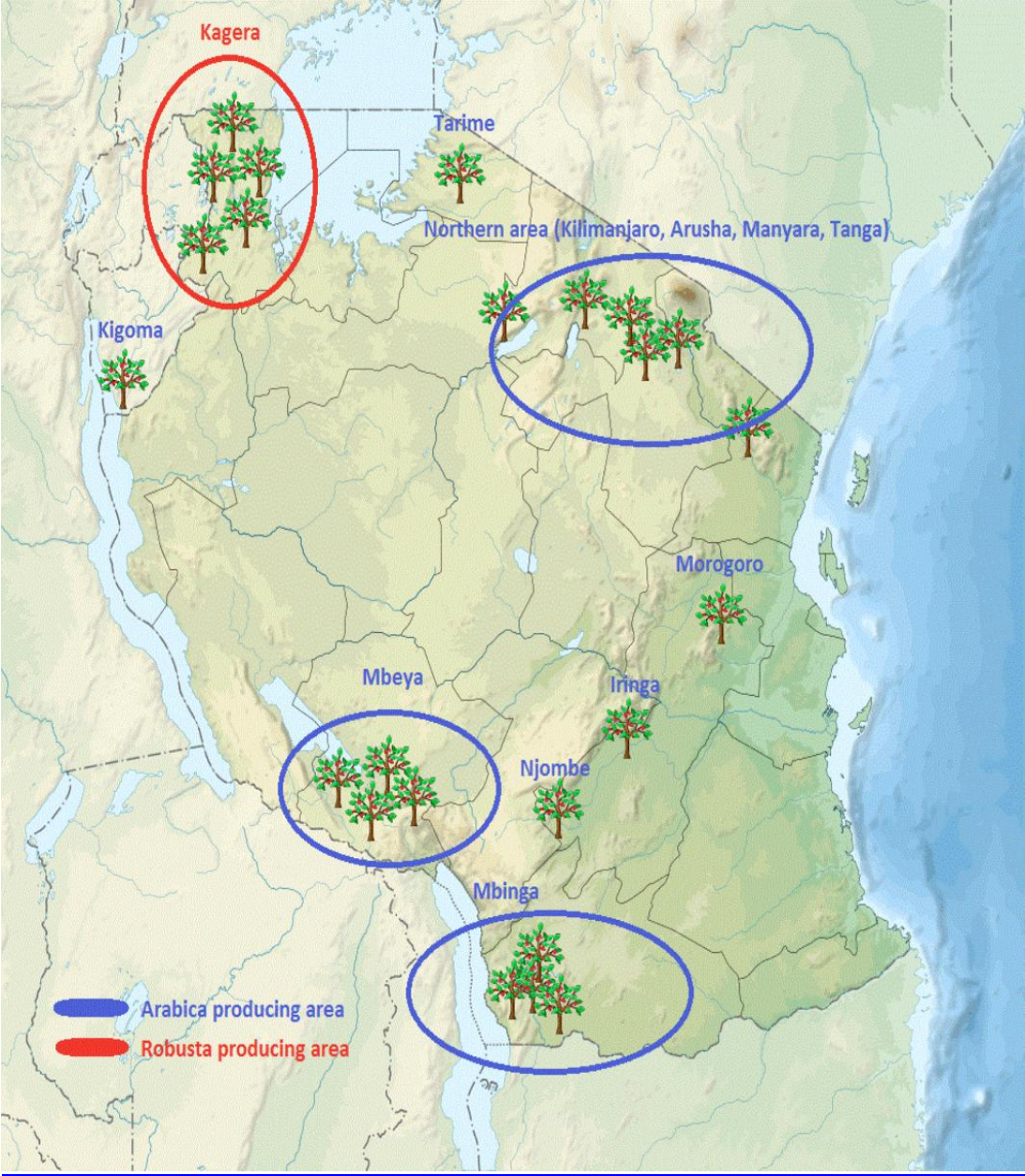
Coffee beans are always harvested between July and December in Kilimanjaro, Arusha, Mbeya and Ruvuma regions while in Kagera region coffee beans are harvested between May and October. Coffee production in Tanzania is mainly for exportation, however, the Tanzania Coffee Board has been promoting domestic consumption of coffee as the way of increasing market. Domestic consumption of coffee has risen from 2% in 2003 to 7% in 2012. Tanzania

has adopted British system of grading coffee which depends on shape, size and density. Grades used in coffee beans are AA, A, B, PB, C, E, F, AF, TT, UG and TEX.

3.4 Coffee marketing system in Tanzania

In early 1933 up to 1992 KNCU through various unions was the only coffee buyer from farmers. It was also responsible for providing inputs, shipment and training to farmers (Baffes, 2005). On the other hand Tanzania Coffee Board (TCB) had overall control of coffee market in Tanzania and used to purchase all coffee from KNCU. In this era TCB was the only organization allowed to export Tanzania coffee abroad. Thus, TCB had monopolistic buying power over all cooperative unions as a result coffee industry lacked competitive pressures.

3.5 The coffee market reforms

In 1992 Tanzania adopted free trade policy which allowed a number of buyers to purchase coffee direct from farmers. This resulted to emergence of buyers like AKSCG, DORMAN who are competing with already established buyer like KNCU. Due to cut throat competition among buyers then government gave more power to TCB in 2001 as the organization to regulate all stakeholders in coffee production and marketing in order to have a sustainable coffee industry. The existence of reforms has led to more competition among actors on price and quality that can be collected from farmers.

3.6 Historical overview of the two buyers

KNCU is one of the earliest Africa's coffee cooperative unions founded in 1933 by coffee farmers living on the slopes of Mount Kilimanjaro purposely to market coffee. Although KNCU used to be successful in marketing coffee, it experienced high financial loss and poor efficiency in 1970s as a result government banned its operation. Later in 1984, government decided to revive its operation but now operating as farmers' private organization no longer receiving any subsidy from government. This decision was made in order to ensure high level of efficiency in its operation. KNCU used to have more than 100,000 members from more than 200 local cooperatives in 1990s though due to massive decline in coffee price, farmers free ride and farmers decisions to abandon coffee plantations in 2000s coffee global crisis, number of active members dropped dramatically and some of local cooperative societies were closed.

After adoption of free trade in 1992, KNCU experienced tough competition from DORMAN whereby more KNCU farmers used to free ride (by selling their coffee to DORMAN). DORMAN was/is a private coffee buyer that operates with a different business model in buying coffee from farmers. Unlike KNCU, DORMAN does not maintain a relationship with farmers through a primary society but just wait for harvesting period and campaign to buy coffee from farmers at a relatively higher price than KNCU.

Following 2000s global coffee crisis, a number of farmers decided to uproot their coffee trees as the prices offered by both KNCU and DORMAN were not sufficient even to cover production costs. As a result ten farmers' groups from Kilimanjaro decided to find an alternative way of growing and marketing high quality coffee by establishing AKSCG in April 2001. Producing coffee of high quality was the only solution proposed by these farmers in gaining high prices in the global market. During establishment AKSCG gained support from Technoserve and USAID. By 2004 AKSCG had more than 130 primary associations and also since its establishment it has been able to offer more than 20% higher price to its farmers as compared to KNCU farmers (see figure 3.3 showing average prices for both KNCU and AKSCG from 2002-2012). As the global coffee market is now focused on quality then competition in buying coffee from famers (Kilimanjaro region) is now between KNCU and AKSCG followed by DORMAN and other private buyers due to their business models.

Figure 3.3 Bar chart showing average price paid by KNCU and AKSCG from 2002-2012
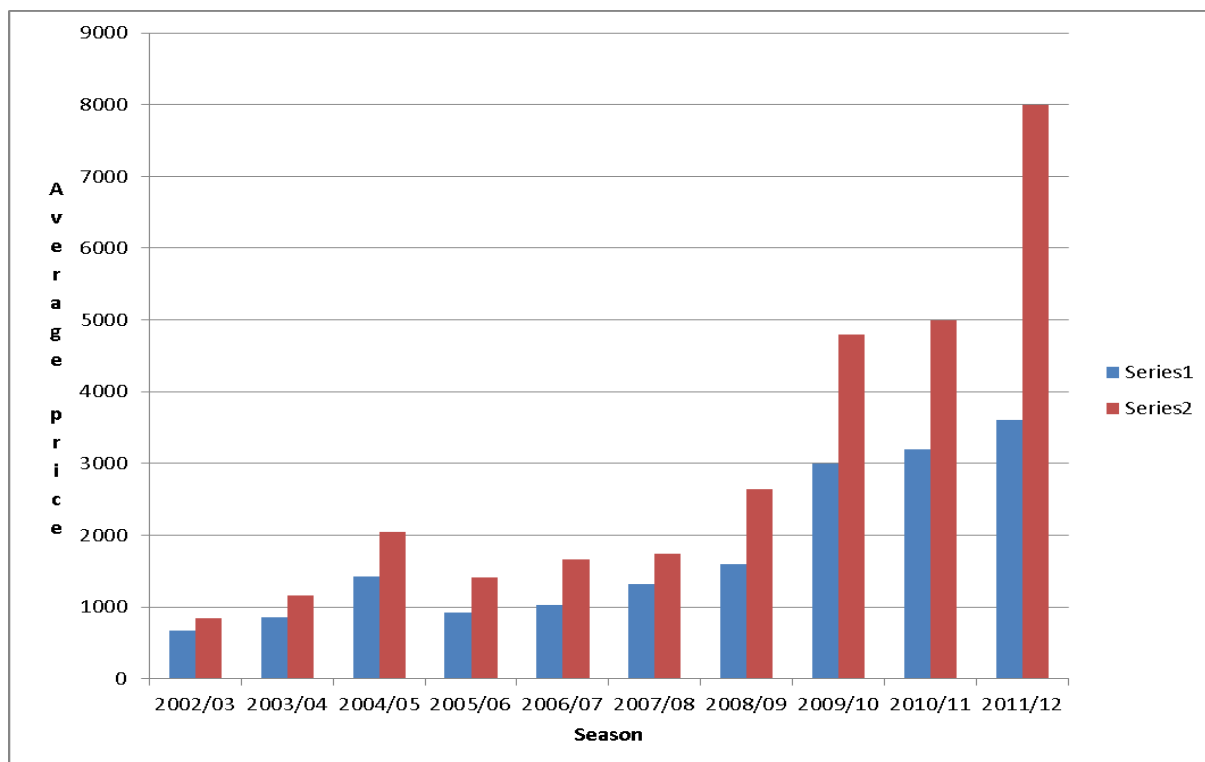
Source: Illustrated based on data collected in field (2013)

Key:

Series 1= Average price paid by KNCU (Tshs/Kg)

Series 1= Average price paid by AKSCG (Tshs/Kg)

Table 3.1 provides explanation of the two buyers with respect to information exchange, pricing system, free riding problem and monitoring. These variables give an overview of how buyers manage their relationships with respective farmers groups.

Table3.1 Characteristics of the two main buyers (KNCU and AKSCG)

FACTOR	AKSCG	KNCU

Information exchange	This buyer has a well established information sharing and reporting system with its farmers through SMS (phones) • It always posts account information like total collections and deliveries, sales from each auction and coffee grades. • Farmers are always informed on how and what type fertilizers and pesticides to be used. • Farmers are trained on how to perform better these activities: picking, pulping, washing, fermentation, washing, drying and cherry sorting	• This buyer rarely provides information feedback and training s to its farmers • Then, information sharing is expected to have more effect in improving performance of KNCU
Pricing system	This buyer uses performance based pricing system as farmers are paid depending on the level of coffee quality supplied. This is a self monitoring system as farmers get punished themselves by delivering coffee of lower quality.	All farmers are paid the same price even though coffee quality may differ among themselves. As a result its farmers care more about quantity than quality.
Free-riding problem	• Farmers are not tempted to free ride as they are paid depending on the level of coffee quality supplied by them. Also as shown in figure 3.3 AKSCG has been able to pay higher price to its farmers compared to KNCU which reduces possibility of farmers to free ride. • With its well established information	• Farmers are more tempted to free ride due to uniform price paid to them. It is difficult to detect free ride among farmers due to poor reporting system and information sharing. • Thus, monitoring supported by sanctions (if deemed necessary) is expected to have more effect

	sharing system then it is easier to detect free-ride in AKSCG than KNCU as a result less monitoring is required in AKSCG.	on performance of KNCU.
Monitoring	• The use of performance based pricing system acts as self monitoring system for AKSCG farmers as a result monitoring is not expected to have more effect in improving AKSCG's performance. • Also, due to a well established information sharing system, AKSCG rarely inspects coffee quality though it provides frequent feedback and establishes management level (supervisors) at each association for quality assurance	• Use of a uniform price means that farmers are not punished themselves by delivering coffee of relatively lower quality as a result KNCU highly emphasizes on inspection of fermentation units, transportation facilities water used and of coffee bags to ensure quality of coffee supplied. • Hence, monitoring (supported by sanctions if deemed necessary) is expected to have more effect on KNCU performance

Source: Authors` own table based on (Parrish et al., 2005)

3.8 Chapter summary

In this chapter discussion on the origin, production and consumption of coffee has been made. The marketing system and market reforms of Tanzania coffee industry have been presented. Also historical overview and characteristics of the two main buyers in different aspects like information sharing, pricing system, free ride and monitoring have been discussed. In the next chapter, research model and hypotheses are discussed.

CHAPTER FOUR

RESEARCH MODEL AND HYPOTHESES

4.1 Introduction

This chapter gives an overview of the research model and hypotheses developed for this study. The hypotheses of this study have been formulated from the research model that seeks to explain factors affecting quality performance of coffee between two buyers organizations based on broad discussion of principal agent theory in chapter two and discussion of coffee industry in Tanzania as presented in the previous chapter. The illustration of the research model for this study is presented in figure 4.1. Although there could be many factors affecting performance between the two organizations, this study aims at testing some of them as shown in the model (figure 4.1). At the end of chapter, a thorough discussion of control variables included in the model is made as they help to alternatively explain variations in the endogenous variables in this study.

4.2 Overview of research model

Research model of this study shows how different factors affect performance between the two organizations as illustrated in figure 4.1. This research aims at testing the effects of the named independent variables on the dependent variable, focusing on how the developed independent variables affect performance between the two organizations. In this study, dependent variable is agent's quality performance (PERF) which is influenced by the following independent variables: information sharing (INFO), monitoring (MONT) and negative external influence (EXTI). These variables will be tested and the results will be examined to explain factors affecting performance. For example, we expect monitoring to have more effect in KNCU than AKSCG as there is lesser information sharing in KNCU than AKSCG.

The research model is formulated to determine the effects of the named independent variables on performance of the two buyer organizations by using dummy variable (0=AKSCG and 1=KNCU). Then we measure the effects of information sharing, monitoring, and negative external influence on performance of each buyer.

Figure 4.1: Research Model

Hypothesized effect   ⟶

Control effect   - - - - ->
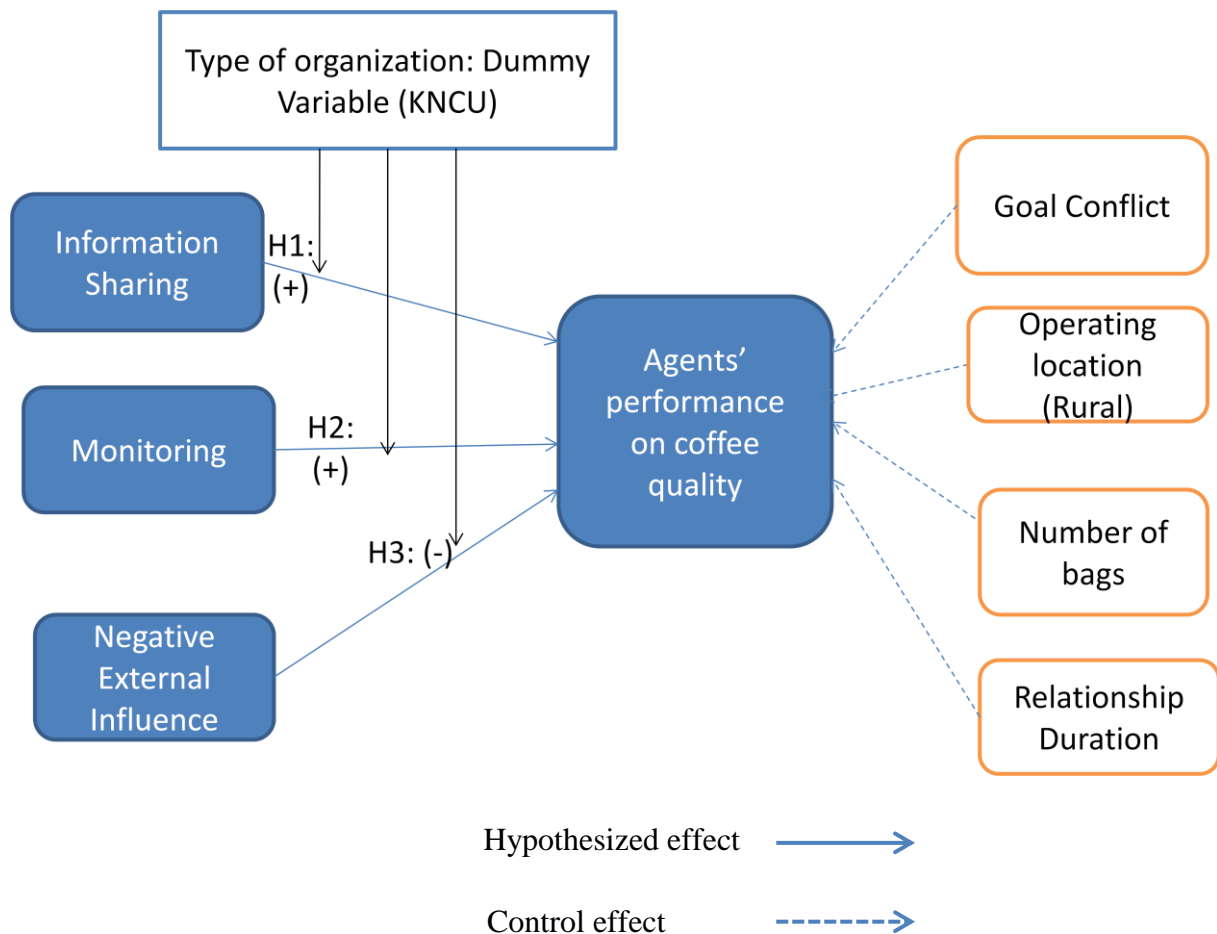
Source: Own source

4.3 Research hypotheses

The research hypotheses below are constructed based on determined factors under principal-agent relationship. Literature review on information sharing, monitoring and negative external influence together with insights from coffee industry paved a way for developing hypotheses of this study

4.3.1 Dependent variable

Agent's performance

Performance is the recurring concept that has drawn attention from different disciplines like management, accounting and marketing (Venkatraman and Ramanujam, 1986; Vorhies and Morgan, 2003). Different stakeholders like managers, scholars are so interested in this theme performance. A number of empirical studies have used performance when observing different strategic and process matters in organization (Ginsberg and Venkatraman, 1985).

Performance can be measured by using different dimensions like financial indicators based on objective data, operational indicators based on perceptual data or by using both financial and operational indicators. Different indicators are used to measure performance from financial perspective like: changes in revenue, changes in profit, and changes in price/value per share for a specific company, changes in cash flows, and ROI-return on investment. It is difficult to get access to financial data due to confidentiality (especially in private companies).

When performance is measured from operational perspective, it refers to likes of: quality of product, customer satisfaction, value added in goods/services, technological improvement and marketing efficacy. It is less difficult to get access to perceptual data as their level of confidentiality and sensitivity is less compared to financial data (Venkatraman and Ramanujam, 1986).

Objective performance data have no biasness and thus makes them more reliable than perceptual data. However, according to different researchers, perceptual performance data can also reflect degree of objectivity when they are subjected to different statistical validity and reliability tests (Dess and Robinson, 1984).

This study is concerned with agent's performance based on operational data. Study is centered on quality of coffee produced by farmers. In this study agent's performance is a dependent variable which is influenced by different independent variables like information sharing, monitoring and negative external influence. According to literature review, we expect monitoring and information sharing to have more positive effect on the performance of KNCU than in AKSCG while negative external influence has more negative effect in KNCU than in AKSCG (Jensen and Meckling, 1976; McQuiston, 1989; Eisenhardt, 1989 and Wright, 2004). We expect that a better combination and application of these factors will enhance

quality performance of farmers. Next section presents discussion of these independent variables.

4.3.2 Independent variables

4.3.2.1 Information sharing

Information means organized and specific data with meaning for a certain purpose (Glazer, 1991). Information is a key tool in proper facilitation of any operation/activity. Information can also be taken as a commodity that can be exchanged among the parties. To ensure proper exchange of information in a relationship, parties are required to have a well established communication system among them (Eisenhardt, 1989; Chou, Chen, and Pu, 2008). A well established communication system is required to ensure strong relationship between principal and agent (Glazer, 1991). The more timely and accurate sharing of information among parties the stronger the relationship and the more possibility for achieving common objectives. According to Glazer (1991), the nature of tasks done by the agent or extent of authority delegated to agent determines the different types of information required to ensure that common goals are achieved. This study emphasizes on timely sharing of information between farmers (coffee suppliers-agents) and buyers (principal) with respect to: market information like price, progress of coffee production, time required for drying in every season, required quality of coffee, and cash bonuses. Effective information sharing systems will have positive impact on performance of agents in the field.

- The presence of high level of information sharing in AKSCG through training, a well established reporting system and providing feedback to farmers has helped the organization to easily detect free-ride whose impact is to deteriorate performance. Also, timely information sharing between principal and agent would enhance performance of the agent in the assigned task.
- Training farmers on different aspects like how to perform well pulping, fermentation, washing, drying and cherry sorting plays a key role in ensuring quality on coffee (Parrish et al., 2005). As KNCU rarely provides feedback and trainings to its farmers then we expect information sharing to have more positive effect on performance of KNCU. From this discussion we propose the following hypothesis.

H1: There is a more positive effect of information sharing on performance in KNCU than in AKSCG.

4.3.2.2 Monitoring

A number of studies have been conducted based on agency theory on how mechanisms suggested by this theory can be used to improve performance (Welbourne, 1995). Buvik and Rokkan (2003) shows how monitoring could have different impacts in the performance of voluntary chain members, whereby more monitoring could lead to more alignment of individual members to the collective goal while in other case it could lead to more freeriding problem among agents. Buvik and Rokkan (2003) also highlights on behavioral uncertainty among agents and the eventual performance evaluation problem. Holmstrom (1982) also urges that free ridding by agents is caused by moral hazard and principal's inability to observe efforts devoted by the agents in performance due to asymmetric information. As a result many researchers have tried to find out how principal can solve problems arising from moral hazards and one of most recommended ways is monitoring of agents' actions (Holmstrom 1982; Whynes, 1993). Also researchers emphasize on the importance of using monitoring in minimizing agents' opportunistic behavior (free ride) and subsequently improving their performance (Buvik and Rokkan 2003; Eisenhardt 1989). Although monitoring is perceived to have more positive impact on performance in some few case some agents may resists to principal 's monitoring as they see that principal have no trust on them or they don't like to be monitored hence leading to lower performance (Welbourne, 1995; Buvik and Rokkan, 2003; Tosi and Gomez-Mejia, 1994).

Principal needs to establish monitoring mechanisms that can ensure that agents behave in the best interest of principal (Jensen and Meckling, 1976; Eisenhardt 1989). Principal has to ensure proper observation of agents' actions when performing the agreed task. Buvik and Rokkan (2003) suggest the use of monitoring as the way forward of improving performance of members of voluntary chain.

- Use of performance based pricing system in AKSCG acts as a self monitoring system as farmers get punished themselves by delivering coffee of low quality. As KNCU uses uniform pricing then there is no self monitoring system as a result monitoring would have more effect on its performance.

- Also, monitoring of all processes from growing, harvest and further processing is crucial for quality assurance. Buyer organizations should work closely with farmers to ensure that clean water is used in washing coffee beans. Buyers should engage in managing fermentation process which is a very important stage in maintaining coffee's quality.

- Provided that there is higher level of information sharing in AKSCG than KNCU then, it is easier to detect free ride in ACKCG than KNCU whose impact is always to deteriorate performance. Thus we expect monitoring to have more effects in detecting free ride and thereafter improving performance. From this perception we propound the following hypothesis.

H2: There is a more positive effect of monitoring on performance in KNCU than in AKSCG.

4.3.2. 3 Negative External influence

External influence refers to the situation whereby communication given by one party for consideration deliberately affects the actions of other parties (Mc Quiston, 1989). In this concept an organization's decision could be interfered / influenced by actions or decisions of other interested parties (government). Marketing and resource management researches show that relationship between farmers and buyers is always influenced by likes of government and surrounding society (Markelova and Meinzen-Dick, 2009).

In this study we focus on negative external influence although external influence can be either positive or negative influence (Chen et al., 2006). Government has a great role in influencing agricultural activities in developing countries through policy making, legal procedures and supporting farmers. Also farmers face some pressure from different local organizations and local politicians in key decisions like which crop should be given priority in a particular period (Lele, 1981)**.** For example, during time of hunger and famine it is more expected that local politicians will pressurize farmers to grow more food crops than cash crops like coffee. When government, local organizations and local politicians call for likes of the following: Use of more land for food crops, more emphasize on quantity than quality of coffee, use of water for other activities and less water for cleaning coffee. All of these negatively impact on quality performance of farmers in coffee.

- The use of performance based pricing system in AKSCG makes farmers to resist negative external influence posed to them by taking some initiatives in finding best alternatives without impairing coffee quality. For example, in 2009 Kilimanjaro region experienced water shortage as a result water supply organization restricted farmers to use more water for washing coffee. In response to this AKSCG farmers decided to construct their own water well/dams as alternative source of water.

- Also when other private buyers and stakeholders campaign on farmers to free-ride their original coffee buyer (sell their coffee to other private buyers), AKSCG famers find it more difficult to free-ride due to a well established information sharing system and performance based pricing system. From this discussion, we propose the following hypothesis:

H3: There is a stronger negative effect of negative external influence on performance in KNCU than in AKSCG.

4.3.3 Control variables

In order to avoid misspecifation in our study we have incorporated the following control variables: relationship duration, number of bags, location of organization and goal conflict. Some variations in the endogenous variables can alternatively be explained by these control variables. We expect a positive association between quality performance and the following control variables: relationship duration, location of organization been close to farmers-rural. We also hypothesize the negative association between quality performance against number of bags and goal conflict.

Relationship duration

Relationship duration implies the number of years that two parties in a specific relationship have worked together within a certain time frame (Buvik and Halskau, 2001; Heide and Miner, 1992; Buvik and John, 2000). The more time partners spend in a relationship the more possibility of developing trust, norms and personal relationships that are expected to enhance the quality of relationship (Macneil 1980; Buvik and Halskau 2001). One of the reasons for parties (principal and agent) to engage in a relationship for a long period is due to quality satisfaction from each party like: when a farmer delivers high quality of coffee (Agent) or when a buyer delivers required support to farmer on time (principal).

Location of organization

As many farmers are located in rural areas, we could expect to have primary society/association close to them for effective monitoring. When a primary association is located in urban area while farmers are in rural areas then it is difficult for a buyer (principal) to observe actions of the agents (farmers). Close location between farmers and primary association helps to minimize internal uncertainty faced by principal as he /she can easily

evaluate performance of the agents. Then we expect high quality performance for farmers when more primary associations are located in rural areas.

Number of bags

Many scholars in agricultural literature highlight how farmers can increase quantity of their cash crops at expense of quality (Olmos and Martínez, 2010). There is always a tradeoff between quantity and quality in cash crops cultivation. Then we expect existence of a negative association between number of bags and quality performance of farmers

Goal Conflict

Goal conflict refers to the situation whereby two or more cooperating parties have different interests/goals in attaining a certain cooperative objective (Slocum, Cron, and Brown, 2002). This is one of the main causatives of agency problem as reported by many researchers in principal-agent theory (Eisenhardt, 1989). Goal conflict is experienced when principal and agent have different interests and each of the two wants to maximize individual returns (profit) (Saam, 2007). For example, a principal would like to maximize profit by delivering high quality products while agent could be interested in minimizing costs of production even at the expense of quality impairment. Goal conflict can be reflected in different situations like: having conflicting procedures on how to perform a task, conflicting rules and practices, conflicting policy and conflicting objectives (Penska and Thai, 2000; Blomberg, 2001). Goal conflict can also be experienced in this study as some of farmers would like to maximize quantity of coffee at the expense of quality or when farmers want to use cheaper warehousing and transportation facilities, cheaper pesticides and fertilizers at the expense of quality.

Though both principal and agent could agree on the rules to be adhered in performing a task, still an agent could implement the agreed rules in different ways (Schapper, Malta, and Gilbert, 2006). We can also expect a mismatch between agreed rules and implementation between farmers and buyers due to conflicting interests. Therefore, cooperating parties can fail to attain expected performance solely due to goal conflicts among them (Wright, 2004). Research suggests that, goal conflict has negative impact on performance (Slocum, Cron, and Brown, 2002). Therefore, we expect a negative association between goal conflict and performance.

4.4 Chapter summary

An overview of research model and hypotheses has been presented in this chapter. Literature review on agency theory and discussion in a previous chapter has been used in developing research model and hypotheses. Three hypotheses have been developed from the research model and they will be subjected to statistical testing in chapter eight. Discussion of control variables has also been presented. Research methodology applied in this study is discussed in the next chapter.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 Introduction

This chapter gives an overview of empirical research setting, research design and questionnaire development for this study. Research design section clearly describes rationale used in choosing cross sectional research design as the research design applied in this study. Then the last section of the chapter describes questionnaires development and data collection procedures adopted in this study.

5.2 Empirical research setting; Coffee industry in Tanzania

5.2.1 An overview of the industry

The Tanzanian coffee industry provides living for 6% of the country's population (2.4million represents coffee farmers out of estimated 40 million country's population) and still the industry provides employment to people who are dealing with different activities like transport, warehousing, selling of coffee farming tools , processing, marketing and exporting of the coffee product. There are five main regions growing coffee in Tanzania: Kilimanjaro (on the slopes of Mount Kilimanjaro); Arusha (on the slopes of Mount Meru); Mbeya; Ruvuma and Kagera. Out of the five regions, only Kagera is growing Robusta and the rest grow Arabica type of Coffee**.** It is estimated that 265,000 hectares are used in growing both Arabica and Robusta.

Coffee is the main cash crop for exportation in Tanzania compared to other cash crops like cotton, tobacco and sisal. The crop contributes significantly to both foreign currency and GDP (Gross Domestic Product). Due to its importance in Tanzania economy, TCB was established in 2001 as the government organization for regulating both production and marketing of coffee all over the country. Provided coffee is one of cash crops that is highly attacked by insects and diseases, TACRI (Tanzania Coffee Research Institute) was established to undertake research on any insects and disease affecting coffee farming, coming up with recommended pesticides and researching on best coffee seeds that can sustain Tanzania's changing weather conditions.

5.2.2 Coffee supply chain

Coffee supply chain involves several tiers from farmers (both individual farmers and estates), intermediaries and finally end customers. 90% of coffee production in Tanzania is undertaken by small holder farmers while the rest is undertaken by estates. Picking, pulping, washing, fermentation, washing and drying are the key activities performed by both smallholder farmers and estates. Dried coffee beans are then sold to primary societies (KNCU and AKSCG), farmers groups and private buyers (Dorman). Coffee beans are thereafter milled and processed by different companies whereby 20% of coffee beans volume is lost in this stage. After milling and processing, samples of processed coffee beans are sent to TCB for auctioning. After auctioning coffee is sold to private exporters or cooperative unions licensed to export coffee (KNCU and AKSCG). Finally green coffee is sold to export market . Coffee supply chain is illustrated in figure 5.1.

Figure 5.1: Tanzania's Coffee Supply Chain
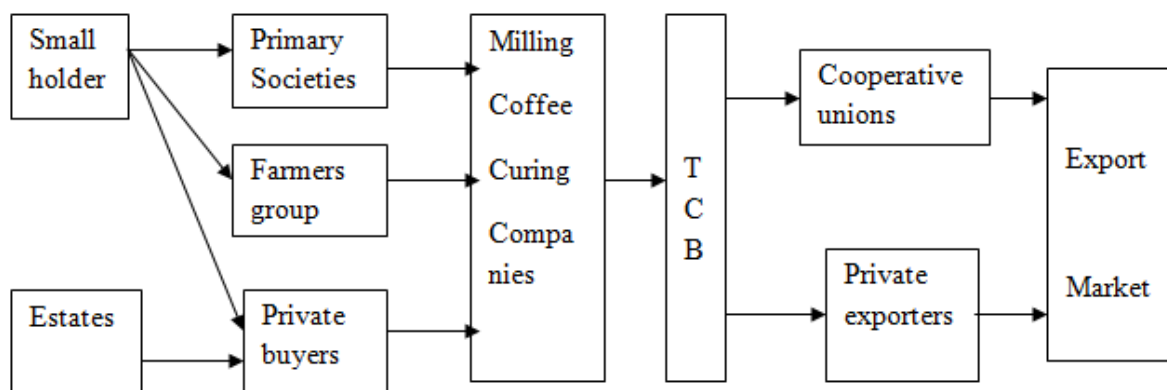
Source: Adapted from (Parrish et al.,2005)

Value creation takes place from famers to intermediaries through harvesting process, pulping, fermentation, cleaning, drying, cherry sorting, processing, milling, roasting and any further processing till coffee products reach end customers for consumption in different forms.

5.2.3 The Tanzania Coffee Board (TCB)

TCB was established through Tanzania coffee industry Act No. 23 of 2001. It is a government organization for regulating production and marketing of coffee. Its main objectives are:

- To regulate coffee industry
- To provide professional advice to government on :
    - ➢ Growing
    - ➢ Processing
    - ➢ Marketing of coffee
- To provide license for different companies undertaking different activities connected to coffee like processors, buyers and exporters.

5.3 Research design

Malhotra and Birks (2006:58) describe 6 core components that should at least be covered in a research design as a framework for the conduct of research. These components are i) defining the type of information needed in a particular research; ii) deciding on type of research design to be applied; iii) deciding on the measurement techniques; iv) deciding on how to design questionnaires; v) deciding on sampling procedures and the sample size and vi) deciding on how data analysis will be conducted

According to Malhotra and Birks (2006) there are two broad types of research, exploratory and conclusive research. Conclusive research is the one that deals with formulating and testing of hypotheses and explaining relationships between variables or constructs of the study. In this type of research key informants are clearly defined, large samples are used and data are analyzed by quantitative/statistical techniques.

Conclusive research design is then divided into two groups: Causal and descriptive research design (Malhotra and Birks, 2006).

Causal research is used in conclusive research to study the cause and effect relationships among variables through experimentation (Larsen, 2007; Malhotra and Birks 2006). Whereby descriptive research is mainly used when a researcher wants to describe a phenomenon like

characteristics of organizations (Larsen, 2007). Descriptive research can be categorized into two streams: cross sectional or longitudinal

In this study cross sectional research design is applied where by data are collected from the pre-defined sample only once. This is research design is tailored to investigate association between a set of independent variables and a dependent variable (Frankfort-Nachmias and Nachmias, 1996).

Causality is the fundamental assumption in cross sectional research design (Cook and Campbell, 1979). According to Cook and Campbell (1979) association, directionality and isolation are the three components forming causality in this perspective.

 Association means that changes in variable x must be associated with changes in variable y. *Directionality* implies that the direction of influence must be temporal that is cause (x) must precede effect (y) temporally (Malhotra and Birks, 2006). In some situations time sequence is not clear and cannot be tested statistically therefore, researchers use either theory or logical thinking (both) to explain direction of influence (McGrath, 1982). In this study principal agent theory and logical thinking have been both used in supporting the directionality of the hypotheses.

Isolation implies that no other variables that explain the association between cause and effect in our model other than the ones that have been used. This refers to elimination of other variables that could possibly explain the relation between x and y. Nature of data collection method (survey) used in cross section research design makes it difficult for a researcher to achieve a complete isolation. Recommended methods in obtaining a reasonable degree of isolation is by: isolating explanations that are not well backed by respective theory in place and incorporating sufficient number of control variables (Antonakis et al., 2010; Mitchell 1985). Location of the primary society/association, relationship duration and number of bags are the control variables in this study to elude omitted variable bias.

5.4 Validity Network Scheme

This is the approach that explains validity concepts by clarifying research question (s) through three domains: conceptual; substantive and methodological domains. It is advised that a researcher should prioritize the three domains (Brinberg and McGrath, 1985) and in respect to this study conceptual domain is given first priority followed by substantive and lastly methodological domain. This is evidenced by in-depth review of relevant theory and literature

for better understanding of the concepts behind this study. Literature review paves the way for formulating hypotheses to be tested in the methodological domain.

Substantive domain in this study is coffee industry in Tanzania which is used for testing the formulated hypotheses. Performance of coffee sector is crucial to Tanzania's economy. Coffee price depends largely on extent of quality which is essential for the growth and success of the sector. Methodological domain is used in testing hypotheses.

5.5 Questionnaire development

We conducted a preliminary study for in-depth understanding of our research problem. During 2012 summer holiday we had a trip to Tanzania where we managed to visit Kilimanjaro coffee growers and conducted some discussion on main problems they are facing. We also got familiar with main buyers and challenges they are facing .This helped us to know which variables we should pay attention in our study. For example some farmers complained on some buyers who either provide less/no any support in form of training. Also some buyers admitted that the quality problem could be attributed by less monitoring on famers' plantations and less information sharing between coffee supply chain actors.

Based on these insights we managed to conceptualize our research problem by using Principal agent theory's constructs. We spent November and December 2012 in developing questionnaires with great support from our supervisor. At times during the process we made some telephone interviews with managers of primary societies for further clarification. After a number of reviews and editing of the questionnaire, we finally came up with questionnaire for survey.

Provided English is not the national language of Tanzania, then we decided to have independent translation of questionnaire. Translation was done by TUKI (Taasisi ya Ukuzaji wa Kiswahili-National institute of Swahili) and linguistic department of University of Dar es Salaam. Different and independent linguistic experts were used to translate questionnaire from English to Swahili, then it was translated to English from Swahili. Validation of translation was performed by two selected managers of Primary associations who had fluent knowledge of both languages and checked the translation to examine if any concept of logistical nature was left out due to translation. Then we had a final compiled questionnaire translated to Swahili that was used in the field.

5.6 Population, sampling frame and sample size

One of key goals of conducting research is to be familiar with the characteristics of population through data collection. Population refers to sum of all elements that have common features for studying a particular research problem (Malhotra and Birks, 2006).

Researchers use either sample or census in understanding parameters of a particular population. Studying attributes of all elements in a population refers to census while studying attributes of only a subset of a population refers to sample. Statistics which are characteristics of sample are then used by a researcher to make interpretations on population parameters (Malhotra and Birks, 2006).

Sampling frame provides the researcher with all elements of a population from which a representative sample has to be taken out. This could be association directory, company directory, telephone directory, primary society directory, buyers' database and suppliers' database (Malhotra and Birks, 2006). To come up with a nice representative sample, a researcher should have access to a well prepared sampling frame (Fowler, 2009). In respect to this study, sampling frame involves a list of primary associations of two main buyers of coffee in Kilimanjaro region (KNCU and AKSCG). Then randomly, we selected a sample of primary associations to be visited and interviewed. We established criteria for a person who should respond to questionnaires in each association:

- He/she should be a manager or a deputy manager who has been with the association for at least 3 years
- He/she should clearly be knowledgeable of its famers group

Then we asked managers/deputy managers to answer our questionnaires in respect to their most important farmer. We reviewed each association's records for individual farmer in order to choose the most important farmer based on the farmer who consistently supplied coffee of the highest quality

There are different factors affecting determination of sample size: type of sample; availability of resources like personnel, financial support and time; and homogeneity of population (Kline, 2011; Malhotra and Birks, 2006)

KNCU has a total of more than 100 primary associations while AKSCG has a total of more than 130 primary associations. Then a sample of 80 was drawn from each organization

population. This depicts adequate representation of our sample though the most important thing is to have higher response rate.

5.7 Data collection procedures and technique

Always a researcher has to consider required response rate, survey cost and form of question in determining the most suitable data collection method according to the research environment (Fowler, 2009). In Africa context, it is hard to use internet, telephone and post office for collecting data due to poor infrastructures. Therefore, we have used personal interviews as the most effective way of collecting data in this kind of environment.

Researchers should pick respondents who are well knowledgeable of the subject matter under consideration and who are capable of communicating well (Campbell, 1955). To avoid language confusion, managers/deputy mangers with at least three years experience were given Swahili translated questionnaires.

To avoid complications of aggregating responses from multiple informants, our study is based on single informant approach like works of other researchers (Buvik and Reve, 2002; Heide and John, 1992; Buvik and Halskau, 2001). With cooperation of both manager/deputy manager and our team we managed to point out the most important farmer in his/her primary association based on consistency of coffee quality supplied by the farmer through tracing primary society's records.

We conducted personal interviews with managers of associations in rural areas of Kilimanjaro region. Each questionnaire has a total of fifty questions in a paper based form (see appendix 9). The process of data collection was conducted in January and February 2013 by both of us. It was more challenging to collect data from KNCU primary associations, thus out of 80 targeted sample we managed to have 68 responses (85%) while 73 out of 80 (91.25%) responded in AKSCG primary associations.

5.8 Chapter summary

This chapter presented research methodology applied in this study. Provided this is an empirical study, the research setting in which the study was conducted was presented. The chosen cross-sectional research design was discussed. Furthermore, a thorough discussion of sampling frame and data collection procedures and technique was made in this chapter. Next chapter explores on operationalization of variables in the study.

CHAPTER SIX

OPERATIONALIZATION OF VARIABLES

6.1 Introduction

This chapter presents operationalization and measurement of variables used in this research. Questionnaires comprised of variables of interest have been involved as part of measurement framework. Measurement in this perspective implies allocation of numbers to objects (questions) in accordance to rules in order to dictate different degrees of importance/quality of respective objects (questions) (DeVellis, 2003).

6.2 Operationalization and Measurement of Latent Variables

Latent variables refer to theoretical variables that stand for abstract phenomena which cannot be observed directly. To ensure proper observation of constructs (unobserved variables), a researcher must in first place establish clear rules of observation. The only way for a researcher to visualize unobserved variables is by clearly operationalizing them as shown in figure 6.1 and 6.2.

Figure 6.1: Construct operationalization

Source: Adapted from (Strube, 2000)

In order to observe the unobserved construct, a researcher links the unobserved construct with the observable operation (observable operation is measured by different questions in a specified scale like 7 point likert scale). Several researchers emphasize on the importance of having reliable and valid scales (Cook and Campbell, 1979; Gerbing and Anderson, 1988).

Figure 6.2: Construct operationalization of monitoring and performance
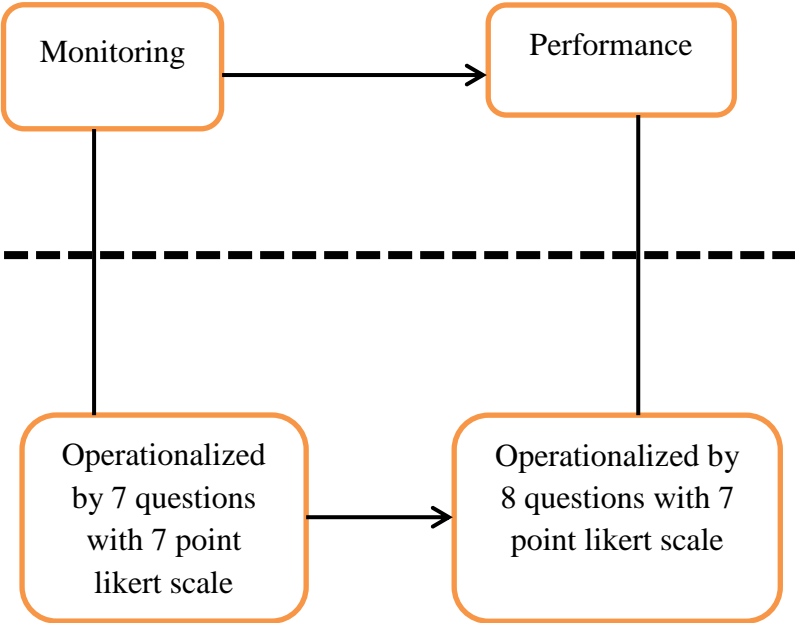
Source: Authors' own illustration based on Strube (2000)

6.3 Measurement model

Reflective and formative models are the main two types of measurement models used in measuring relationship between a set of latent variables in inter-organizational researches. In order to measure a phenomenon that is unobservable, both reflective and formative models make use of multiple indicators (Jarvis, MacKenzie, and Podsakoff, 2003).

Reflective model also known as principal factor model refers to when an unobservable construct influences more than one observed measure, thus a direction of causality starts from construct to measures. In this model, possible correlations among the observed measures are due to construct. Reliability is always ensured in this measurement model as measures are expected to portray internal consistency.

In the composite/formative measurement model, direction of causality starts from the measure to the construct as a result we don't expect internal consistency. This model demands criterion reliability and it accounts for error at a construct level (Jarvis et al., 2003).

Figure 6.3 Measurement models
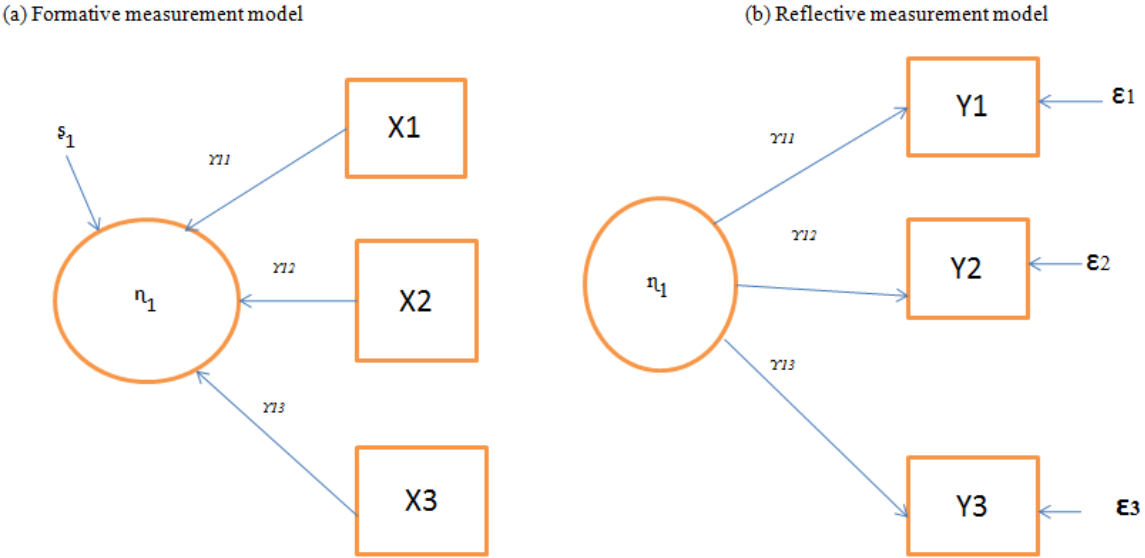
Source:(Bollen and Lennox, 1991)

To ensure effective research outcomes, researchers must be able to know when to use formative or reflective scales so as to avoid type I and type II error. Type I error emerges when a theory recommends formative /composite operationalization but a researcher chooses to go for the reflective measurement approach. Type II likewise occurs when a theory calls for a reflective operationalization but a researcher chooses to go for the formative measurement approach. In this research, constructs are operationalized as latent variables and all variables are measured as reflective scales.

6. 4 Measurement of variables

Our research model has six latent variables which have been quantified by using guidelines laid down by (Churchill, 1979). The process of validating constructs includes the following steps (Burki 2009; Churchill 1979):

- Specification of constructs
- Selecting items
- Data collection
- Purify measurement and data validation

Extensive review of relevant literature on principal agent theory has helped us to specify our research constructs as described in chapter two. Studies hail this approach due to its benefits in assuring validity and reliability (Buvik, 1995). In this study, Churchill (1979) approach is applied supported by theoretical and literature background in developing suitable items for each construct.

Extensive literature review was conducted on how to administer quality performance in a form of principal-agent relationship in order to know which items are to be measured and thereafter an item pool was generated. Continuous and intensive review of items was made by the supervisor

Exploratory factor analysis was made in assessing latent variables and those which portrayed low/cross loadings (above 0.4) were eliminated in order to ensure reliability of the scales and validated for convergent and discriminant validity. Results for reliability and validity tests are given in the next chapter eight.

6.5 Measurement Process

In this part, each variable is defined and all items making up a particular variable are listed. We have three independent variables: monitoring, information sharing and negative external influence while we have only one dependent variable which is quality performance. A dummy variable was introduced for one organization in determining factors affecting performance among the two organizations based on the listed independent variables.

6.5.1 The Dependent Variable

In this study, quality performance is used as a dependent variable which is influenced by the named independent variables. The following items have been used to capture the level of performance of the two organizations as perceived by managers of primary associations. This construct is comprised of eight items which are anchored from 1 strongly disagree to 7 strongly agree.

PERF 1   This farmer always delivers coffee to us on time

PERF 2   We are always very satisfied with the quality of the coffee we receive from this farmer

PERF 3   This farmer always responds quickly to required production volume

PERF 4   This farmer regularly responds quickly to our requirements on production process

PERF 5   This farmer always uses very good storage facilities

PERF 6   This farmer rarely free ride on us

PERF 7   This farmer always uses the required fermentation units.

PERF 8   This farmer usually uses very good transportation facilities

6.5.2 The Independent Variables

Monitoring, information sharing and negative external influence are the three variables employed in this study.

Monitoring

The following items were used to measure level of monitoring and they were anchored from 1 strongly disagree to 7 strongly agree

MONIT 1   We regularly make personnel visits to this farmer's plantations to improve performance

MONIT 2.   We are regularly informed by this farmer on any new insects/disease affecting coffee during the season.

MONIT 3   We frequently receive report from this farmer on time used to dry coffee after harvesting.

MONIT 4   We frequently have physical inspection of water used by this farmer on washing coffee after harvesting.

MONIT 5.   We frequently control the time period used by this farmer for drying coffee after harvesting.

MONIT 6   We frequently inspect fermentation units used by this farmer

MONIT 7.   We frequently inspect transportation facilities used by this farmer

Negative External influence

The following items were used to measure level of negative external influence. These items were anchored from 1 strongly agree to 7 strongly disagree.

EXTI 1.   Local food crops organization frequently campaigns more use of land for food crops than coffee to this farmer which reduces available land for coffee production

EXTI 2.   Local banana growers organization frequently campaigns more use of land for banana than coffee to this farmer which reduces available land for coffee production

EXTI 3.   Local trade organization campaigns more use of fertilizer than manure which reduces quality of coffee.

EXTI 4.   Local government authority regularly campaigns to this farmer to practice intercropping which reduces quality of coffee.

EXTI 5.   Local water supply organization always orders this farmer to use less water for washing coffee which affects negatively quality of coffee.

EXTI 6.   Other local coffee buyers who emphasize more on quantity always interfere negatively on quality of coffee produced by this farmer

EXTI 7.   Local government authority regularly influences this farmer to sell his/her coffee to other buyers.

Information sharing

Items below were used to measure level of information sharing. These items were anchored from 1 strongly disagree to 7 strongly agree

INFO 1.	We regularly communicate market information like new prices to this farmer
INFO 2.	We always get reports from this farmer on progress of coffee production during the season
INFO 3.	We frequently get reports from this farmer on time period lasted for drying coffee
INFO 4.	We always communicate our expectation on coffee quality to this farmer
INFO 5.	We regularly provide information on cash bonuses to this farmer
INFO 6.	We always get reports on any insects/disease affecting coffee production from this farmer
INFO 7.	We frequently inform this farmer about what was taking place in auction floor
INFO 8.	We usually inform this farmer about fertilizers and pesticides to be used in coffee production.

6.6 Chapter Summary

In this chapter operationalization and measurement of variables were discussed. Evaluation of measurement models was made and question items for both independent and dependent variables was also presented. Next chapter shows tests of reliability and validity.

CHAPTER SEVEN

MEASUREMENTS ASSESSMENT AND DATA VALIDATION

7.1 Introduction

The previous chapter has described operationalization approach used in this research. This section presents initial data analysis overview. It is recommended to have a deep insight in collected data before further analysis. This process of examining data ensures credibility (relevance and reliability). For the purpose of avoiding anonymity in future we have conducted preliminary data screening (descriptive statistics, reliability and validation) and their results are presented below as a preliminary analysis of collected data.

7.2 Preliminary data screening

In this subsection we checked existence of outliers in our research data set. An observation is considered to be an outlier if its characteristics differ significantly from the majority. Conducting a thorough look on outliers when using multiple regression is important as existence of outliers may deter interpretation of research results (Pallant, 2011). Outliers can be identified in several ways but for this study we have employed box plot method in identifying them. This method uses simplified statistical chart which is easy to identify outliers in data set (Pallant, 2011). Through box plot we identified no outliers cases but 9 (4 from AKSCG and 5 from KNCU) cases were taken away as they were not properly filled. Therefore, we remained with 132 cases (69 from AKSCG and 63 from KNCU) equivalent to 93.6% of the total surveyed questionnaires.

7.3 Descriptive Statistics

Before conducting reliability, validation and further analysis for collected data it is advised to run descriptive statistics (Pallant, 2011). The information gathered from descriptive statistics is used to describe features of data. According to Gaur and Guar (2006) descriptive statistics provides researcher with data summary in form of numbers and graphs. As suggested by Gaur and Guar (2006) there are three methods which use numerals in describing data and these are outlined below:

- Central Tendency Measurements: This describes averages, numbers lying at middle and frequency of occurrence.

- Variability measurements: This describes the difference between the largest number and smallest and the level of dispersion from the mean.
- Skewness and kurtosis: This is used to check if data satisfies normality assumption.

For the purpose of checking whether our data are suitable for this study we conducted descriptive statistics as suggested by some studies (Gaur and Guar, 2006). Each variable was checked for minimum, maximum, mean and standard deviation as presented in appendix 1 and 2. All items forming each construct were also investigated for normality by using skewness and kurtosis measurements. The skewness and kurtosis in appendix 3 proves presence of normality in our data as absolute numbers for both skewness and kurtosis are less than 3 and 10 respectively (Kline, 2005). Further analysis for this assumption will be conducted after specifying regression model in the next chapter.

7.4 Reliability

In this part scale reliability employed for this research is presented. Reliability can be defined as correctness or exactness of a measurement used to measure constructs (Kerlinger, 1986; Agle and Kelley 2001). Other related terms with reliability are accurateness and truthfulness. In doing so we can be able to know whether the measurement reflects the real characteristics of constructs; or what if another study is carried by different researcher/researchers by using new constructs (Do they come with different findings?) (Agle and Kelly, 2001).

There are four groups of scale reliability which are classified depending on the intention of the study (Peter, 1979; Mentzer and Flint, 1997). These are shortly described as follows:

- Test-retest which is widely employed by psychologists in formulating factors.
- Split half reliability in which data for a sample are equally organized into two groups and thereafter are subjected to correlation check up.
- Internal consistency; this is a popular and frequently used in checking consistency. It uses Cronbach's alpha in assessing consistency.
- Inter-judge that is usually employed in research using case studies.

Scale reliability for this study was investigated based on internal consistency approach. All items which were extracted after running exploratory factor analysis (see table 7.2 below) were used in estimating scale reliability. The internal accuracy for every construct in our research was analyzed by Cronbach alpha. The ground of this comes from the notion that Cronbach alpha is a sign of correctness which should be investigated before supplementary tests for the purpose of giving meaning to the study (Mentzer and Flint, 1997).This is

employed to investigate whether all items in one construct are measuring the same thing. In general it assesses the level of relationship among items forming a particular factor. When we get less Cronbach alpha we get some clues about weaknesses of the sample used in collecting data (Nunnally, 1967). According to Mentzer and Flint (1997) it is recommended to have a minimum of three items in each factor as the more the items the better the consistency. For the construct to be considered as having items measuring the same thing the minimum Cronbach alpha is supposed to be 0.7 (Nunnally, 1967), and for our study this condition was met as all Cronbach alpha are more than the minimum as presented in table 7.1.

Table 7.1: Items representing different scales and their reliability estimates

Construct	Items	No. of Items	Cronbach alpha (α)
Performance	PERF 2,4,6,7	4	0.848
Monitoring	MONIT 1,2,3,6	4	0.960
Goal Conflict	GOAL 1,2,3,6	4	0.754
External Influence	EXTI1,2,4,5,6, 7	6	0.916
Information sharing	INFO 1,2,3,4	4	0.941

7.5 Validity

Validity can be described as the level whereby the measurement used in a study captures what was expected to be captured. It is all about the level of which a measurement thoroughly stand for factors as adopted from the theory (Kerrlinger, 1986). According to Agle and Kelly (2001) validity can be categorized as follows:

- Content validity: In this category validation is carried in the field of study by looking whether the instrument really captures what was intended (Kerrlinger, 1986).
- Face validity: this is thought to be similar to content validity (Buvik 2011; Mentzer and Flint 1997; Ping Jr. 2004)**.** It is also carried in the field of study by a specialist to get clues if the instrument captures what was intended. Some studies claim that when a group of items seem to be like what were expected then content and face validity are thought to be done (Churchill, 1979).
- Criterion related validity: This uses some conditions whereby items measuring constructs should meet the specified conditions (Agle and Kelly, 2001). It explains

how instrument is important in projecting other features (Buvik, 2011). It puts researchers in a position to explain how items in one construct are related to each other and how one construct relates with other constructs (Kimberlin and Almut, 2008).

- Construct validity is the one adopted by this study and it is described below.

7.5.1 Construct Validity

This type of validity applies a set of validity methods to explain how healthy the adopted measurements captures what was intended as adopted from the guiding theory (Mentzer and Flint, 1997). According to Agle and Kelly (2001) construct validity is the level whereby a considered factor is the same as a factor that is been considered. As suggested by some professional construct validity is divided into two major groups that is discriminant validity and convergent validity (Shuttleworth, 2009). Also, discriminant validity and convergent validity are thought to be the major validity which explains well construct validity (Dunn, Seaker, and Waller, 1994). These two types of validity under construct validity have been used by this study and are presented as follows:

7.5.1.1 Discriminant validity

As per Fornell and Larcker (1981) discriminant validity is obtained when one construct segregates (separates) from other constructs. This is a capacity of a single construct to distinguish itself from others to make sure that there is less relationship among constructs used in the study (Agle and Kelly, 2001). Discriminant validity exists when there is variance among the constructs developed from the same theory. Presence of discriminant validity strengthens truthfulness to the constructs used in the study (Fornell and Larcker, 1981; Farrell, 2010). In this study we investigated existence of discriminant validity by using Exploratory Factor Analysis (EFA). Also, we employed another method of comparing the Average Variance Extracted (AVE) against Shared Variances (Fornell and Larcker, 1981). Both of the two methods are presented below:

Exploratory factor analysis can be defined as a method of dropping items which are not aligned with others in the same construct (Pallant, 2011). There are several methods under Exploratory Factor Analysis in which items can be dropped to smallest set from largest as pointed out by Pallant (2011) such as: Image factoring; Principal components; Alpha factoring; Unweighted least squares; Principal axis factoring; Generalized least squares and Maximum likelihood. In this study we adopted principle component as it is the popular method used for reducing large items to smallest set. Items loading for each construct are

presented in table 8.4 and we obtained five factors as follows: Factor 1:Negative External Influence (EXTI), factor 2: Monitoring (MONIT), factor 3: Information Sharing (INFO) factor 4: Performance (PERF), and factor 5: Goal Conflict (GOAL). As pointed out by Pallant (2011) all items loading less than 0.4 were not included in table 7.2. Also, for all items which have cross loading of at least 0.4 were excluded from the table 8.4. As supported by some researchers such elevated loading we have obtained suggest also existence of elevated convergent strength (Hair et al., 1998).

Table 7.2 Rotated Component Matrix[a]

Factor	Component				
	1	2	3	4	5
EXTI1	**.808**	-.051	-.077	.111	.174
EXTI2	**.877**	-.009	-.051	.074	.148
EXTI4	**.867**	.065	.013	.050	.079
EXTI5	**.764**	.100	.007	.066	.197
EXTI6	**.822**	-.095	.031	.179	.049
EXTI7	**.785**	-.054	-.021	.091	.226
MONIT1	-.130	**.887**	.180	.016	-.036
MONIT2	.063	**.974**	-.063	.040	-.017
MONIT3	.016	**.953**	-.107	-.005	-.016
MONIT6	.015	**.957**	-.123	.003	.022
INFO1	-.044	-.002	**.979**	-.002	.007
INFO2	-.061	-.034	**.976**	-.023	-.012
INFO3	.059	-.002	**.834**	-.061	.153
INFO4	-.036	-.080	**.906**	.086	-.045
PERF2	.153	.026	-.005	**.855**	.135
PERF4	.019	.037	-.027	**.852**	.158
PERF6	.144	.031	-.025	**.876**	.131
PERF7	.178	-.052	.065	**.591**	.310
GOAL1	.287	.038	.045	.183	**.709**
GOAL2	.233	-.030	.060	.067	**.741**
GOAL3	.201	.030	-.029	.226	**.616**
GOAL6	.030	-.066	.023	.189	**.774**

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

For the Squared Inter-construct correlation (R^2) and Variance Extracted Estimates (AVE) we used AVE to check if it differs from Shared Variances between constructs and once we find that Shared Variances are less than AVE then we confirm existence of discriminant validity. The estimated findings in regard to this test are presented in table 7.3 below and we observe that all constructs reveal presence of discriminant validity as all Average Variance Extracted (AVE) for each construct are greater than Shared Variances for each construct.

Table 7.3 Squared Inter-construct correlation (R^2) and Variance Extracted Estimates (AVE)

Factor	1	2	3	4	5
PERF	1	.10	.08	.00	.00
MONIT		1	.04	.00	.00
GOAL			1	.03	.07
EXTI				1	.11
INFO					1
AVE	**.60**	**.86**	**.44**	**.65**	**.83**

7.5.1.2 Convergent validity

As per Agle and Kelly (2001) convergent validity is described as the level of conformance for information coming from diverse sources and instrument (measurement) used to analyze a factor. For this analysis Confirmatory Factor Analysis (CFA) by using AMOS18 was used to describe presence of convergent validity (Arbuckle, 2009) . We decided to use a single construct justification for every factor. Since location of organization, numbers of bags and relationship duration have just one item for measurement then they were not involved in testing validity as they are considered to capture thoroughly what was intended. Some scholars have pointed out many ways in which convergent validity can be assessed such as fitness indices, composite reliability, average variance extracted and level of loadings (Lu and Po-Hsing, 2012; Schreiber, Stage, and King, 2006). We adapted fitness of various types from Schreiber et al., (2006)[1] in checking convergent validity as follows: Chi – Square (χ2); Root Mean Square Residual (RMR); Goodness of Fit Index (GFI); Tucker- Lewis Index(TLI); Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSE). The

computed fitness values for our research constructs are presented in table 7.3 below. From the results we observe that each construct has enough fitness indices accompanied with significant high loadings (t>1.96, p<0.05). Also, the composite reliability strengthen emphasis on consistency for items used in each construct as all composite reliability are greater than 0.7.

Table 7.4 Construct Validity Assessment

Construct	Standardized loading (t-values)		Fit indices	Composite Reliability [b]	Average Variance Extracted (AVE)[c]
PERF (4 items)	$\lambda 11=0.825$[a]		$\chi 2(2)=1.374$	0.855	0.601
Performance	$\lambda 12=0.814$	(10.187)	P=0.503		
	$\lambda 13=0.867$	(10.761)	RMR=0.056		
	$\lambda 14=0.557$	(6.432)	GFI=0.995		
			TLI=1.008		
			CFI=1.000		
			RMSEA=0.000		
MONIT (4 items)	$\lambda 21=0.826$[a]		$\chi 2(2)=10.083$	0.962	0.863
Monitoring	$\lambda 22=0.978$	(15.742)	P=0.006		
	$\lambda 23=0.946$	(14.781)	RMR=0.030		
	$\lambda 24=0.958$	(15.147)	GFI=0.961		
			TLI=0.965		
			CFI=0.988		
			RMSEA=0.176		
GOAL (4 items)	$\lambda 31=0.726$[a]		$\chi 2(2)=0.971$	0.757	0.440
Goal Conflict	$\lambda 32=0.700$	(6.062)	P=0.615		
	$\lambda 33=0.575$	(5.335)	RMR=0.058		
	$\lambda 34=0.641$	(5.791)	GFI=0.996		
			TIL=1.027		
			CFI=1.000		
			RMSEA=0.000		
EXTI (6 items)	$\lambda 41=0.822$[a]		$\chi 2(9)=18.776$	0.917	0.648
External influences	$\lambda 42=0.892$	(12.435)	P=0.027		
	$\lambda 43=0.843$	(11.445)	RMR=0.084		
	$\lambda 43=0.725$	(9.256)	GFI=0.952		
	$\lambda 43=0.778$	(10.199)	TLI=0.968		
	$\lambda 43=0.758$	(9.832)	CFI=0.981		
			RMSEA=0.091		

INFO (4 items)	$\lambda51=0.977^{a}$		$\chi2(2) = 35.119$	0.951	0.831
Information sharing	$\lambda52=0.986$	(37.557)	P= 0.000		
	$\lambda53=0.785$	(13.818)	RMR=0.085		
	$\lambda54=0.884$	(19.701)	GFI=0.878		
			TLI=0.855		
			CFI=0.952		
			RMSEA=0.356		

[1]Cutoff criterial for Fit indices as adapted from Schreiber et al., (2006) are as follows: Chi-square ($\chi2$) Ratio of $\chi2$ to df ≤ 2 or 3; Root mean square residual (RMR) Smaller the better, 0 indicates perfect fit; Goodness of fit index (GFI)$\geq$.95 Not generally recommended; Tucker-Lewis index (TLI)$\geq$.95 can be 0>TLI>1 for acceptance; Comparative fit index (CFI)$\geq$.95 for acceptance; Root mean square error of approximation (RMSEA)<.06 to .08 with confidence interval.

[a] Standardized estimated factor loading

[b]As per Lu and Po-Hsing (2012) composite reliability = (sum of standardized loadings)^2/[(sum of standardized loadings)^2+ (sum of indicator measurement error)]. Indicator measurement error can be calculated as 1-(standardized loading)^2

[c] Also as per Lu and Po-Hsing (2012) Average Variance Extracted (AVE) = (sum of squared standardized loadings)/[(sum of squared standardized loadings) + (sum of indicator measurement error)]. Indicator measurement error can be calculated as 1-(standardized loading)^2

7.6 Chapter Summary

This chapter has presented initial data analysis. It has described preliminary data screening, descriptive statistics and characteristics of sample. Also, it has presented scale consistency and justification (discriminant and convergent) of the constructs employed in this study. Cronbach alpha was used in checking consistency of constructs while justification for discriminant was analyzed by using exploratory factor analysis and by comparing Shared Variances against Average Variance Extracted (AVE). Also, various level of fitness was employed in assessing convergent validity of constructs used in this study.

CHAPTER EIGHT

DATA ANALYSIS AND HYPOTHESES TESTING

8.1 Introduction

In this chapter we further analyze data which are used in our research model. In addition to describing model used in this study, hypotheses are also tested. Multiple regression analysis seems to be suitable for our research model. Further explanations for our research model are presented below.

8.2 Regression analysis

A common method (statistical tool) for explaining how group of variables relate is known as regression analysis. Once independent variable is single (one) then the regression analysis is known as bivariate (simple) regression otherwise it is known as multivariate (multiple) regression and (Sykes, 1992; Gujarati, 2003). As in this study we have more than one predictor variables then the preferable regression analysis is multivariate regression. Correlation investigation of variables in multiple regression analysis is essential as it is used to check if there is interrelationship between the variables (Pallant, 2011). Also, as per Pallant (2011) multiple regressions can be grouped into three categories as follows:

- Standard (simultaneous) multiple regression: In this type of multiple regression simultaneously entrance of predictors variables in the equation is used.

- Hierarchical multiple regression: In this type of multiple regression predictors variables entrance in the equation is based on researcher's specification in accordance to theoretical perspective.

- Stepwise regression: In this type of multiple regression all variables are entered and a program chooses variables and entrance order in the equation.

Normally, multiple regression is carried under assumptions such as sample size, multicollinearity, outliers, normality, linearity and homoscedasticity (Pallant, 2011). These assumptions are also presented in this chapter. The well known regression analysis estimation methods are Maximum Likelihood (ML) and Ordinary Least Squares (OLS). The OLS seems to be the best method in regression analysis due to its distinguished and imperative statistical

features (Gujarati, 2003). Our study opted for OLS to estimate the coefficients of variables due to attractive features embedded in the method.

8.3 Regression model

Our research hypotheses were tested after running Ordinary Least Squares (OLS) regression for our model to estimate the variables which are used to determine the main effect of information sharing, monitoring and negative external influence on performance. Also, the interaction effects of KNCU with information sharing, monitoring and negative external influence were included in the research model for the purpose of understanding how these factors have effect in the two organizations. Goal Conflict, Relationship Duration, number of bags and location of organization (Rural as dummy variable) were used as control variables in our research model. Furthermore, KNCU was used as dummy variable to determine effect of information, monitoring and negative external influence in the two organizations.

- **Research Model:**

$$PERF = b_o + b_1 KNCU + b_2 INFO + b_3 MONIT + b_4 EXTI + b_5 INFO*KNCU + b_6 MONIT*KNCU$$

$$+ b_7 EXTI*KNCU + b_8 GOAL + b_9 RURAL + b_{10} BAGS + b_{11} REDU + \varepsilon$$

Where:

Dependent variable

PERF = Farmer's (Agent's) performance

Independent variables

KNCU = Dummy variable representing Kilimanjaro Native Cooperative Union

INFO = Information

MONIT = Monitoring

EXTI = Negative External Influence

INFO*KNCU = Information x Kilimanjaro Native Cooperative Union

MONIT*KNCU = Monitoring x Kilimanjaro Native Cooperative Union

EXTI*KNCU = Negative External Influence x Kilimanjaro Native Cooperative Union

GOAL = Goal Conflict

RURAL = Dummy variable if the organization operates in rural area.

BAGS = Number of bags produced by a farmer

REDU = Relationship Duration between a farmer and organization.

ε = Error term

b_0 = Constant

$b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8, b_9, b_{10}, b_{11}, b_{12}$ = regression coefficients.

8.4 Further Data Analysis

As described earlier in previous chapters having a deep look on collected data is very essential for any research (Hair et al., 2010). To ensure that multiple regression analysis assumptions are adhered we carried out further data examination as presented below.

8.4.1 Normality Assumption

Assumption of normality is very sensitive in multiple regression analysis (Tabachnick and Fidell, 2007). This is usually carried to check if residuals of predicted variables scores are normally distributed. When assumption of normality is not present then a sample size may have some problems (Hair et al., 2010) and may cause errors in prediction of outcomes (Pallant, 2011). Graphs (histogram, normal P-P plots) and numerals (skewness and kurtosis) are common methods in assessing normality and are used concurrently. Normally, skewness describes symmetrical distribution on the other hand kurtosis describes the peakedness. There are several ways of analyzing normality by using skewness and kurtosis values (Hair et al., 2010; Tabachnick and Fidell, 2007; Kline, 2005).

As presented in chapter eight normality of this study was assessed based on Kline (2005). The acceptance criteria for both skewness and kurtosis absolute values were less than 3 and 10 respectively indicating existence of normality (see appendix 3). Graphical results revealing presence of normality in our study were presented in appendix 7 (a) and (b)) and from them we observe that conditions for normality were adhered.

8.4.2 Multicollinearity Assumption

Multicollinearity can be defined as existence of relationship between one independent variable and another independent variable for all independent variables used in a research model. According to Pallant (2011) high correlation exists when r = 0.90 and above. Presence of multicollinearity in a research model reduces dependability on estimation and renders false sign on beta coefficients for respective correlated variables (Grapentine, 1997). Also, we used tolerance and variance inflation factor (VFI) in exploring presence of multicollinearity. Tolerance is the degree whereby one construct varies from other constructs and presence of tolerance value less or equal to 0.1 indicates existence of multicollinearity (Pallant, 2011). On

the other hand VFI is the opposite of tolerance and existence of its value greater or equal to 10 reveals presence of multicollinearity (Pallant, 2011). The named methods in explaining level of multicollinearity in our model and descriptive statistics are presented in Table 8.1 below.

Table 8.1 Correlation matrix, descriptive and Collinearity   statistics

Factor	1	2	3	4	5	6	7	8	9	10	11	12
1PERF	1	.212*	-.008	.320**	.033	.203*	.323**	.161	.082	.031	-.05	.02
2KNCU		1	-.173*	.443**	.09	.868**	.940**	.943**	-.011	-.092	.083	.041
3INFO			1	-.065	.332**	.241**	-.185*	-.056	.259**	.027	.013	.008
4MONIT				1	.048	.362**	.606**	.458**	.193*	.146	.025	-.019
5EXTI					1	.224**	.137	.324**	.182*	.054	-.011	-.024
6INFOXKNCU						1	.803**	.886**	.125	-.093	.102	-.001
7MONITXKNCU							1	.911**	.068	-.086	.064	.005
8EXTIXKNCU								1	.083	-.086	.084	.003
9GOAL									1	-.008	-.003	.026
10RURAL										1	.049	-.053
11BAGS											1	.042
12REDU												1
Mean	4.58	.48	4.08	3.91	4.19	1.83	2.19	2.05	4.33	.20	8.64	3.46
Std. Deviation	1.13	.50	1.39	1.49	1.06	2.21	2.45	2.28	1.07	.40	2.45	1.08
Tolerance		.03	.31	.42	.41	.08	.06	.04	.83	.89	.98	.95
VIF		33.3	3.3	2.36	2.45	13.39	16.13	23.48	1.21	1.12	1.02	1.05

8.4.3 Homoscedasticity Assumption

Homoscedasticity exists when predicted dependent variable residual scores have equal variance (Pallant, 2011). Normally, homoscedasticity assumption seems to be similar with normality which we have already described. As presence of heteroscedasticity (no homoscedasticity) gives us indication that our data are not normally distributed (Tabachnick and Fidell, 2007), then making sure that data are normally distributed helps a researcher to avoid this problem. Usually multivariate regression uses standardized residuals scatter plot in checking presence of homoscedasticity. As per Tabachnick and Fidell (2007) the shape of scatter plot should be rectangle and most of the residual scores should be at the middle. This test is presented in appendix 7 (c) and we observe that our model does not suffer from heteroscedasticity as the scatter plot is rectangle and most of the residual scores lie at the middle.

8.5 Regression estimation

In order to get statistical coefficients we have used specified model and the following are the results.

Table 9.2: Regression Analysis: Dependent Variable: Performance (PERF)

Independent Variables	Unstandardized Coefficients (b)	t-values
Constant (b_0)	3.498	4.107***
KNCU (b_1)	-.292	-.290
INFO (b_2)	-.088	-.779
MONIT(b_3)	.061	.680
EXTI(b_4)	.251	1.938*
INFOXKNCU(b_5)	.288	1.988**
MONITXKNCU(b_6)	.531	3.697***
EXTIXKNCU(b_7)	-.682	-3.669***
GOAL(b_8)	.016	.183
Rural(b_9)	.100	.429
Number of bags(b_{10})	-.026	-.716
Relationship Duration(b_{11})	.038	.458
***indicates p≤.01 (2-tail)	Model Fit: $R^2_{adj} = 0.211$	
**indicates p≤.05 (2-tail)	$R^2 = 0.277$	
* indicates p≤.10 (2-tail)	$F(11,120) = 4.179$, p<.01	

After applying our specified regression model to estimate coefficients our basic research model becomes as follows:

PERF = 3.498- 0.292KNCU –0.088INFO+0.061MONIT+0.251EXTI +0.288INFO*KNCU
+ 0.531MONIT*KNCU - 0.682EXTI*KNCU + 0.016GOAL + 0.100RURAL −
0.026BAGS + 0.038REDU + ε

The overall goodness of fit for our basic research model seems to be good with $F(11, 120) = 4.179$ (p<0.01) and $R^2_{Adj} = 0.211$ suggesting that approximately 21.1% of performance variation can be explained by the model while the remaining percentage (78.9%) can be explained by other factors not included in the research model. Variation in dependent variable resulting from independent variable is explained by R^2 which is equal to 0.277.

Some scholars argue that R^2 for all models using data gathered from a person should be at least 0.10 (Newbold, Carlson, and Thorne, 2010). In accordance to this proposition we find that R^2 for our research model was acceptable with value of 0.277 showing that 27.7% variation in performance (PERF) which is the dependent variable is the result of the variation

from predictors (KNCU, INFO, MONIT, EXTI, INFO*KNCU, MONIT*KNCU, EXTI*KNCU, GOAL, RURAL, BAGS and REDU).

8.6 Hypothesis Testing

As presented earlier in chapter four all three hypotheses are associated to interaction terms (INFO*KNCU, MONIT*KNCU, EXTI*KNCU). The results given in the regression table were used to test the following hypotheses: H1: There is a more effect of information sharing on performance in KNCU than in AKSCG; H2: There is a more effect of monitoring on performance in KNCU than in AKSCG; and H3: There is a stronger negative effect of negative external influence on performance in KNCU than in AKSCG.

Hypothesis 1:

The hypothesis projects a more positive relationship between information sharing and performance in KNCU than is the case in AKSCG. This is in line with a positive value of the interaction term b_5. Table 9.2 reveals that b_5 is positive as anticipated ($b_5 = 0.288$, t value = 1.988, p $\leq$0.05) and provides sufficient evidence to support hypothesis one that there is a more positive effect of information sharing on performance in KNCU than in AKSCG.

Hypothesis 2:

This hypothesis suggests a more positive relationship between monitoring and performance in KNCU than in AKSCG. From table 9.2 we observe that the interaction term b_6 is significantly positive as expected ($b_6 = 0.531$, t value = 3.697, p $\leq$ 0.01). Based on this we have strong statistical evidence to support hypothesis two that there is a more positive effect of monitoring on performance in KNCU than in AKSCG.

Hypothesis 3:

This hypothesis emphasizes a stronger negative association between negative external influence and performance in KNCU than in AKSCG. From table 9.2 we observe that the interaction term b_7 is significantly negative ($b_7 = -0.682$, t value = -3.669, p $\leq$0.01) and provides enough evidence to support hypothesis three that there is a stronger negative effect of negative external influence on performance in KNCU than in AKSCG.

8.7 Hypothesis testing summary

The hypothesized effects and findings are summarized in the table below. We see that all three hypotheses were supported as they were all significant.

Table 9.3: Hypothesis testing summary

Hypotheses	Relationship between variables	Hypothesized effect	Findings
Hypothesis 1	Performance and Information Sharing	+**	Supported
Hypothesis 2	Performance and Monitoring	+***	Supported
Hypothesis 3	Performance and Negative External Influence	-***	Supported

*** indicates p<.01 (2-tail)

**indicates p<.05 (2-tail)

8.8 Chapter Summary

In this chapter the assumptions underlying multiple regression were presented. The proposed hypotheses were subjected to test after running the model using Ordinary Least Square (OLS) method. The results reveal that all three hypotheses were supported as all were statistically significant. The findings are discussed more in the next chapter taking account the contribution in the theory.

CHAPTER NINE

SUMMARY, DISCUSSION, MANAGERIAL IMPLICATIONS, LIMITATIONS AND AREAS FOR FURTHER RESEARCH

9.1 Introduction

Discussion of statistical tests and results for this study was presented in the previous chapter. Estimation of regression model parameters and hypotheses testing were as well discussed in the previous chapter. In this chapter an overview is given about summary, discussion, managerial implications, limitations and areas for further study.

9.2 Summary of findings

This study was focused on examining factors affecting performance of coffee growers in the two organizations (KNCU and AKSCG). The results obtained from this study were targeted to review managerial practices and policies for purpose of improving coffee industry performance in Tanzania. Also we were interested in knowing how agency theory could be useful in improving performance and contributing more insights to the theory from the results obtained.

From correlation matrix (see table 8.1 above) we observe that there is a significant relationship between performance and two interaction terms (INFOXKNCU and MONITXKNCU). Generally our model seems to be quite good ($F(11, 120) = 4.179$, $p<0.01$, $R^2 = 0.277$, $R^2_{Adj} = 0.211$). Therefore, $R^2_{Adj} = 0.211$ indicating that 21.1% of performance variation can be explained by the model while the remaining percentage (78.9%) can be explained by other factors not included in the research model.

The findings strongly reinforced the hypotheses that were formulated from agency theory. The first hypothesis was strongly supported as effect of information sharing on performance was found to be more positive in KNCU than in AKSCG and was statistically significant. Also, for the second hypothesis we found that the effect of monitoring on performance was more positive in KNCU than in AKSCG and was significant. Furthermore, the third hypothesis was also significant implying that there is more negative effect of negative external influence in KNCU than in AKSCG.

This study aimed at seeking answers to our research question ''what are factors affecting performance in the two organizations (KNCU and AKSCG)?''. The findings from this study seem to be relevance with KNCU. This means more exercise of monitoring and information sharing to farmers belonging to KNCU improves performance. Also, more increase of negative external influence reduces performance of farmers under KNCU.

9.3 Discussion

According to agency theory the presence of information sharing, monitoring and less negative external influence in a principal-agent relationship would enhance performance of an agent. Presence of strong information sharing helps to reduce adverse selection, moral hazards, free ride and internal uncertainty. Also, effective monitoring of agent's activities helps principal to reduce internal uncertainty. When an agent is exposed to more negative external influences implies that he/she has to respond to multiple principals and basically confront goal conflict in a different dimension as a result his/her performance can be enhanced by positively responding to these negative external influences.

As revealed from Parrish et al., (2005) there is more transparency and information sharing in AKSCG than in KNCU. Then more increase of information sharing in KNCU would improve performance. Also studies emphasize on the role training farmers on how they should carry various activities such as pulping, fermentation and drying which are very essential in maintaining coffee quality (Parrish et al., 2005; Hulm et al 2007). Hence, more effort of training will result into more positive effect in KNCU as this is not currently carried by KNCU to its farmers (Parrish et al., 2005).

Provided that there is less transparency in KNCU (Parish et al., 2005) and our statistical findings show that there is lower level of information sharing in KNCU (correlation table 8.1, r= -0.173, p<0.05), then more monitoring would have more effect in KNCU. Also some studies argue that monitoring is not effective unless is supported by sanctions or penalties (Buvik and Rokkan, 2009). Provided that KNCU does not have a well established performance based pricing system then we argue that effective monitoring supported by sanctions/penalties on different activities performed by farmers would more improve its performance.

KNCU farmers are more sensitive/responsive to negative external influence posed to them as a result their performance is deliberately lowered. On other hand farmers under AKSCG resist

external influence posed to them by taking some initiatives in order to avoid their performance been impaired by external influence as a result these initiatives have helped them to improve performance. The main effect of external influence (b_4) is significantly positive revealing that negative external influence in AKSCG leads to positive performance ($b_4 = 0.251$, $t = 1.938$, $p<.01$).

As pointed out by some scholars negative external influence strongly reduces performance of an agent when there is no motivation/incentives (Bruno and Reto, 2001). As there is no a well established performance based pricing system in KNCU then its farmers are always more responsive to negative external influence. Therefore, farmers under KNCU are not motivated to positively react to negative external influence. For example, AKSCG farmers in attempting to address water shortage they construct dams (water infrastructures) in order to have enough water for washing coffee while KNCU farmers have no motive to do that.

From historical point of view all farmers used to belong to KNCU until adoption of free trade. After adoption of free trade still the efficiency of KNCU was not satisfactory that's why some farmers used to free ride by selling their coffee to Dorman. KNCU farmers who were tired of the non-performance based pricing policy, poor efficiency of the organization, low pricing of the coffee decided to uproot their coffee plantations purposely to plant other profitable crops like banana and food crops while other farmers decided to practice intercropping. Thus, KNCU farmers were/are more responsive to campaigns of growing other crops and intercropping due to the named reasons above as a result this has massively reduced the quantity and quality of coffee collected.

9.4 Managerial implications

This study lays out foundation on which coffee stakeholders such as managers, government and farmers can improve quality of coffee supplied in the global market. Frequently communication and well established reporting systems on: new prices based on quality, hazards of delaying harvesting coffee beans, sensitivity of fermentation process in maintaining coffee quality, importance of using clean water in washing coffee and time required for drying which all together would ensure high degree of quality. Since most of farmers are found in rural areas where communication through emails is not possible then better transfer of information between farmers and managers can be facilitated through SMS and calling by using phones. Also, by establishing centers in rural areas tailored for training farmers on how to conduct coffee production would enhance coffee quality.

Furthermore, increasing farmers follow up   through regularly visits, inspection of pulping units, fermentation units and washing units would assure coffee quality. Also, the use of performance based pricing system which acts as self monitoring would help to improve quality of coffee as farmers get punished themselves by delivering coffee of low quality. Primary societies could be imposed to financial penalties when farmers do not comply with established required production procedures.

Organizations using uniform pricing should shift to quality pricing that provides more motivation for famers to respond positively to negative external influence. Establishment of strong communication and reporting system (transparency) would help to detect free ride among farmers easily. Farmers should be trained to perform well key activities (picking, pulping, washing, fermentation, washing, drying, sorting) that ensures quality of coffee which can attract premium price from the world market. Being able to produce coffee of high quality attracting premium price would discourage coffee farmers from intercropping and using of more land for growing banana and food crops.

9.5 Limitations and areas for further research

This study analyses only a single industry (coffee industry) as a result it is difficult to apply the findings of the study in other industries like cotton, tea, sisal and tobacco. Single industry analysis helps researchers to find out more accurate, specific and detailed information to be familiar with the nature of the industry and relationship between key actors of the industry (farmers and buyers). Although single industry analysis provides researchers with high degree of internal validity, it also undermines external validity in other hand as a result its findings can be difficult to be applied in other industries.

As this research is based on cross sectional design then it implies that hypotheses are tested only once at a time and thus difficult to demonstrate causality. The best way to express causality in the model could be done by using longitudinal research design. Further research could be done using longitudinal research design.

From this study principal agent theory has been used, and questionnaires were based on collecting information about agents (farmers). For more improvement, then further research needs to be conducted by gathering information from the other side (principal-buying organizations) or from both parties.

Also this research was based only on Northern part of Tanzania (Kilimanjaro) then in forth coming days all regions growing coffee in Tanzania should be incorporated to get more clear results. Furthermore, as this research was just based on one cash crop (coffee) then more cash crops should be included in future to come up with clear strategies for improving cash crops performance in Tanzania.

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APPENDICES

Appendix 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PERF1	132	1	7	3.68	1.411
PERF2	132	1	6	4.17	1.115
PERF3	132	1	7	3.95	1.709
PERF4	132	1	7	5.06	1.294
PERF5	132	1	5	3.00	1.119
PERF6	132	1	7	4.92	1.351
PERF7	132	1	6	4.17	1.115
PERF8	132	2	7	4.27	1.267
MONIT1	132	1	7	3.68	1.555
MONIT2	132	2	7	4.33	1.595
MONIT3	132	1	7	3.35	1.587
MONIT4	132	1	7	3.65	1.166
MONIT5	132	1	7	4.39	1.233
MONIT6	132	1	7	4.27	1.577
MONIT7	132	1	7	4.43	1.534
GOAL1	132	1	7	4.35	1.166
GOAL2	132	2	7	4.70	1.139
GOAL3	132	1	7	3.56	1.361
GOAL4	132	1	7	3.24	1.303
GOAL5	132	1	7	4.23	1.408
GOAL6	132	2	7	4.70	1.139
GOAL7	132	1	7	4.18	1.532
GOAL8	132	2	7	4.10	1.324
EXTI1	132	2	6	4.09	1.080
EXTI2	132	1	6	3.11	1.161
EXTI3	132	1	7	4.17	1.273
EXTI4	132	3	7	5.09	1.080
EXTI5	132	2	7	4.42	1.057
EXTI6	132	2	7	4.52	1.156
EXTI7	132	2	7	3.92	1.137
INFO1	132	1	6	3.53	1.373
INFO2	132	1	7	4.44	1.499
INFO3	132	1	7	3.98	1.493
INFO4	132	1	7	4.36	1.672
INFO5	132	2	7	5.48	1.328
INFO6	132	1	7	4.29	1.322
INFO7	132	1	7	4.03	1.553
INFO8	132	1	7	3.91	1.310
Valid N (listwise)	132				

Appendix 2: Sample characteristics

	N	Minimum	Maximum	Mean	Std. Deviation
Size of farm in hectares	132	3	10	5.61	1.542
Number of bags	132	3	18	8.64	2.453
Relationship Duration	132	1	6	3.46	1.080
Valid N (listwise)	132				

Appendix 3: Skewness and Kurtosis

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
PERF1	132	-.097	.211	-.531	.419
PERF2	132	-.485	.211	.305	.419
PERF3	132	-.159	.211	-.872	.419
PERF4	132	-.693	.211	.374	.419
PERF5	132	-.166	.211	-.704	.419
PERF6	132	-.803	.211	.635	.419
PERF7	132	-.485	.211	.305	.419
PERF8	132	.295	.211	-.335	.419
MONIT1	132	.583	.211	-.438	.419
MONIT2	132	.068	.211	-1.154	.419
MONIT3	132	.096	.211	-1.046	.419
MONIT4	132	.126	.211	.057	.419
MONIT5	132	-.056	.211	-.257	.419
MONIT6	132	.098	.211	-1.022	.419
MONIT7	132	-.191	.211	-.622	.419
GOAL1	132	-.126	.211	.057	.419
GOAL2	132	-.167	.211	-.501	.419
GOAL3	132	.286	.211	-.213	.419
GOAL4	132	.254	.211	-.246	.419
GOAL5	132	-.027	.211	-.244	.419
GOAL6	132	-.167	.211	-.501	.419
GOAL7	132	-.079	.211	-.825	.419
GOAL8	132	.197	.211	-.663	.419
EXTI1	132	.112	.211	-.702	.419
EXTI2	132	.355	.211	-.413	.419
EXTI3	132	-.161	.211	-.573	.419
EXTI4	132	.112	.211	-.702	.419
EXTI5	132	.222	.211	-.233	.419
EXTI6	132	.279	.211	-.491	.419
EXTI7	132	.626	.211	.014	.419

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	N	Statistic	Std. Error	Statistic	Std. Error
INFO1	132	-.307	.211	-.851	.419
INFO2	132	-.440	.211	-.739	.419
INFO3	132	.054	.211	-.861	.419
INFO4	132	-.382	.211	-.864	.419
INFO5	132	-.752	.211	-.085	.419
INFO6	132	-.285	.211	-.135	.419
INFO7	132	-.225	.211	-.740	.419
INFO8	132	.212	.211	-.085	.419
Relationship Duration	132	.136	.211	-.402	.419
Number of bags	132	.603	.211	1.420	.419
Size of farm in hectares	132	1.268	.211	.909	.419
Valid N (listwise)	132				

Appendix 4: Correlations

		PERF	MONIT	INCE	GOAL	EXTI	INFO	MONITXKNCU	EXTIXKNCU	INFOXKNCU
PERF	Pearson Correlation	1	.320**	.101	.082	.033	-.008	.323**	.161	.203*
	Sig. (2-tailed)		.000	.248	.351	.704	.924	.000	.064	.019
	N	132	132	132	132	132	132	132	132	132
MONIT	Pearson Correlation	.320**	1	.326**	.193*	.048	-.065	.606**	.458**	.362**
	Sig. (2-tailed)	.000		.000	.027	.584	.457	.000	.000	.000
	N	132	132	132	132	132	132	132	132	132
INCE	Pearson Correlation	.101	.326**	1	.333**	.143	.014	.120	.072	.025
	Sig. (2-tailed)	.248	.000		.000	.103	.878	.172	.414	.772
	N	132	132	132	132	132	132	132	132	132
GOAL	Pearson Correlation	.082	.193*	.333**	1	.182*	.259**	.068	.083	.125
	Sig. (2-tailed)	.351	.027	.000		.037	.003	.441	.344	.155
	N	132	132	132	132	132	132	132	132	132
EXTI	Pearson Correlation	.033	.048	.143	.182*	1	.332**	.137	.324**	.224**
	Sig. (2-tailed)	.704	.584	.103	.037		.000	.116	.000	.010
	N	132	132	132	132	132	132	132	132	132
INFO	Pearson Correlation	-.008	-.065	.014	.259**	.332**	1	-.185*	-.056	.241**
	Sig. (2-tailed)	.924	.457	.878	.003	.000		.034	.521	.005
	N	132	132	132	132	132	132	132	132	132
MONITXKNCU	Pearson Correlation	.323**	.606**	.120	.068	.137	-.185*	1	.911**	.803**
	Sig. (2-tailed)	.000	.000	.172	.441	.116	.034		.000	.000
	N	132	132	132	132	132	132	132	132	132
EXTIXKNCU	Pearson Correlation	.161	.458**	.072	.083	.324**	-.056	.911**	1	.886**
	Sig. (2-tailed)	.064	.000	.414	.344	.000	.521	.000		.000

	N	132	132	132	132	132	132	132	132	132
INFOXKNCU	Pearson Correlation	.203[*]	.362[**]	.025	.125	.224[**]	.241[**]	.803[**]	.886[**]	1
	Sig. (2-tailed)	.019	.000	.772	.155	.010	.005	.000	.000	
	N	132	132	132	132	132	132	132	132	132

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix 5 (a) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.526[a]	.277	.211	1.00262

a. Predictors: (Constant), Duration relationship, INFOXKNCU, Rural,

Number of bags, GOAL, EXTI, INFO, MONIT, MONITXKNCU,

EXTIXKNCU, KNCU

Appendix 5(b) ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46.205	11	4.200	4.179	.000[a]
	Residual	120.628	120	1.005		
	Total	166.833	131			

a. Predictors: (Constant), Duration relationship, INFOXKNCU, Rural, Number of bags, GOAL,

EXTI, INFO, MONIT, MONITXKNCU, EXTIXKNCU, KNCU

b. Dependent Variable: PERF

Appendix 6: Collinearity Statistics

	Collinearity Statistics	
Factor	Tolerance	VIF
KNCU	.030	33.285
INFO	.307	3.252
MONIT	.423	2.364
EXTI	.409	2.448
INFOXKNCU	.075	13.390
MONITXKNCU	.062	16.129
EXTIXKNCU	.043	23.483
GOAL	.828	1.208
Rural	.893	1.120
Number of bags	.979	1.021
Relationship Duration	.949	1.053

Appendix 7 (a):

Histogram

Dependent Variable: PERF

Mean = 5.29E-17
Std. Dev. = 0.945
N = 132
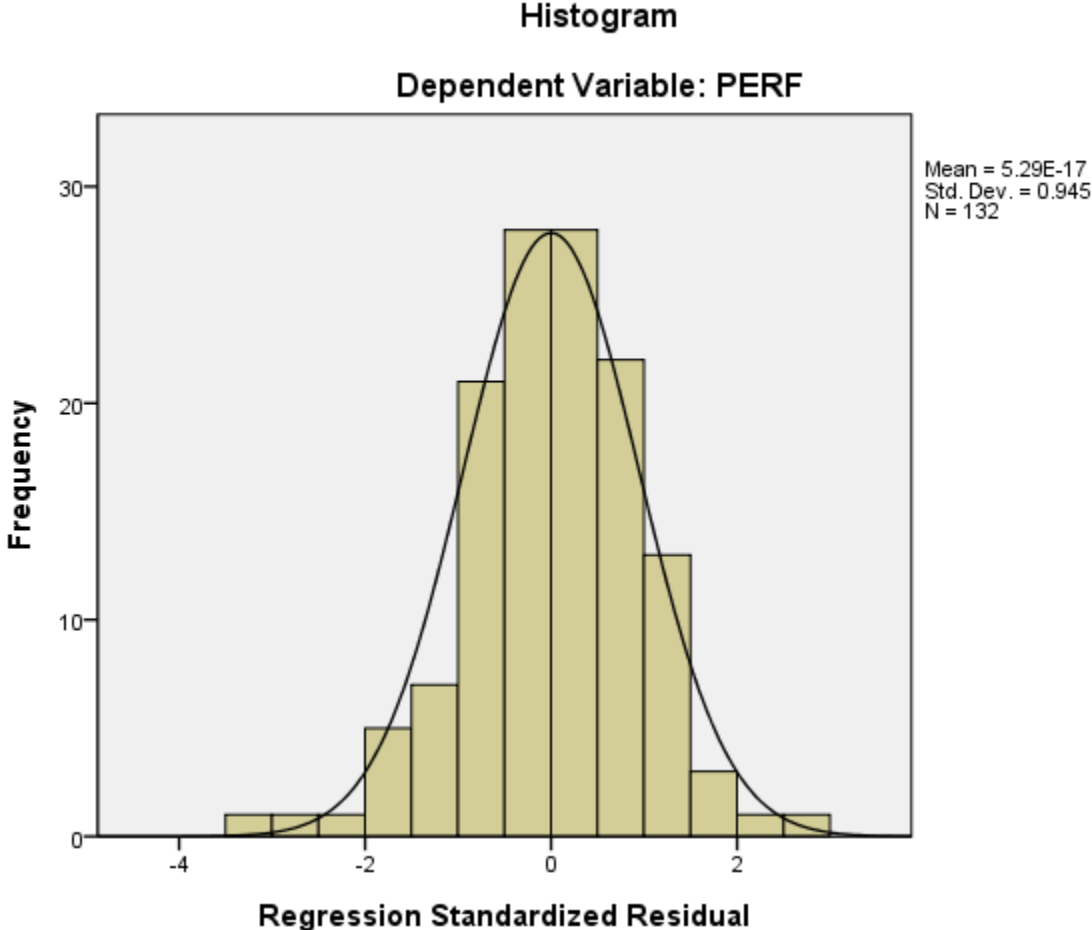
Appendix 7 (b):

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: PERF

Appendix 7 (c):

Appendix 8 (a): Scale: Performance

Cronbach's Alpha	N of Items
.848	4

Appendix 8 (b): Scale: Monitoring

Cronbach's Alpha	N of Items
.960	4

Appendix 8 (c): Scale: Incentive

Cronbach's Alpha	N of Items
.817	3

Appendix 8 (d): Scale: Goal Conflict

Cronbach's Alpha	N of Items
.754	4

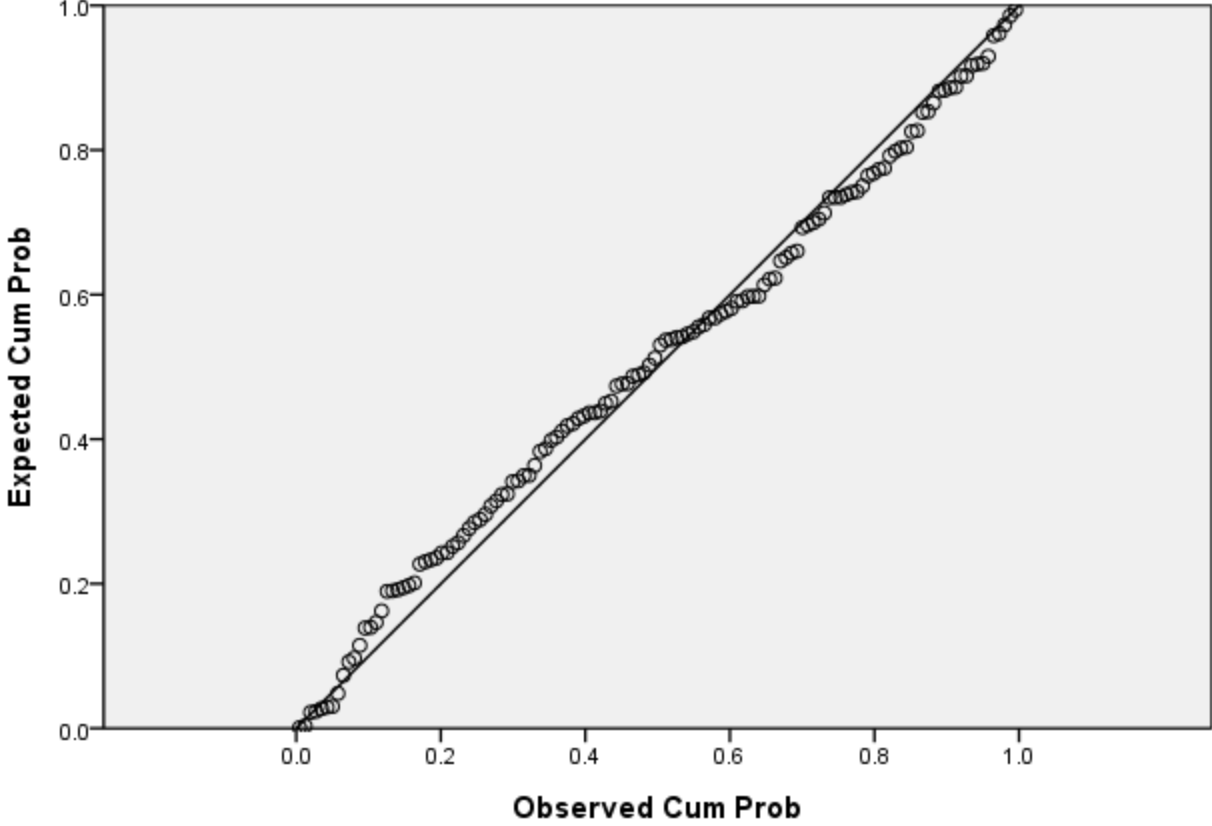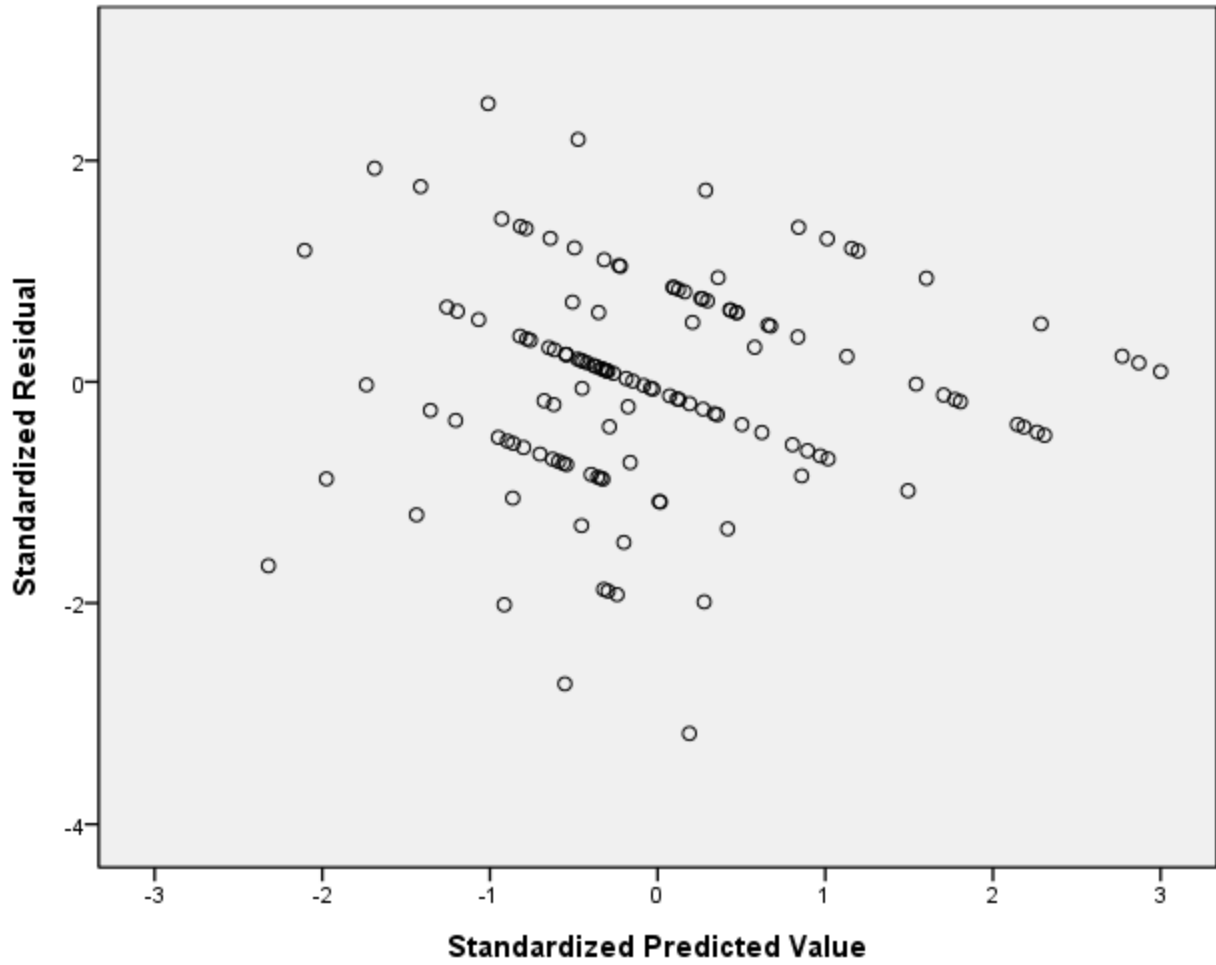## Appendix 8 (f): Scale: External Influence

Cronbach's Alpha	N of Items
.916	6

Appendix 8 (g): Scale: Information Sharing

Cronbach's Alpha	N of Items
.941	4

Appendix 9: Questionnaire

Factors influencing coffee growers' (agents') performance on quality: An empirical study of Coffee Growers with evidence from Tanzania's Coffee Primary Societies/Associations.

Dear Manger/Deputy Manager,

This study focuses on finding factors affecting coffee growers' performance on coffee quality in Tanzania. This means improving farmers' performance will enhance high coffee quality which can attract high price in the global market and provide high income to farmers. The coffee industry in Tanzania can be cited as a major source of foreign currency and acts as an absorber for unemployment especially in the regions where coffee is grown (Kilimanjaro, Arusha, Mbeya, Mbinga, Kagera). Despite the insights that will be added in scientific

literatures this study will be useful in formulating policies and managerial practices aimed at improving coffee quality. The results of this study may be delivered to you as executive summary when requested. In this questionnaire 1 stands for strongly disagree and 7 for strongly agree for question one A,B,E and F while for question one C and D we specify that 1 stands for strongly agree and 7 stands for strongly disagree. With respect to the above question we request you to answer question one A-F by circling a number that you think matches perfectly with your understanding for each statement. In subsequent questions you are requested to fill/tick answers in the space provided. Sometimes brief overview will be provided to you when a question seems to be not clear.

We promise to maintain secrecy on this information and no any Manager/Deputy Manager can be traced as all information gathered will be summed up to come up with results for improving coffee growers performance.

Finally we expect to receive much cooperation from you as information that will be collected from you will enhance this study to be accomplished.

With regards,

Bazil James & Patrick Singogo.

Question One:

A. Please circle only once a number that you think matches well with your understanding							
	Strongly disagree					**Strongly agree**	
1. This farmer always delivers coffee to us on time.	1	2	3	4	5	6	7
2. We are always very satisfied with the quality of the coffee we receive from this farmer.	1	2	3	4	5	6	7
3. This farmer always responds quickly to required production volume.	1	2	3	4	5	6	7
4. This farmer regularly responds quickly to our requirements on production process.	1	2	3	4	5	6	7
5. This farmer always uses very good storage facilities.	1	2	3	4	5	6	7
6. This farmer rarely free ride on us	1	2	3	4	5	6	7

	Strongly disagree					Strongly agree	
7. This farmer always uses the required fermentation units.	1	2	3	4	5	6	7
8. This farmer usually uses very good transportation facilities.	1	2	3	4	5	6	7

B. Please circle only once a number that you think matches well with your understanding							
	Strongly disagree					**Strongly agree**	
1. We regularly make personnel visits to this farmer's plantations to improve performance.	1	2	3	4	5	6	7
2. We are regularly informed by this farmer on any new insects/disease affecting coffee during the season.	1	2	3	4	5	6	7
3. We frequently receive report from this farmer on time used to dry coffee after harvesting.	1	2	3	4	5	6	7
4. We frequently have physical inspection of water used by this farmer on washing coffee after harvesting.	1	2	3	4	5	6	7
5. We frequently control the time period used by this farmer for drying coffee after harvesting.	1	2	3	4	5	6	7
6. We frequently inspect fermentation units used by this farmer.	1	2	3	4	5	6	7
7. We frequently inspect transportation facilities used by this farmer.	1	2	3	4	5	6	7

C. Please circle only once a number that you think matches well with your understanding							
	Strongly agree				**Strongly disagree**		
1. This farmer always produces more volume than what is desirable for good coffee quality.	1	2	3	4	5	6	7
2. This farmer frequently uses shorter period for drying coffee than what is desirable for good coffee quality.	1	2	3	4	5	6	7
3. This farmer always uses cheaper fermentation units than what is desirable for good coffee quality.	1	2	3	4	5	6	7
4. This farmer always uses cheaper transportation equipment than what is desirable for good coffee quality.	1	2	3	4	5	6	7
5. This farmer frequently uses cheaper fertilizer than what is desirable for good coffee quality.	1	2	3	4	5	6	7
6. This farmer always uses shorter fermentation period than what is desirable for good coffee quality.	1	2	3	4	5	6	7
7. This farmer always uses less water for washing coffee than what is desirable for good coffee quality.	1	2	3	4	5	6	7
8. This farmers frequently uses very cheap pesticides than what is desirable for good coffee quality.	1	2	3	4	5	6	7

D Please circle only once a number that you think matches well with your understanding							
	Strongly agree				**Strongly disagree**		
1. Local food crops organization frequently campaigns more use of land for food crops than coffee to this farmer which reduces available land for coffee production.	1	2	3	4	5	6	7
2. Local banana growers' organization frequently campaigns more use of land for banana than coffee to this farmer which reduces available land for coffee production.	1	2	3	4	5	6	7
3. Local trade organization campaigns more use of fertilizer than manure which reduces quality of coffee.	1	2	3	4	5	6	7
4. Local government authority regularly campaigns to this farmer to practice intercropping which reduces quality of coffee.	1	2	3	4	5	6	7
5. Local water supply organization always orders this farmer to use less water for washing coffee which affects negatively quality of coffee.	1	2	3	4	5	6	7
6. Other local coffee buyers who emphasize more on quantity always interfere negatively on quality of coffee produced by this farmer.	1	2	3	4	5	6	7
7. Other local coffee buyers who emphasize more on quantity always interfere negatively on quality of coffee produced by this farmer.	1	2	3	4	5	6	7

E. Please circle only once a number that you think matches well with your understanding							
	Strongly disagree				**Strongly agree**		
1. We regularly communicate market information like new prices to this farmer.	1	2	3	4	5	6	7
2. We always get reports from this farmer on progress of coffee production during the season.	1	2	3	4	5	6	7
3. We frequently get reports from this farmer on time period lasted for drying coffee.	1	2	3	4	5	6	7
4. We always communicate our expectation on coffee quality to this farmer.	1	2	3	4	5	6	7
5. We regularly provide information on cash bonuses to this farmer.	1	2	3	4	5	6	7
6. We always get reports on any insects/disease affecting coffee production from this farmer.	1	2	3	4	5	6	7
7. We frequently inform this farmer about what was taking place in auction floor.	1	2	3	4	5	6	7
8. We usually inform this farmer about fertilizers and pesticides to be used in coffee production.	1	2	3	4	5	6	7

F. Please circle only once a number that you think matches well with your understanding							
	Strongly disagree						**Strongly agree**
1. We usually pay a different price to this farmer depending on different level of coffee' quality.	1	2	3	4	5	6	7
2. We always provide different level of seasonal financial assistance to this farmer based on the level of coffee' quality supplied.	1	2	3	4	5	6	7
3. We frequently provide personal training to this farmer on how to use fertilizer and pesticides based on quality level of coffee supplied.	1	2	3	4	5	6	7
4. We always provide labor assistance to this farmer on fumigation process based on quality level of coffee supplied.	1	2	3	4	5	6	7
5. We usually provide cash bonuses to this farmer based on quality level of coffee supplied.	1	2	3	4	5	6	7
6. We always provide labor assistance to this farmer on coffee beans picking process based on quality level of coffee supplied.	1	2	3	4	5	6	7
7. We usually offer annual awards on achievement of required quality to this farmer.	1	2	3	4	5	6	7

Question Two: In which organization do you belong? Please tick one of the options provided below.

KNCU…………………

AKSCG…………………

Question Three:

For how long have you been in relationship with this farmer? ……………………… years.

Question Four:

How many number of bags did you receive from this farmer for the last production season (2011/2012)?………………bags

Question Five:

In which location your organization operates? Please tick one

Rural…………………….. Town………………….

Question Six: In the table below you are requested to fill average coffee price paid to farmers under your organization for each specified production season.

Season	Average price paid (Tsh../Kg)
2002/2003	
2003/2004	
2004/2005	
2005/2006	
2006/2007	
2007/2008	
2008/2009	
2009/2010	
2010/2011	
2011/2012	

Thank you for your cooperation!