



Master's degree thesis

LOG950 Logistics

**ANTECEDENTS OF BUYER OPPORTUNISM IN THE
EGYPTIAN SUGAR INDUSTRY: AN EMPIRICAL STUDY
BETWEEN SUGAR MILLERS AND SUGARCANE GROWERS
IN UPPER EGYPT**

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List of Abbreviation

AVE	Average Variance Expected
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CR	Composite Reliability
EFA	Explanatory Factor Analysis
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
IFI	Incremental Fit Index
KMO	Kaiser-Meyer-Olkin
MSV	Maximum Shared Squared variance
OLS	Ordinary Least Squares
RCT	Relational Contracting Theory
RSMEA	Root-Mean-Square Error of Approximation
SIIC	Sugar and Integrated Industries Company
TCA	Transaction Cost Analysis
USD	United States Dollars
USDA	United States Department of Agriculture
VIF	Variance Inflation Factor
X ²	Chi-square

Abstract

Purpose: To investigate the impact of environmental uncertainty, supplier assets specificity, prior relationship duration, purchase volume, on buyer opportunism in the Egyptian sugar industry's dyadic relationships between sugar mills and sugarcane farmers.

Design/methodology/approach: The sampling frame of the study was sugarcane's farmers registered in the transaction records register of Kom Ombo sugar mill in Aswan city in Egypt. Convenience sampling technique was used to administer 120 questionnaires. A total of 120 responses were collected for the study. The study employed multiple regression analysis to test the hypotheses.

Findings: Environmental uncertainty has positive impact on buyer opportunism, while introduction of supplier assets specificity has negative impact by reducing the level of buyer opportunism. Moreover, the negative effects on buyer opportunism depends on the level of relation duration, supplier sales volume and supplier workforce.

Research limitations/implications: The study hypothesizes only three antecedents of opportunism gives the study room to study other causative factors of opportunism in the future. Moreover, the study employed a cross-sectional research design, limiting the study in generalizing the results in the long-term. High internal validity of the study makes it to draw same conclusions in other industries.

Theoretical implications: The study depicts environmental uncertainty is a causal factor of opportunistic behaviors in buyer-seller relationships. Moreover, supplier asset specificity creates dyads of competitive advantages and tailor the relationships as such they have a negative impact on opportunistic behavior, even in presence of environmental uncertainty. Relationship duration plays a role in dissipating the opportunistic behavior through relational norms formed.

Managerial implications: Opportunism undermines exchange relations and is a factor caused by various prerequisites such as environmental uncertainty, short-term relations and power of exchange parties. This study therefore proposes measures that aim to eliminate opportunistic behavior such as formation of trade unions for collective bargaining, aligning long-term goals with sugar mills goals and enforcing formal contracts rather than totally depending on gentleman's agreements as a way of conducting business.

Key words: Buyer opportunism; Relationship duration; supplier transaction-specific investment; Sugar industry; Supplier sales volume; Egypt; Transaction Cost Analysis; Relational Contracting Theory; Power-Dependence theory.

CHAPTER ONE
INTRODUCTION

CHAPTER ONE – INTRODUCTION

1.1 Introduction

The introductory chapter of this thesis presents the background to the research, research problem, objectives of the study and justification of the study. Furthermore, the chapter elaborates the scope and delimitation of the study and the organization of the work.

1.2 Background Information

The knock-on effect of the highly increasing world population every year has led to higher demand for processed foods which use sugar as the most strategic commodity (Svatoš et al 2013). In fact, the international sugar market is one of the most highly distorted agricultural commodity markets in the world with both raw and refined sugar markets characterized by significant and widespread domestic support and trade distorting policies, such as guaranteed minimum payments to producers, production and marketing controls, state-regulated retail prices, tariffs, import quotas and export subsidies (Nyberg, 2008).

Moreover, Nyberg (2008) asserts that sugar is not only used as a food additive but also offers other production alternatives such as animal feed, fiber and energy, particularly biofuels (sugar-based ethanol) used to generate electricity which is a substitute of the ever-volatile oil energy resulting in a heightened focus on sugar as an internationally traded resource. In fact, extant literature posits strong linkages between world sugar and oil prices in recent years driven by the relationships between sugar as the primary ethanol raw material and exports of both sugar and ethanol in the world; particularly in Brazil which is the largest sugar producer (Nyberg, 2008; Chen, 2015).

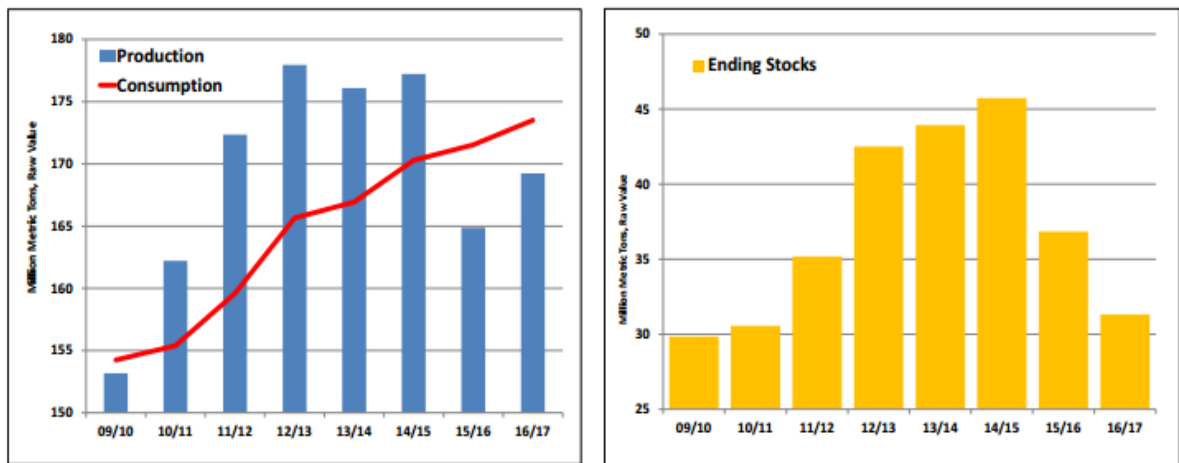
Ahmad (2013) posits that sugar as a major agricultural player has impacted markets from Europe to Asia and in the Americas. Sugar comes after wheat in strategic importance in Europe, Africa, the Americas and Australia, while sugar is ranked second only to rice to Asian countries and after wheat in Australia, Europe and Americas.

According to FAO (2012), the world sugar trade stood at USD 24 billion of which developing countries account for over 80% of the total transactions, showing its importance to the emerging economies through GDP contributions. Sugarcane's cultivated area globally stands at a total of 59 million acres and the total production of sugar was approximately about 175.1 million metric tons in 2014/2015 in terms of sugarcane on average (excluding

beet sugar), accounting for 75 to 80 % of global production per year with average yearly production growth is about 1.34% (Amrouk et al 2013). The global consumption of sugar has risen about 2 % on a yearly basis since the middle of 1980, with population growth as the key driver (Andersson, Hanna Jenshagen,2010).

Moreover, the sugar global consumption for 2016/17 has exceeded production thus drawing stocks down to the lowest level since 2010/11 (USDA, 2016). Furthermore, the rising demand of sugar has been sustained by drawing down stock levels in recent years, reaching historically low levels as shown in (figure 1) below (USDA, 2016).

Figure 1: Global Sugar Consumption vs Production



Source: USDA (2016)

As El-Sharif et al (2009) point out, the sugar industry is an important source of food security due to its strategic significance for countries' production processes in the food and agricultural sectors.

Agriculture is a key pillar of the Egyptian national economy which employs about 35% of the total country's workforce, and contributes about 20% of the national GDP and about 20% of total exports. In addition to its contribution to the provision of food for the ever-growing Egyptian population it also provides crude materials necessary for many other national industries with a further contribution to the process of capital accumulation in the national economy (El Sharif, 2009; Hussein and Mahdy, 1998). Furthermore, more than half of Egypt's population (53%) live in rural areas and depend largely on agriculture as a key resource for their income and livelihoods (Shalaby ,2011), thus targeting agricultural

development strategy in Egypt to achieve food security especially on the key strategic crops including sugar crops (both beet and sugarcane).

However, the industry has seen many a problem in the dyadic relationships between millers (sugarcane producers) and sugarcane farmers resulting to a self-destruct concept of Egypt's sugar industry, resulting to sub-optimal production and a progressive decline of the industry over the years. This study has therefore has chosen the Egyptian sugar industry as a setting to investigate the underlying buyer opportunism in the industry due persistent problems such as low profits and high costs especially on the producers' point of view.

In interorganizational relationships small-scale farmers such as those in the sugar industry, are considered in general to be dependent and vulnerable. This is due to significant resource inequalities and their proneness of asymmetric power disadvantages (Masuku and Kirsten, 2004). In the sugar industry supply chain, opportunistic behavior may occur when the buyers (the sugarcane mills) realizes that the farmers have limited opportunities for redeploying relationship- specific assets (Royer, 1999). Joshi and Arnold (1997) suggest that opportunistic behavior is a purposeful behavior, meaning that this behavior is likely to emerge in situations where the party (the sugarcane millers) expects a high probability of success from such behavior.

Cullen and Hickman (2001) suggest that the main factors that influence supply chain efficiency includes informal element such as trust, norms or standards that support exchange relations regardless of contractual obligations. In Ramdas and Spekman (2000), authority balance is positively related to alliance performance in the sense that the more one partner controls the alliance through authority advantage, the more likely that the alliance would perform poorly. Masuku and Kirsten (2004) conclude '*...that trusting relationships are perceived to promote alliance performance and that the presence of authority advantage has a negative effect on alliance performance, which is further worsened by the absence of trust*'. Other scholars, like Medina-Munoz and Medina-Munoz (2002) also emphasizes the role of trust, and suggests that trust is associated with the success of the relationship.

1.3 Research Problem

This research is concerned with the study of buyer opportunism characterized with behaviors such as deceit and false promises towards sugarcane growers, who supply the sugarcane to their respective millers; bringing about exchange hazards buyer-supplier relationships. Exchange risks arise when a partner in an exchange relationship opts to pursue his or her own interest at the expense of the other (Williamson, 1985).

From an overview of the universal problems the sugarcane farmers face; many have been as a result of their exchange relations with the buyers (sugar millers) that all reflect the element of opportunistic behavior withholding or distorting information, lies, stealing, cheating, calculated efforts to mislead, disguise, confuse, and shirking or failing to fulfill promises or obligations (John, 1984; Williamson, 1985); all at the expense of the farmers.

Moreover, the buyers' opportunistic behavior is expected to be deterred when relationship duration increases and in scenarios where the supplier trades massive volumes of sugarcane compared to the small-scale farmers. Regarding the empirical and methodological gaps identified in the extant literature in as far as sugar millers and sugarcane farmers are concerned, little has been done per the extant literature especially in the light of the developing economies such as Egypt.

In the light of the potential exchange hazards that are embedded in the buyer-seller relationships, this paper aims to examine the prerequisites of opportunism existing in this relationship through theoretical paradigms of Transaction Cost Analysis, Relational Contracting Theory and Power Dependence theory to answer the following questions;

- What are the factors that influence opportunism of sugar millers towards sugarcane growers in Upper Egypt?
- What factors deter buyer opportunism (sugar millers) behavior towards sugarcane growers?

1.4 Objective of the Study

The primary objective of this study is to examine buyer-seller relationships in the Egyptian sugar industry. This study focuses on exchange relationships between sugar millers and sugarcane growers in Upper Egypt as the unit of analysis.

Thus, the specific objectives of the study are:

(a) to examine the role environmental uncertainty plays on opportunism in the sugar millers and farmers' exchange relationships when supplier specific investments are introduced.

(b) to examine the moderating effect of relationship duration on the association between sugar millers power with respect to the resulting opportunism.

(c) to examine the moderating effect of scale of production (small scale or large-scale famers) and supplier work force (supplier size) on the association between farmers' unilateral specific investments and sugar millers' opportunism.

1.5 Justification for the Study

The sugar industry in Egypt is one of the most important sectors that has a positive impact in contribution of the national income. Despite recent political unrest and a decline in GDP growth, the importance of this industry raises where it affects other sectors like transportation and agriculture by makes the industry having a potential contribution in creating jobs, directly and indirectly, leading to development in other economic activities as sugar industry is relatively labor intensive typical of manufacturing industry (El Sharif et al, 2009).

Furthermore, sugar is a strategic commodity in Egypt's economy. As El-Sharif et al (2009) point out more than half of the Egyptian population live and work in rural areas and depend largely on agriculture as a key resource for their income and livelihoods. According to Mohamed, Elgazzar and Abdelsalam (2017) the Egyptian sugar industry has recently been undergoing a dramatic challenge to survive due to the misappropriation endorsed in the industry coupled by an elevation of destructive impact on the supply chain participants and activities involved in the sugar supply chain which hinder the way business carryout their necessary business activities.

In the light of the Egyptian sugar industry therefore the research aims to study the causal factors of the buyer's opportunism as described from the perspective of suppliers (farmers) of sugar in the buyers-seller relationship. Therefore, this research will employ three theories including power-dependence theory, transactional cost theory and relational contracting theory as the primary theoretical frameworks seeking to answer the research questions raised in the preceding subsection.

1.6 Scope and delimitation of the Study

This research includes sugarcane growers who are suppliers within the Egyptian Sugar and Integrated Industries company (SIIC), a sugarcane-growing in the upper Egypt region this region was chosen as represented high percentage of the cultivated areas and where all millers are located. The study is also limited to the existence of a relationship between buyer and supplier. Thus, suppliers give their perception of the relationship they have with a buying firm over a time. Thus, the use of dynamic relationship approaches rather than the network approach, with data collected from one side of the dyad, specifically from supplier side of the buyer-supplier relationship under study.

1.7 Organization of the Study

This thesis consists of nine chapters. Chapter 1 presents a brief background to the Egyptian sugar industry, research gap and questions, objectives of the study, justification of the study and scope and delimitation of the study. Chapter 2 presents the current situation in Egyptian's sugar industry and the supply chain of sugar industry. Chapter 3 gives a theoretical framework to the proposed study. Chapter 4 discuss the research conceptual model and the hypotheses which are developed considering TCA and RCT theories. Chapter 5 describes research design and the methodology which are used in such a study. The definition and operationalization of variables are discussed in chapter six. As for chapter seven it covers the measurement assessment and data validation. Chapter eight presents the regression model and the result of hypotheses tested in the study. Finally, chapter nine the last chapter deals with research results, theoretical and managerial implications, limitations and suggestions and further research studies.

1.8 Summary

As a summary, this chapter clarifies the background of this study based on buyer-supplier relationship followed by the research problem, objectives of the study, significance, scope and organization of study. The upcoming chapter presents an overview of the sugar industry in Egypt.

CHAPTER TWO
SUGAR INDUSTRY IN EGYPT

CHAPTER TWO – SUGAR INDUSTRY IN EGYPT

2.1 Introduction

This chapter shows a brief overview of the history of sugar industry with sheds light on the production and consumption of sugar, as well as the sugar value chain.

2.2 Egypt's Sugar Industry Overview

According to Shehata (2015), sugarcane is the primary source to produce sugar, molasses and sugar cane juice while sugar beet is the second source of sugar production in Egypt. Moreover, sugarcane also is used in animal feeding next and production of alcohol (El-Sharif et al ,2009). In this study, the area of concern is sugarcane production and how opportunism arises between the farmers and sugar millers. Sugarcane accounts for 66.1% of the industry's total sugar production. (Shehata, 2015). The sugar industry offers over 23,000 jobs in the country, mostly through unskilled labor (USDA, 2016).

Moreover, the sugar industry in Egypt is characterized as a monopsony market where there are many suppliers with only one buyer (USDA, 2015). The government is considered the sole owner of all the sugar mills in the country (Abdel-Maksoud and El-Sharabassy, 2007). According to USDA (2016), Egyptian Sugar and Integrated Industries Company(SIIC) is the one responsible for managing all the sugar mills on behalf of the government. The company was founded in 1956 followed by 9 mills which are Hawamdeya in Elgiza, Abu Qurqas in Minya, Sohag Gerga factory and the Nag Hammadi, Deshna and Qus in Qena, Armant factory, Kom Ombo and Edfu in Aswan, where Kom Ombo factory is the largest at the level of all in the country in terms of size and production. Furthermore, these mills are located where sugarcane crop is grown on a commercial scale in Upper Egypt, starting from the southern centers of the province of Minya and to Aswan which cultivated in tropical and temperate regions.

The cultivated area of sugarcane harvest about 100,000 hectares (USDA, 2016). Furthermore, the concentration of sugarcane cultivation is in Aswan, Qena, Suhag, and El-Minya governorates with a total 97.1% of sugarcane crop area in Egypt. (USDA, 2016; USDA, 2015). Furthermore, Shalaby, (2011) and USDA, (2016)'s report, sugarcane is planted in two seasons which spring and autumn, the crop takes 11 to 12 months to grow, as the autumn season's planting extends from September through October, while spring seasons planting happens in February and March.

Recently, production of sugarcane in Egypt faces many challenges due to the increasing challenges in terms of water supply, government policies, highly increasing population growth. In fact, there have been calls for a reduction of sugar cane area, however it was suggested that it would threaten the sugarcane industry in Upper Egypt (USDA, 2016, USDA, 2015).

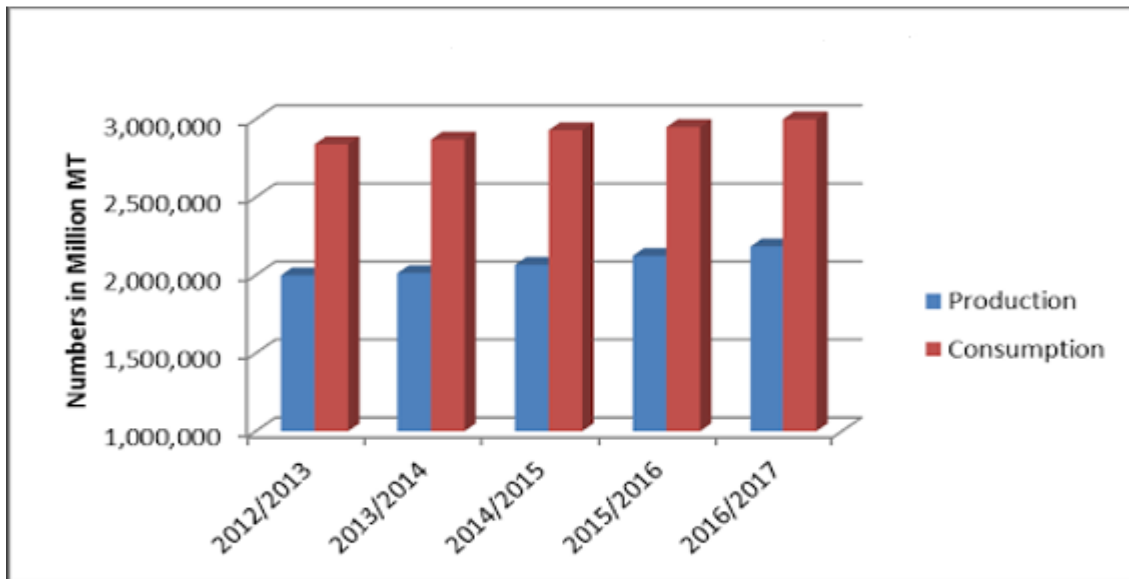
Due to the importance of sugar as a strategic commodity the government has sought to help the industry by encouraging farmers by subsidizing the sugarcane price through the state-run Sugar and Integrated Industries Company (SIIC), (USDA, 2015). Nonetheless, increase in production of sugarcane is expected to grow by 3 percent or 60,000 MT to reach 2.185 MMT in 2016/2017 from in 2015/2016 production of 2.125 MMT. According to USDA (2016) the study problem has presented the gap between production and consumption of sugar. The upcoming section will present the gap between both production and consumption in the Egyptian sugar industry.

2.3 Sugar Production and Consumption

According to Werr (2015) & USDA (2016) Egypt produces approximately 2.185 million tons domestically and consumes approximately 3,000,000 tons, an increase accounted for due to the ever-growing increasing Egyptian population. The total raw sugar imports were 850,000 MT in 2015/16 and Brazil and the EU were Egypt's main suppliers for sugar imports. Egypt's sugar exports over 200,000 Metric Tons in 2015/16, and its major market is Sudan, Saudi Arabia, Tanzania, Uganda and Kenya (USDA, 2016).

As El-Sharif et al (2009) and USDA (2015) point out, a gap between production and consumption of sugar in Egypt started to appear after the 1973 war this gap has significantly increased at the beginning of the eighties in 1981, 573,000 tons increased to 978,000 tons by the year 2006 with an annual increase of 50,000 metric tons' gap between production and consumption that's due to the population increment in addition to the beginning of the opening economy policy after 1973 and the subsequent variation in food patterns. Figure 2 below which demonstrates the gap between Egypt's sugar production and consumption for the past six years.

Figure 2: Egypt's Sugar Production and Consumption 2012-2017



Source: USDA – 2016

2.4 Egypt's Sugar Supply Chain

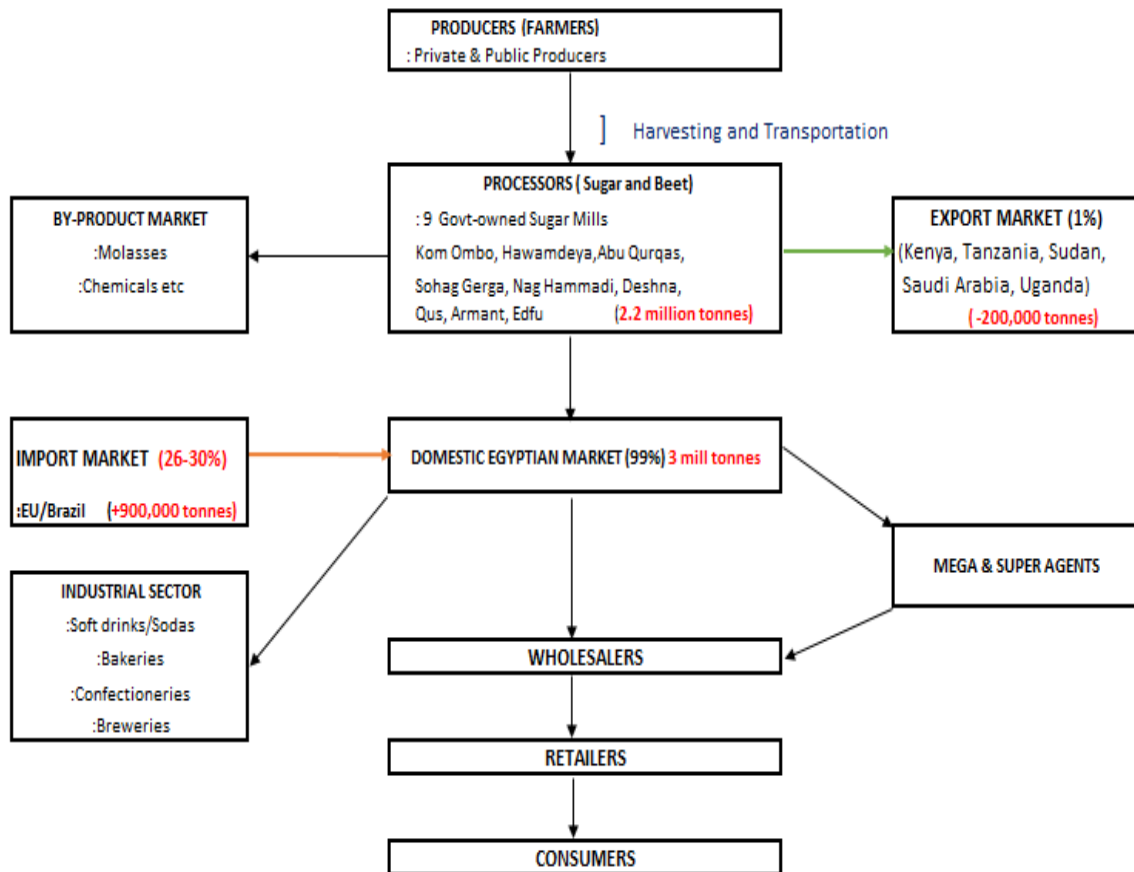
The sugarcane industry has faced several challenges last years like increased international competitiveness, lower commodity prices and an industrialization of agriculture as farming shifts from a rural lifestyle to an agri-business sector with a value chain mentality. While the cost of production is in general increasing, the long-term sugar price trend has been downwards. Also, increasing competition from new sweeteners (erythritol, asper tan) puts pressure on sugar prices (Spencer, 2004).

The supply chain of agri-foods doesn't differ from any other supply chain in the way that different processes and activities are working together with the goal to bring products and services to the market with the purpose to satisfy customer demand. However, the agri-food supply chain differs in the characteristics of the product, which are their limited shelf-life and their demand and price variability, the importance played by other factors such as quality and safety, and weather-related variability. This combination can make the underlying supply chain more complex and more difficult to manage than other supply chains (Ahumada and Villalobos, 2009).

According to Higgins et al (2007), sugar industries are primarily “push chains”. The sugarcane is pushed through the supply chain to produce raw sugar and sold at market value as a bulk commodity. There is minimal product differentiation, and the main difference

between sugar industries across countries are the number of farms and the ownership structure. Figure 3 below presents the major actors in the Egyptian sugar industry's value chain.

Figure 3: Egyptian Sugar Industry Value Chain



Source: Author's own illustration based on literature review (2017)

Figure 3 above has presented the supply chain in the Egypt's sugar industry through in a condensed illustration. The supply chain involves several actors starting by the farmers as suppliers of raw sugarcane until the end process where the products reach the final consumer. The farmers play a major role in providing the raw materials (sugarcane) to the sugar mills. According to the USDA (2016) report, the total area cultivated by farmers in Egypt account for over 100,00 hectares of which most of the area is in the Upper Egypt region.

Other major actors include transporters of sugarcane to the mills and refineries. Majority of the transporters are the farmers themselves using tractors, animals such as donkeys and small trucks. Alternative transporters are sugar mills that offer transport services through local

light railway lines from major sugarcane collection centers. The train consists of 25 carts loaded with 10-15 tons of cane per cart with the carts given numbers according to the cane owner. (Abdel-Mawla, 2012; Nakhla and Hagggar, 2014).

Figure 2.2 further depicts the by-product market which plays a role in the sugar supply chain. The producers provide this market with by-products such as bagasse which is a fibrous material after squeezing the juice from canes, filter mud or cake after cane juice filtration, molasses used majorly in animal feed production, and alcohol and chemical catalysts and products (Nakhla, 2015).

The export market plays a vital role in the Egyptian sugar industry. According to USDA (2016), Egypt exports about 200-250,000 tonnes of the sugar it produces to Kenya, Tanzania, Sudan and Saudi Arabia, accounting for the 1% of its total production output. respectively. Despite Egypt's sugar deficit, Egypt still exports some of its sugar and this can be justified by the theory of comparative advantage where still Egypt has advantages based on the opportunity costs of not investing in other industries that the country has absolute disadvantage.

The import market plays a major role in sustaining the whole Egyptian sugar industry by accounting for the production deficit. It accounts for 26 to 30% of the needs of the Egyptians through considerable amounts of subsidies. According to USDA (2016), Egypt imported over 800,000 metric tonnes of sugar to satisfy its sugar deficit with most of it coming from the EU and Brazil.

Other value creators include the industrial sector such as soft-drink manufacturers who buy in bulk, mega and super agents who store and break bulk to further sell to wholesalers, then to retailers and to the final consumer. This study is therefore mainly focused on the first two supply chain players, that is the relationship between farmers as the supplier for sugarcane and sugar mills as the buyer. Furthermore, figure 3 portrays three main functional areas within the sugarcane supply chain for the area of the study; production, harvest and transport. In production, the main decisions relate to how farmers grow crops regarding the specifications given by the sugar millers. This can be for example allocation of land and sowing time, type of sugarcane breed to be planted, sugarcane husbandry and quality control. In harvest, the main decisions be will related to timing for collecting the crops, and which

recourses to use (equipment and labor). Transportation involves decisions of choice of transport mode and routes, whether the farmer will transport the crops by their own transport mode or using the mill's transport mode (Ahumada and Villalobos, 2009).

2.5 Relevance of Egypt as a Research Setting

Egypt is one of the world leading countries in sugar production with comparative advantage to many sugar producing countries, and sugar is considered as one of the most important commodities to the Egyptians (Mohamed, Elgazzar and Abdelsalam, 2017). The strategic significance of this industry with respect to the GDP contribution, job offerings as illustrated in the supply chain in the preceding sub-chapter, and pivotal role in sustaining other industries that need sugar and its by-products as inputs has motivated the researcher to initiate this study in the Egyptian sugar industry.

Furthermore, many studies in the Egyptian sugar industries have not addressed the dyadic relations issues farmers face with respect to the sugar mills. The Egyptian sugar market is laid in a monopsony market structure, where there are many producers and sellers and one buyer (the Egyptian government that owns all the sugar mills), a case which is very rare according to Van Weele (2009). Monopsony situations result in unilateral power especially due to low supply risk and the perishability of the raw materials in question. This scenario may result in opportunistic tendencies especially by the powerful sole buyer to gain profits at the expense of the peasants. This study therefore aims to bring into light the opportunistic nature of the existing monopsony market in the Egyptian sugar markets and factors that enhance such practices leading to inefficiencies in the Egyptian sugar supply chain.

2.6 Summary

This chapter has provided an overview of the Egypt's sugar industry and its market, as well as explored and discussed the gap between both production and consumption of sugar during the past six years. This chapter has discussed sugar value chain and its actors. The upcoming chapter presents theoretical background that is relevant for this study.

CHAPTER THREE
LITERATURE REVIEW

CHAPTER THREE- LITERATURE REVIEW

3.1 Introduction

This chapter gives a literature overview of the three theories that are incorporated in the research paper including Transaction Cost Analysis (TCA), Relational Contracting Theory (RCT) and Power Dependence Theory, the three theories mentioned in this chapter are used to develop the variables of the conceptual model relevant to the study.

3.2 Transaction Cost Analysis

Transaction Cost Analysis has been an important anchor for most economists and other audiences, especially in the marketing discipline and organizations. The theory, which belongs to the “New Institutional Economics” paradigm was developed from the works on transaction costs by Ronald Coase and John Commons in the 1930s and later developed by other economists such as Oliver Williamson (Williamson, 1979, 1985; Rindfleisch and Heide, 1997). The theory has initiated research interests from various disciplines such as economics, sociology, politics, organization theories, business strategies and marketing (Rindfleisch and Heide, 1997).

According to Williamson (1985), the theory sheds light on how transactions are organized through different forms of governance. In fact, TCA propounds that a transaction between exchange parties is the basic unit of analysis and dictates the forms of governance structures to be used in a dyad to economize on the transaction costs (Williamson, 1985, 1993).

Williamson (1985) has distinguished transaction costs into two main categories, that is ex-ante transaction costs and ex-post transaction costs. Ex-ante transaction costs rise prior to establishing agreements and can take the form of costs arising when drafting or negotiating a contract. Ex-post costs rise after agreements and can include costs of monitoring and enforcing agreements (Rindfleisch & Heide, 1997; Williamson 1985).

TCA’s analytical paradigm stresses the importance of efficient governance mechanisms for supporting exchange relations (Heide, 1994; Heide and John, 1992). Moreover, Heide and John (1992) and Williamson (1985) further argue that certain exchange characteristics give rise to transaction difficulties and can be counteracted by different governance mechanisms that have different efficiencies in minimizing costs. Buvik and Grønhaug (2000) assert that TCA follows a relative efficiency in exchange process, focusing on net gains provided by economies of production and the different governance performance.

Williamson (1985; 1979) asserts that transactions bear different characteristics transaction and as the frequency of transaction increases or with the introduction of specific investments external market as a governance mechanism leads to inefficiency of the exchange relationship. In fact, external market mechanism has a short-term orientation and views inter-firm relationships as discrete and does not consider long-term bilateral relationships (Williamson 1985; Heide, 1994; Buvik and Haugland, 2005). Moreover, Heide, (1994) posit the focus in market governance environments is short term economic profits and the supply and demand forces are the primary mechanism for interfirm-coordination.

As external market transaction costs rise, non-market governance forms assume the role of governing exchange relationships (Heide, 1994, Williamson 1985). These include hybrid governance and vertical integration that are more efficient in guiding exchange relationships between buyers and sellers (Williamson 1985; Heide, 1994).

Bilateral or hybrid governance involves bilateral adaptations in a dyadic relationship aimed to achieve a common objective (Heide, 1994). According to Buvik and Haugland, 2005 and Heide (1994), relationships are significant in this governance and evaluative processes involve the assessment of not only skills but also general beliefs, attitudes and values. Moreover, relationships are strategic, and planning is jointly done, decentralized, flexible, and exhibits lower levels of specificity. This kind of governance however can lead to small-number conditions creating a dependence trap caused by high switching costs (Buvik and Grønhaug, 2000).

Unilateral or hierarchical governance incorporates power asymmetry and exchanges in this governance are governed by contracts that contain explicit specifications of duties to ensure that the required behaviors are performed such as vertical integration (Heide, 1994; Williamson 1985). Contracts in this governance often contain standard rules, monitoring mechanisms, and terminating clauses are frequently used as a governance mechanism and incentive systems are designed to reward observed behavior (Buvik and Haugland, 2005; Heide, 1994). Both hybrid and unilateral governance structures are a contingency plan in eradicating exchange parties' opportunistic behavior, a concept that is a corner stone in the TCA theory.

3.2.1 Behavioral Assumptions of TCA

The TCA microanalytical framework is based on the interplay between two main assumptions of human behavior i.e., bounded rationality and opportunism. The two concepts are further elaborated in the following two subchapters.

3.2.1.1 Opportunism

Extant literature on transaction cost analysis framework mentions the opportunism construct as a vital assumption based on the nature of the economic man forming exchange parties. This construct however has brought contradictory views among scholars of various disciplines including organization theory and marketing, claiming little explicit studies on opportunism (Wathne and Heide, 2000; Rokkan, Heide and Wathne, 2003). In fact, much of the focus on the existing studies is on strategies for controlling the opportunistic behavior, forgetting the main opportunism construct itself (Wathne and Heide, 2000).

Furthermore, Wathne and Heide (2000) posit that very few studies have measured opportunism and there are unresolved questions pertaining to the definition of opportunism due to the complex nature of the phenomenon. These two factors have rendered the strategies of tackling opportunism to be ineffective (Wathne and Heide, 2000).

According to Williamson (1985) opportunism is defined as self-interest seeking with guile and ranges from lying, stealing, cheating and all kinds of deceit, with calculated efforts to mislead, distort, disguise, obfuscate or confuse. Williamson (1985) further argues the introduction of asymmetric information gives room for people to act opportunistically for their own interest instead of the other party. According to Masten (1988) and Wathne and Heide (2000), Williamson's (1975; 1985) definition of opportunism can be termed as blatant or strong form opportunism and may manifest in the initiation stage of an exchange relationship through deliberate misrepresentations of some kind (ex-ante) or through violations over the course of the relationship (ex-post). This is mainly due moral weaknesses in humans that make it difficult in honoring contracts (John, 1984, Wathne and Heide, 2000).

Wathne and Heide (2000) elucidate blatant opportunistic behavior in a marketing perspective through traits such as falsification of expense reports, breach of distribution contracts, bait-and-switch tactics, quality shirking and violation of promotion agreements.

Opportunism poses transactional hazards in the purported exchange relations especially where there is the introduction of specific investments (Rindfleisch and Heide, 1997; Rokkan, Heide and Wathne, 2003). In fact, opportunism, can also reduce a firm's incentive to invest valuable resources, therefore undermining both a firm and the exchange relationship's efficiencies (Rokkan, Heide and Wathne, 2003). Wathne and Heide (2000) assert that specific assets could be used as a form of hostage knowingly of the risk of asset obsolescence that decreases the value to the hostage party. The hostage party is then subjected into a lock-in situation and cannot leave the relationship without sustaining economic loss, thus increasing incentives for partners in a dyad to act opportunistically.

Some extant literature has discussed the three types of business opportunistic behavior namely; adverse selection, moral hazards, and hold-up (Berthon et al ,2003; Barney and Ouchi, 1988).

Berthon et al, (2003), defines adverse selection as an ex ante opportunism that arises when there is information asymmetry prior to establishing an exchange agreement thus parties in the dyad cannot establish the true attributes that have impacts on their future performance. The pre-contractual evaluations of partners or goods can be an issue to address especially when one party of the exchange relationship lacks adequate resources and expertise to tackle down insufficient information before the agreement. This is evident in the insurance literature (Berthon et al ,2003; Barney and Ouchi, 1988).

The other two opportunistic practices of moral hazard and hold-up situation arise ex post. In fact, moral hazard is ex post opportunism bred also from information asymmetry about the capabilities of an exchange partner with respect to the current environment. In fact, moral hazard can be defined as shortfalls in effort arising when individuals engage in risk sharing under conditions such that their privately taken actions affect the probability distribution of the outcome (Berthon et al ,2003; Holmstrom, 1979).

Conversely, hold-up situation is ex post opportunistic behavior arising from unilateral idiosyncratic investment in an exchange relationship. The specific investments introduced in the exchange relationship act as bait, leading to dependence trap on an exchange partner that lead to small number conditions because of high switching costs (Rokkan, Heide and Wathne, 2003; Wathne and Heide, 2000; Berthon et al ,2003).

Forms and Outcomes of Opportunism

Expounding on the early TCA works of Williamson (1985), Wathne and Heide (2000) have gone a step further in defining the two forms of opportunistic behavior i.e. active and passive opportunism, with the considerations as to whether either form take place within existing or new circumstances.

Figure 4 gives an overview of the different faces opportunism takes and much of this is further explained in the upcoming subsection.

Figure 4: *Forms and Outcomes of Opportunism*

		Circumstances	
		Existing	New
Behavior	Passive	<p>1</p> <p style="text-align: center;">Evasion</p> <p style="text-align: center;">↓</p> <p>Cost effect: Decrease for O (short-term), increase for E (long-term)</p> <p>Revenue effect: Decrease for E, S (long-term)</p>	<p>2</p> <p style="text-align: center;">Refusal to adapt</p> <p style="text-align: center;">↓</p> <p>Cost effect: Minimal</p> <p>Revenue effect: Increase for O (short-term), decrease for E and O (long-term, forgone revenues due to maladaptation)</p>
	Active	<p>3</p> <p style="text-align: center;">Violation</p> <p style="text-align: center;">↓</p> <p>Cost effect: Increase for E (long-term)</p> <p>Revenue effect: Increase for O (short-term), decrease for E, S (long-term)</p>	<p>4</p> <p style="text-align: center;">Forced renegotiation</p> <p style="text-align: center;">↓</p> <p>Cost effect: Increase for E (haggling, concessions)</p> <p>Revenue effect: Increase for O (short-term, from concessions), decrease for E and O (long-term, forgone revenues due to maladaptation)</p>

O = Party engaging in opportunistic behavior; E = Exchange partner; S = System (e.g., other parties).

Source: Wathne and Heide (2000)

From figure 4 above, cell 1 considers passive opportunism under existing circumstances perspective. Opportunistic behaviors entailed in these two prerequisites take the form of evasion of obligations and shirking such as non-compliance of quality standards by parties in a dyad. Partners acting opportunistically aim to achieve cost saving, and this can only be

met in the short-term, at the expense of the exchange partner who incurs extra costs. In the long-run, there is customer dissatisfaction for the opportunistic party and this leads to reduced profits for both parties in the exchange system (Wathne and Heide, 2000).

In cell 2, Wathne and Heide (2000) illustrate a scenario of passive opportunism under new circumstance. Opportunism here takes the form of refusal to adapt to new business circumstances. Here, there are minimal costs incurred because of lack of investments needed to support the exchange system. On the revenue side, however, the opportunistic partner benefits on the short term through increased revenue. In the long run, the exchange partner and the system feel the impact of opportunism through forgone revenues because of maladaptation.

Cell 3 depicts active opportunism under existing circumstances. In this scenario, opportunistic behavior takes form of violation of previously laid down rules through breach of contracts. This leads to increased costs for the hostage as the relationship progresses. Moreover, revenue wise, the opportunistic partner achieves the desired goal of increased revenue, but only in the short-term. In the long-run, both the system and the hostage feel the negative effect of opportunism in their revenues through decreased incomes (Wathne and Heide, 2000).

The last cell portrays active opportunism in arising circumstances. According to Wathne and Heide (2000), opportunism in this situation takes the form of forced renegotiation of the previously written contracts. This influences the weak exchange partner as he incurs increased costs brought about by haggling and concessions. The short-term revenue effect is positive to the opportunistic party and negative to the hostage partner. In the long-run however, both exchange parties are negatively impacted by the opportunistic behavior through decreased income caused by refusal to adapt.

3.2.1.2 Bounded Rationality

The second TCA assumption of 'bounded rationality' is a designation referring to the rational choice that accounts the cognitive limitations of decision makers in the exchange dyad in terms of knowledge and computational capacity (Simon, 1982). Rindfleisch and Heide (1997) further elucidate that it is the assumption that decision makers have constraints on their cognitive capabilities that affects their rationality in information processing and

communication ability. This assumption is not further discussed in the study, with focus given much on the opportunism aspect.

3.2.2 Dimensions of a Transaction in TCA

The dimensions of a transaction in TCA also play a vital role in supporting the theory. These include Asset Specificity, Uncertainty and Volume/ Frequency of Transactions. These dimensions are further expounded in the subsequent sub-chapters.

3.2.1.1 Asset Specificity

According to Rokkan, Heide and Wathne (2003), specific investments are important in marketing strategies and inter-firm relationships due to the value they add in a dyad. Ghosh and John (1999) assert that specific assets play key roles in realizing value propositions which give a party competitive advantages.

Williamson (1985) defines asset specificity as durable, tangible and intangible investments that firms incur for the facilitation of transactions in an exchange relationship. Moreover, Buvik and Reve (2002); Rokkan, Heide and Wathne (2003) posit that they are assets that are uniquely dedicated for specific transactions out of task needs and goodwill and cannot therefore be redeployed to other uses without a significant loss in value, a character that brings up the question of opportunism by exchange partners through lock-in and dependence traps as receivers have the incentive to expropriate the investments' values (Wathne and Heide, 2004).

The aspect of specific investment not being able to be redeployed puts the focal receiver in a driving seat to expropriate the investments (Rokkan, Wathne and Heide, 2003).

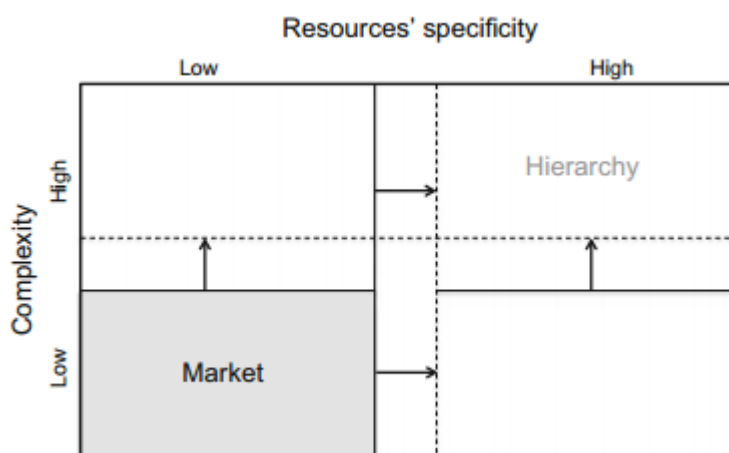
The subject of opportunistic behavior acts as a barrier for firms to invest in valuable assets in fear of expropriation, but still this dimension brings about controversy due to the considerable value they create that can improve co-ordination in an exchange relationship (Rokkan, Heide and Wathne, 2003). Furthermore, Rokkan, Heide and Wathne (2003) posit the specific investments pose a dilemma between remaining in the relationship and bear the opportunistic behavior and its costs or leave the relationship and pay significant amounts of switching costs.

Rokkan, Heide and Wathne (2003) further argue specific investments can have negative impact on opportunism through bonding effect especially if given the extent of returns is sufficiently productive. The effects of specific investment on the receiver depend on extendedness, which is the duration of the exchange relationship, and relational norms that tend to dilute opportunism towards bonding (Rokkan et al., 2003).

Rindfleisch and Heide (1997) also argue that opportunism poses a problem to the extent that a relationship is supported by specific assets whose values are limited outside of the focal relationship by the focal recipient exploiting the situation by demanding various kinds of concessions from the investor. This has led to the notion that specific investment creates safeguarding problems (Rindfleisch and Heide, 1997; Wathne and Heide, 2000; Rokkan, Heide and Wathne, 2003).

Heide and John (1988) have incorporated the dependence and TCA frameworks as the basis of how firms can eradicate the safeguarding problems while Rokkan, Heide and Wathne (2003) also incorporate relational norms as a basis of shifting from expropriation towards bonding. In fact, Heide and John (1988), Buvik and Haugland (2002) and Kvaløy (2003) suggest different forms of governance mechanisms as an effective way to deal with safeguarding problems arising from investments of specific assets in the notion that as asset specificity becomes more substantial, the form of governance should move from external market convention to hierarchy governance.

Figure 5: Governance Mechanisms and Asset Specificity



Source: Rossignoli (2015).

Extant literature posits the various types of asset specificity including *site specificity*- that occurs when investments are made in close proximity to enhance efficient production in an exchange relationship, *physical asset specificity*- including equipment or machinery that

produce inputs specific to a particular customer or are specialized to use an input of a particular supplier, *human-asset specificity* – in terms of the accumulation of knowledge and expertise that is specific to one trading partner and *dedicated assets*- investments in general capital to meet the demand of a specific buyer. However, these are not specific to the buyer, except that if the specific customer decided not to purchase, the input supplier would have substantial excess capacity. (Church and Ware, 2000). Asset specificity in this study will be used to study the buyer opportunism and to what extent they effect the sugarcane famers' relations with the sugar millers.

3.2.2.2 Uncertainty

Uncertainty is a multidimensional concept considered as one of the most important factors in transaction costs theory and other organization theories; in fact, uncertainty has been a key issue for strategic decision makers in charge of sustaining the advantage of the firm over time (Sutcliffe and Zaheer, 1998; Vecchiato, 2012).

Many scholars have time and again associated uncertainty with choice of governance forms for firms (Williamson, 1975; Pfeffer and Salancik, 1978; Bergen et al, 1992). Uncertainty has however raised concerns on its impact on governance decisions among various scholars (Bergen et al, 1992). Extant literature has raised questions on the role of uncertainty found in TCA as a factor for influencing governance mechanisms and as a multidimensional concept, this may result in different organizational governance outcomes (Bergen et al, 1992). In fact, strategic management scholars stress on uncertainty as a major factor affecting key strategic decisions of organizations (Sutcliffe and Zaheer, 1998).

Williamson (1975) describes uncertainty as the inability of exchange parties to predict the future and its unforeseen occurrences. Williamson (1985) went further to clarify the two categories of uncertainties, i.e. environmental uncertainty and behavioral uncertainty.

- ***Behavioral Uncertainty***

Behavioral uncertainty is the individual's perceived inability to predict the future correctly (Milliken, 1987). Milliken (1987) further argues that individuals experience uncertainty due to insufficient information to predict accurately or the inability to discriminate between relevant and irrelevant data. Rindfleisch and Heide (1997) postulate that behavioral uncertainty can be elucidated by opportunistic behavior of the economic agents and bounded rationality. In fact, this uncertainty arises from the difficulties associated with the monitoring of contractual

performance in the presence of bounded rationality (Williamson, 1979). Williamson (1985) further expounds on the concept, referring to the exchange partners' strategic, non-disclosure, disguise or distortion of information. Rindfleisch and Heide (1997) posit that an increase in behavioral uncertainty would lead to an increase in cost of evaluating the performance of an exchange partner.

- ***Environmental Uncertainty***

Environmental uncertainty has over the years been a fundamental concept of strategic management and has thus been incorporated in the contingency theory, information process theory, theories of decision making and entrepreneurship theories (Chen, 2013). Environmental uncertainty is referred to as the unpredictability of the environmental or organizational variables that surrounding an exchange and have impact on corporate performances (Jie and Thongrattana, 2009). Furthermore, Chen (2013) defines environmental uncertainty as the perceived lack of information on the aspects of the environment dictating a business' performance in terms of unpredictability of the environment, the inability to predict the impacts of environmental change and the consequences of the opportunity cost taken. Milliken (1987) summarized the concept of environmental uncertainty as 'an inability to assign probability as to the likelihood of future events, a lack of information about cause-effect relationship and inability to predict accurately what the outcomes of a decision might be.

According to Vecchiato (2012) firms' business environments are inherently volatile and this volatility creates uncertainty for rationally-bounded managers, since information about external changes is intrinsically difficult to collect, process and comprehend fully or when managers are not confident that they understand what the major events or changes in their business are and when they feel unable to predict something with pin-point accuracy.

The organization management literature defines the environment in which a firm operates as micro environment and the macro environment, by distinguishing sectors with which the firm has direct contacts and which directly affect its business strategy from sectors that affect the firm indirectly (Dill, 1958; Vacchiato, 2012). The micro environment also known as environmental components includes competitors, customers, suppliers, potential incomers, substitute products and providers of complementary products while the macro environment (dimensions of environmental attributes) is made up of the political, economic, ecological, societal and technological aspects (Vacchiato, 2012; Chen, 2013).

Environmental uncertainty has been defined as a multidimensional construct classified into three; state, effect and response uncertainty (Chen, 2013). State Uncertainty is the inability to predict how the components of the environment are changing; Effect Uncertainty describes the inability to predict the impact of the dynamism of the environment of the company; and Response Uncertainty is described as the lack of insight into response options or the inability to predict consequences of a response choice in a volatile environment (Chen, 2013).

- ***Environmental Uncertainty and Opportunism***

Williamson (1979) postulates that high environmental uncertainty enforces ex-ante problems of formulating comprehensive contracts that in turn result to adaptation problems.

Rindfleisch and Heide (1997) postulate that environmental uncertainty's concern is the adaptation problem with difficulties in modifying agreements to the ever-changing circumstances. Buvik and Grønhaug (2000) further assert that the dynamics of economy and technology pronounce uncertainty, leading to adaptation problems. Adaptation problems have been discussed as convenient grounds for opportunistic behavior and this means that parties in an exchange relationship may have to write very complex contracts covering all future uncertainties (Williamson, 1991).

In the extant literature, scholars have argued that the associated transaction costs related to uncertainty and mitigation of adaptation problems include the direct costs of communicating new information, renegotiating agreements, or coordinating activities such as hybrid governance and vertical integration to reflect new circumstances. (Milliken, 1997; Artz & Brush 2000; Joshi and Stump, 1999).

According to Lim et al (2014) firms face opportunism of their exchange partners under environmental uncertainty circumstances and have difficulty in expecting benevolence from them because the participating firms are unable to predict the dynamism of the external environments due to lack of information, knowledge and the human perceived limitation.

Three environmental dimensions have been illustrated in the extant literature; environmental munificence, environmental dynamism, and environmental complexity, on the possible level of the application of opportunistic behavior in the environments which organizations operate (Aldrich, 1979; Chen, 2013; Baker, 2015). Environmental munificence refers to the extent

in which the environment supports sustained growth; while environmental dynamism (turbulence) refers to the degree in which environmental components act as units of change and environmental complexity refers to environmental complexity as the heterogeneity of and range of an organization's activities (Aldrich, 1979; Chen, 2013; Baker, 2015).

Figure 6: Environmental Uncertainty and Dependence of Buyer

ENVIRONMENTAL UNCERTAINTY	HIGH	Moderate Buyer Opportunism (Cell 1)	Highest Buyer Opportunism Cell 2
	LOW	Lowest Buyer Opportunism Cell 3	Moderate Buyer Opportunism Cell 4
		LOW	HIGH
		SELLER'S DEPENDENCE ON THE BUYER	

Source: Researcher's own formulation based on extant literature (2017).

According to figure 6, organizations are more likely to engage in opportunistic behavior as their power on other organizations increases (Baker, 2015). Power and dependence reciprocate each other; hence this means that an organization which is highly dependent on another organization will try to avoid opportunistic behavior due to the inter-independence of organizations (Provan and Skinner, 1989; Heide, 1994).

Cell 1 depicts a scenario of low dependence of buyer by the seller (farmers) and high environmental uncertainty. In this scenario, the opportunistic behavior of the buyer is expected to be moderate due to the low power-dependence relationships between the members in the dyad though the environmental uncertainty still makes room for one party to act opportunistically to some extent.

Cell 2 depicts the scenario of high dependence of the buyer by the seller coupled with high environmental uncertainty. In this business environment, opportunistic behavior by the buyer is at the highest due to the power the buyer has over the seller (Emerson, 1962) and

the high costs associated setting up renegotiating agreements and coordinating activities (Williamson, 1991; Buvik and Grønhaug, 2000; Baker, 2015).

Cell 3 is an environment where exchange partners operate in low environmental uncertainty and both buyer and seller are in a balanced power-dependence situation. In this scenario, it is expected to be the lowest buyer opportunism. This could best describe a competitive market structure where there are many buyers and sellers and the switching cost between parties is relatively low.

Cell 4 describes the interplay between low environmental uncertainty and high dependence of the buyer by the seller. In this business environment, the seller has the incentive to behave opportunistically at the expense of the buyer, though the low environmental uncertainty dampens the power of the seller. Therefore, at this environment, moderate buyer opportunism is expected to prevail.

3.2.2.3 Frequency of Transactions

Frequency is the least straightforward in its influence on transaction costs, however cannot be ignored in the TCA framework. In fact, studies, such as Buvik and Grønhaug (2000) and Milgrom and Roberts (1992) have advocated this concept as an influence on firm's efficacy of alternative inter-firm co-ordination mechanisms. In fact, some scholars, such as Colbert and Spicer (1995) have combined both frequency and volume of transaction. This concept entails how often and how regularly transactions recur. Its influence on transaction costs has been discussed somewhat controversially in the literature (Verhaegen, 2002 and Groenewegen et al., 2010), with authors such as Rinsfleisch and Heide (1997) unable to confirm its hypothesized effects on transactions due to the limited number of studies on it.

Williamson (1979), classified three frequency classes, that is one-time, occasional and recurrent frequencies of transactions. Extant literature posits the argument that frequency can cause transactions to be more of an arm's-length character as well as more integrated in the events where standard transactions are repeated frequently between two exchange parties. As the relationship progresses, both have an incentive to not behave opportunistically as otherwise future profits from the repeat business will eventually diminish (Verhaegen, 2002 and Groenewegen et al., 2010).

On the contrary, Williamson (1985) and Rindfleisch and Heide (1997) argue that as frequency of transactions increase, opportunity costs arise under a market governance structures due to foregone efficiencies of the economies of scale of vertical coordination. In this line of argument, larger volumes of transactions incorporate the justification for more advanced structures of governance to reduce costs of transactions (Colbert and Spicer, 1995). Moreover, the cost of specialized governance structures is easier to recover for large and recurring transactions due to economies of scale in the transactions (Williamson, 1985; Buvik, 2000; Rindfleisch and Heide (1997).

Williamson (1985) and Buvik (2000) have argued that asset specificity should be brought into the light of the frequency of transactions argument, bearing the economies of scale from the control and monitoring systems.

Figure 7: Frequency of Transactions and Asset Specificity

Asset specificity	Frequency of exchange	
	Low	High
High	Cell 1: Occasional purchasing of customised equipment	Cell 2: Recurrent purchasing of customised components. Just-in-time relationships
Low	Cell 4: Occasional purchasing of standard equipment	Cell 3: Recurrent purchasing of raw materials

Source: Buvik (2000)

The interplay between low frequency of transactions and high specific assets in (figure 7) best suits the occasional purchasing of customized equipment. Buvik (2000) asserts efficacy problems in this interplay due to underutilization of governance structures. In cell 2, high asset specificity and high frequency of exchange is the best exchange scenario due to specialized governance efficacy that safeguards the specific investments (Buvik, 2000). In cell 3 low asset specificity with high transaction frequencies interplay is suitable for standardized products. Low asset specificity results to lesser opportunism hence market mechanism is the most efficient governance mechanism (Buvik 2000). The last cell tells a story of low asset specificity and low frequency of exchange. The low-low situation, Williamson (1985) and Buvik (2000) suggest independent transactions, with market governance the most efficient.

3.3 Relational Contracting Theory

The relational contracting theory was pioneered by the works of legal scholars Macaulay (1963) and Macneil (1978). The basis of this theory is characterized by a view of contracts as relations rather than discrete transactions in the works of Macneil (1980). Furthermore, Macneil elaborated a set of relational behavioral norms that govern exchange relationships including role integrity, reciprocity, implementation of planning, effectuation of consent, flexibility, contractual solidarity, restraint of power, propriety of means (doing things the right way), the linking norms and harmonization with the social matrix (Macneil, 1980).

In Macneil's (1978, 1980) works, a relational contract is of uttermost importance if transactions are of long-term duration, personal interaction is crucial, and the future co-operation opportunity is vital. In fact, Macneil (1983) further postulates that in discrete transactions and relational contracts, common contract norms become intensified as the relationship duration is lengthened and safeguard the relationship. Ozkan-Tektas (2014) argues that relational dimensions are difficult to develop, maintain and duplicate, and this gives the norms a competitive advantage in an unstable, risky and highly competitive environment.

More scholars have put forward measures of the extent of a relational contract such as co-operation, organization culture, trust, good faith and contract duration, with trust being one of the cornerstones in quantification of norms (Williamson, 1979, 1985; Buvik and Halskau, 2001).

Trust has been defined as the confidence in an exchange partner 's reliability and integrity or the willingness to rely on a partner where one has confidence (Morgan and Hunt, 1994). Wood and McDermott (1999) define trust as willingness to rely on the action of others, to be dependent upon them, and thus be vulnerable to their actions. The extant literature posit that the existence of trust reduces the need for contractual safeguarding against the future events.

3.3.1 Inter-Firm Trust, Relational Norms and Opportunism

Wathne and Heide (2000) posit norms and inter-firm trust stand as informal agreements even in the presence of formal contracts because formal contracts are time limited. However, the

relational norms develop over time, and in the future act as cushion against opportunistic behavior in the exchange relations (Buvik and Halskau, 2001).

Högberg (2002) elucidates that if both exchange parties in relationship refrain from opportunistic behavior and co-operate in a trustworthy manner they can improve the ability to take advantage of potentials for specialization and economies of scale as trust operates as a mechanism for managing the relationship. In fact, in the presence of inter-firm trust, partners have the incentives to devote more resources, energy, and time to maintain the relationship (Ozkan-Tektas, 2014).

Ozkan-Tektas (2014) posits that opportunism is one of its most critical antecedents for the drive of trust. During intense competition, the focus of firms is directed on improving or at least maintaining their performance level through maximization of time, resources and investment to increase their payoffs, and these efforts may force them to behave opportunistic in their business exchanges which can strain the relationship (Ozkan-Tektas, 2014). In fact, exchange parties opt to opportunistic behavior in short-term relations or in early stages of the exchange relationship where the trust and other norms are still underdeveloped (Burki and Buvik, 2010; Ozkan-Tektas, 2014).

In long-term business, the examination of opportunistic behavior is crucial since, it may seriously affect the strength of the relationship. However, given a longer exchange duration, trust and other relational norms become an important building block in eliminating opportunism that might have otherwise incur the parties' high transaction costs because of monitoring the opportunistic behavior (Burki and Buvik, 2010; Wathne and Heide; 2000). RCT in the context of this study is expected to support the notion that trust over time reduces the incentive of partners acting opportunistically.

Furthermore the relational norms are deemed as important recipes for maintaining stable and mutual interrelationships and create certain behaviors and code of conduct expected in a certain exchange relationship even in asymmetrical power-dependence relations that over time build on the relational norms and trust as cushions for counter-attacking the opportunistic exploitations of the powerful parties in the exchange relations (Heide and John, 1992; Pfeffer and Salancik, 1978 Buvik and Reve, 2002; Buvik and Halskau, 2001; Burki and Buvik, 2010).

On the contrary, the antecedents of opportunism under relational contracting have received virtually no attention in the extant literature (Carson et al. 2003). In fact, Carson et al (2003) argue that the relational contracting literature largely lacks a systematic examination of the weaknesses and vulnerabilities of relational contracting on par with the scrutiny directed toward formal contracting and other administered and market forms of governance. Moreover, Carson et al (2003) work concluded that relational governance mechanisms are not infallible and are subject to their own vulnerabilities vis-à-vis opportunism and the results suggest that ambiguity, rather than volatility (for formal governance), is the primary driver of opportunism in relational contracting exchange relations whereas the reverse is true in formal contractual regimes.

3.4 Power-Dependency Theory

The power dependence theory is a social exchange theory that was developed by Richard Emerson in the early 1960s. The dynamics of this theory are centered on power, power use, and power-balancing concepts, putting into the equation the concept of dependence (Emerson, 1962). Emerson (1962) posits mutual dependence brings parties together; therefore, they become more likely to form exchange relations for their sustainability.

The theory further defines the reciprocation of power- dependence relations and how to balance the two aspects because the basis of power implicitly lies in the other party's dependence (Emerson, 1962). Social relations are mostly characterized by mutual dependence between parties, that is A depends on B if he desired outcomes or goals are facilitated by actions played B and vice versa considering the virtue of mutual dependence. The theory further illustrates that the power of (A) over (B) is equal the dependence of (B) on (A) but inequalities in dependence bring about power imbalances causing conflicts and social change (Emerson, 1962). Therefore, the power exercised over another is directly linked to the level of dependency regarding their capabilities and responsibilities and the dependency tends to be more pronounced by factors of importance, scarcity and non-substitutability (Pfeffer and Salancik, 1978).

The theory further illustrates that imbalances in structural power produce corresponding imbalances in exchange benefits that favors the less dependent actor in an exchange relation (Emerson, 1962; Molm, 1997).

According to Emerson (1962), there is extensive literature based on power at both theoretical and empirical levels, but still there are misconceptions on the concepts of power, influence, dominance, submission, status and authority.

Power has been described as a property of social relation rather than the attribute of the actor, driven by differences across alternatives (Emerson, 1962; Wolfe and Mc Ginn, 2005), as the potential to change the behavior of or overcome some level of resistance of a target (1957) or the deployment of means to achieve intended results (Cobb, 1984).

The most common formulated five types of power include; coercive, that is through application of pressure and threats; reward power through the provision of incentives, legitimate power; that arises from contractual aspects; referent power, developing out of admiration of desire to be like someone else; expert power, which is the ability to influence behaviors of others because of the possession of special knowledge and skills and information power; arising from information asymmetry (French and Raven, 1960; Lunenburg, 2012).

Emerson (1962) argues that reciprocity in power-dependence relations brings about the discussion of equality or inequality of power in a social relation. Two kinds of patterns, balanced and unbalanced relations arise. The reciprocity further leads to either power advantage ($P_{ab} - P_{ba}$ is positive), a power disadvantage ($P_{ab} - P_{ba}$ is negative); cohesion resulting from the dependences of the two parties and balancing the operations in structural changes to reduce power advantages (Emerson, 1962).

3.4.1 Relative Power and Opportunism

Most extant literature has typically addressed power in terms of the agent's potential power. The concept of relative power arises from the argument that power agents may only be powerful on one social domain such as politics, economy, education, technology or others, and moreover the scope of their power limited to a few people, class or organizations and to specific actions. Despite agents exercising power, the notion of resistance from the dominated parties comes in the equation, therefore enacting counter-power, making the powerful less powerful.

Two approaches of social processes have been used by Somech and Drach- Zahavy (2002) to bridge the gap between the relationship of power and influence behavior. The first aspects are role- making processes between a leader and subordinate stressing that subordinates are simply not passive but are proactive in altering their work environment (Somech and Drach- Zahavy, 2002).

The second approach illustrates how power is gained and lost in reciprocal processes between leaders and subordinates due to the ties of mutual dependency between them, (Somech and Drach- Zahavy, 2002). Furthermore, power is not only a factor of the position one holds in an organization, but also relies on personal and interpersonal attributes (Somech and Drach- Zahavy, 2002), bringing about the reciprocity attribute of power.

Buyer-supplier relationships are initiated to achieve significant performances and competitive advantages over rivals (Wang et al, 2012) and are one of the most important resources a company can have because organizations depend on input and output resources for their survival as open systems (Buvik and Grønhaug, 2000). In most business setups, the problem of co-operation tends to arise due to the conflicts of interest (Yaqub, 2009), leading to economic inefficiencies in a such relationship.

The lack of self-sufficiency in the context of resources creates dependence on the parties controlling the resources; bringing a power a symmetry, prompting dominant partners to expect greater payoffs (Yaqub, 2009).

3.5 Summary

This chapter has discussed both Transaction Costs Analysis and Relational Contracting theory in the build-up of opportunism in the sugar industry in Egypt. TCA holds that specific investments and uncertainty enhance opportunism, while RCT asserts that as the duration of transaction increases, relational norms develop and act as cushion to combat opportunism. The following chapter depicts the conceptual model derived from the two theories.

CHAPTER FOUR
CONCEPTUAL MODEL AND HYPOTHESES

CHAPTER FOUR - CONCEPTUAL MODEL AND HYPOTHESES

4.1 Introduction

Chapter 3 laid down the theoretical blueprint for this chapter. This chapter illustrates the overview of the research conceptual model and the hypotheses derived and constructed on the basis the theories of Transaction Costs Economics and Relational Contracting Theory. The theories were used to develop both the dependent variable and independent variables as seen in the conceptual model in the following subsection and further elaborate the hypotheses based on relevant literature that is alignment with the theories mentioned in the preceding chapter.

4.2 The Research Conceptual Model

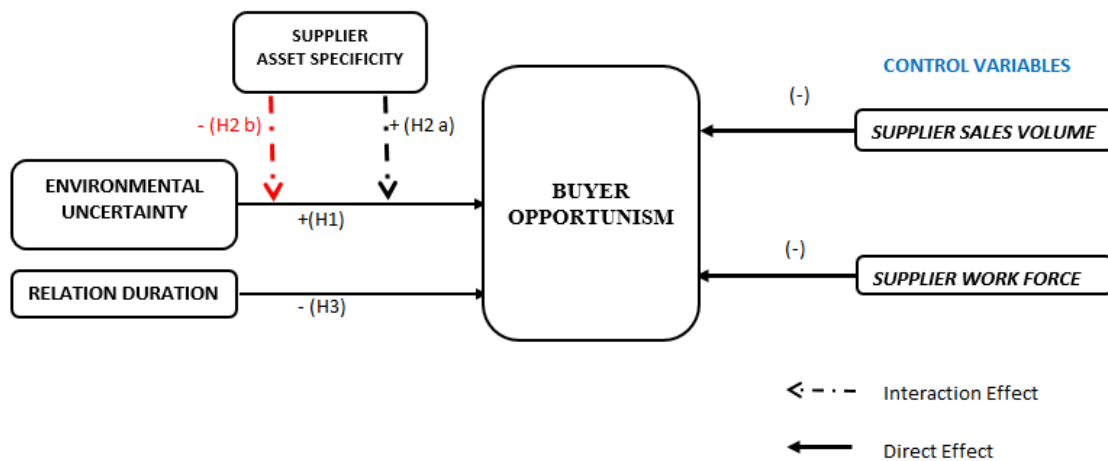
This study has developed a conceptual model with regards to the exploration of the antecedents to opportunism between sugar mills and sugarcane farmers' relationship in the Egyptian sugar industry. The conceptual model empirically tests the effect of independent variables: environmental uncertainty (UNCERT) and supplier transaction-specific investment (SUPSPEC), which also are the variables making the two interaction effects with respect to buyer opportunism (BUYOPPORT) which is the dependent variable in the conceptual model. The other independent variable is relationship duration of sugar mills and sugarcane farmers (RELDUR). The model further incorporates two control variables; supplier's work force (WORKFORCE) and supplier sales volume (SALESVOL).

The conceptual framework of the study further posits the three main hypotheses and a sub-hypothesis (H₁, H_{2a}, H_{2b}, and H₃) that are derived from the independent variables and the control variables to give a limelight of the research problem being studied. As per the study's hypotheses, the researcher expects a positive association between the level of environmental uncertainty and buyer opportunism (H₁) as depicted in Figure 8. Furthermore, the conceptual model entails two interaction effects (H_{2a} and H_{2b}) suggesting the interplay of the introduction of supplier specific investments and the presence of the environmental uncertainty regarding buyers' opportunism. Hypotheses (H_{2a}) and (H_{2b}) show the two effects of idiosyncratic investments in the presence of environmental uncertainty, with hypothesis (H_{2a}) suggesting that the investments will further enhance opportunism while hypothesis (H_{2b}) depicts the positive impacts the investments will have in reducing buyer's opportunistic behavior.

Hypothesis 3 (H₃) in the study postulates the relationship between relationship duration and its expected impact on the expected opportunistic behavior from the buyer. The proposition of this hypothesis expects a negative association between this control variable and the dependent variable of opportunism since as exchange relationships develop over time, trust, relational norms and the partners' shared values emerge and these act as a cushion against the existing and arising opportunistic abuse that would result to asymmetrical dependence in the exchange relations.

Furthermore, the study depicts the relationship between the supplier sales volume with respect to opportunism. This control variable is expected to have a negative association between the two variables a bigger supply volume translates to a strategic supplier for the buyer. This also extends to the second control variable which depicts the size of the supplier, whether large or small by incorporating the size of the work force of suppliers with respect to buyer's opportunistic exploitation. A bigger supplier is thus expected to be of strategic importance to the buyer thus have a negative impact in the expected buyer opportunism.

Figure 8: Research Conceptual Model



Source: Researcher's Own Formulation Based on Literature Review (2017)

4.3 Research Hypotheses

The previous sub-chapter has given an overview of the study's hypotheses. This sub-chapter further elaborates on the hypotheses by expounding on the independent variables and control variables, all derived from the theories of transaction costs analysis theory (TCA) and relational contracting theory (RCT) with respect to the dependent variable of opportunism.

4.3.1 Dependent Variable

- **Buyer Opportunism**

Williamson (1975) defines opportunism as self-interest seeking with guile. Furthermore, Williamson (1985) argued that opportunism takes various forms such as lying, stealing, cheating and all kinds of deceit, with calculated efforts to mislead, distort, disguise, obfuscate or confuse due to the subtle and devious nature of the economic man. According to Mysen and Svensson (2010) and Wathne and Heide (2000), opportunism can include partner behaviors that passively or actively exploit the relationship to their own advantage that can restrict value creation or can erode other exchange outcomes. Furthermore, Wathne and Heide (2000) have argued of three classes of opportunism namely *adverse selection*, that arises from the insurance field, which represents ex-ante opportunism through purposeful withholding of information prior to a transaction initialization; *strong form opportunism* which is explicitly or implicitly breaching of contracts prior to the exchange relationship and *moral hazard* which is a passive form of opportunism caused when an exchange partner distorts information, disguises or misleads the other party in order to protect its own interest (John, 1984; Williamson, 1985).

Barney and Ouchi, (1988) and Berthon et al ,2003 categorize opportunism as *adverse selection* –ex ante opportunism arising when there is information asymmetry prior to establishing an exchange relationship thus exchange parties cannot establish the true attributes that have impacts on their future performance; *moral hazard* – ex post opportunism arising from information asymmetry about the capabilities of an exchange partner with respect to the current environment; and *hold-up* –which arises from unilateral specific investments that create the potential for exploitation as a result of lock-in situations.

Opportunism poses transactional hazards in exchange relationships, and this has hence given the opportunism construct special attention by many economics and marketing scholars (Rindfleisch and Heide, 1997; Rokkan, Heide and Wathne, 2003). In accordance to this research, the opportunism construct has been fabricated to capture the degree to which the sugar mills (buyers) opportunistically exploit their suppliers (sugarcane farmers) through certain behaviors such as false promises, refusal of extensions services, price fixing and manipulation, false accusations and cheating through using altered weighing scale to the detriment of the farmers.

4.3.2 Independent Variables and Interaction Effects

4.3.2.1 Environmental Uncertainty, Supplier Specific Investment and Buyer Opportunism

- ***Environmental Uncertainty***

The concept of environmental uncertainty was coined by Noordewier (1990), defining it as ‘unanticipated changes in circumstances surrounding an exchange. Moreover, Milliken (1987) summarized environmental uncertainty as ‘an inability to assign probability as to the likelihood of future events, a lack of information about cause-effect relationship and inability to predict accurately what the outcomes of a decision might be. Jie and Thongrattana (2009) further defined uncertainty as the unpredictability of the environmental or organizational variables that surrounding an exchange and have impact on corporate performances. Lim, Smith and Kim (2014) argue that there is a relationship between uncertainty and a lack of information and knowledge, cementing Milliken’s (1987) consideration of uncertainty based information asymmetry.

High environmental uncertainty enforces ex-ante problems of formulating comprehensive contracts that in turn result into adaptation problems (Williamson, 1979). Moreover, Rindfleisch and Heide (1997) also postulate that environmental uncertainty’s concern is the adaptation problem with difficulties in modifying agreements to the ever-changing business circumstances.) The dynamics of economy and technology have escalated uncertainty, leading to adaptation problem (Buvik and Grønhaug, 2000). These adaptation problems resulting from environmental uncertainty have been discussed as prerequisites for opportunistic behavior and this means that parties in an exchange relationship may have to write very complex contracts covering all future occurrences (Williamson, 1991). In fact, Lim, Smith and Kim (2014) argue that since it is difficult to anticipate all possible future contingencies ex ante, ex post adjustment usually becomes necessary in volatile environments thus the volatility makes the exchanges more conducive toward opportunistic behavior and thereby increasing its probability of occurrence (Lim, Smith and Kim, 2014).

To add on with, the adaptation problems have led to rising transaction costs in the forms of direct costs of communicating new information, renegotiating of existing agreements, or coordinating activities to reflect new circumstances and this further gives more ground for partners to act opportunistically (Milliken, 1997; Artz & Brush 2000). Furthermore, Williamson (1985) argues that volatility in exchange relationships makes exchanges more conducive toward opportunism and increases its probability of occurrence since volatility engenders a

need to renegotiate agreements to avoid mal-adaptation to the external environment. This leads to confrontation and non-cooperative bargaining inherent among self-interested parties (Williamson, 1985). The extant literature argues that in uncertain environments, firms are more likely to rely on formal enforcement mechanisms, such as elaborate contract for the dispute settlement and as a cushion for curbing opportunistic behavior by partners and less likely to rely on informal mechanisms, such as relational norms and shared values, which in turn has the risk of threatening the development of inter-firm relational governance and lead to loopholes in enhancing opportunism (Joshi and Stump, 1999; Lim, Smith and Kim, 2014).

Following this reasoning in the literature review, the researcher argues that the presence of environmental uncertainty in the sugar mills and sugarcane farmers' relationship is expected to enhance the former's opportunistic behavior. Thus, this study hypothesizes that

H1: There is a positive association between the level of environmental uncertainty and opportunism in the sugar mills-sugarcane farmers' relationships.

- ***Supplier Specific Investment***

The Positive Association of Asset Specificity on Opportunism

According to Williamson (1985), specific investments are defined as durable, tangible and intangible investments that firms incur for the facilitation of transactions in an exchange relationship. The extant literature posit that they are assets that are uniquely dedicated for specific transactions out of task needs and goodwill and cannot therefore be redeployed to other uses without a significant loss in value, a character that brings up the question of opportunism by exchange partners through lock-in and dependence traps as receivers have the incentive to expropriate the investments' values (Wathne and Heide, 2000; Buvik and Reve 2002; Rokkan, Heide and Wathne 2003).

Rokkan, Heide and Wathne (2003) and Ghosh and John (1999) argue that specific investments are important in marketing strategies and inter-firm relationships due to the value they add in a dyad giving them competitive advantages. However, the aspect of the idiosyncratic investment not being able to be redeployed puts the focal receiver in a driving seat to expropriate the investments (Rokkan, Wathne and Heide, 2003).

Moreover, Allen (2015) argues that the introduction of idiosyncratic investment brings about contractual difficulties as transactions involved are prone to exchange hazards and high

switching costs. This gives opportunistic parties to behave so due to the expropriation effect that comes with the specific investment. Allen (2015) further argues that the absence of asset specificity brings about discrete market contracting, where exchange parties to the contract may easily turn to other suppliers or buyers and write a new contract due to lower switching costs.

Williamson's (1979) framework assumes went a further step suggesting in all business environments uncertainty exists in some intermediate degree. In fact, Williamson (1979) further incorporates asset specificity and uncertainty, claiming that as the degree of uncertainty increases, it makes it more imperative that the parties devise a machinery to 'work things out' such as specific investments—since contractual gaps will be larger and the occasions for sequential adaptations will increase in number and importance.

Some studies have support the TCE notion that in the presence of increasing uncertainty with specialized assets causes a shift toward more hierarchical governance while uncertainty without asset specificity favors a market convention (Anderson, 1985; Santoro and McGill, 2005; Buvik and Grønhaug, 2000).

In fact, further studies suggest hybrid arrangements are expected to inefficient to handle substantial bilateral dependence caused by asset specificity and resource dependence when volatile environmental disturbances are present (Masten, 1984; Levy, 1985; Buvik and Grønhaug, 2000). The explanation is that when asset specificity becomes substantial, hybrid inter-firm arrangements become more vulnerable against external disturbances.

Buvik and Grønhaug (2000) and Vita, Tekaya and Wang (2010) argue on the interaction effect of uncertainty and specific investments suggesting that uncertainty captures the degree to which ex-ante contractual costs and ex-post monitoring and enforcing costs are augmented by environmental and behavioral unpredictability, and upon the presence of asset specificity, the effect of uncertainty further pushes transactions away from the market and towards a vertical integration since uncertainty incentivizes expropriation when a party's specific investment is exposed.

Figure 9: The Positive Effect of Asset Specificity on Uncertainty in Relation to Opportunism

ASSET SPECIFICITY	HIGH	Modest- High Buyer Opportunism Cell 1	Very High Buyer Opportunism Cell 2
	LOW	Very Low Buyer Opportunism Cell 3	Low / Modest Buyer Opportunism Cell 4
		LOW	HIGH
		ENVIRONMENTAL UNCERTAINTY	

Source: Researcher’s Own Formulation According to Literature Review (2017)

Figure 9 above depicts the association between asset specificity and environmental uncertainty with their effect on opportunism. Cell 1 depicts a scenario of low uncertainty and high specific investment. From the extant literature, idiosyncratic investment is attached to the expropriation effect, regardless of the level of uncertainty. Therefore, in this scenario, the buyer has the incentive to behave opportunistically due to the high switching costs the supplier will incur if he was to terminate the exchange relationship.

Cell 2 depicts a scenario of very high uncertainty and very high asset specificity. Due to arising adaptation problems and safeguarding problems resulting from the uncertainty and specific investments respectively, the supplier is expected to face the highest opportunistic behavior from the buyer. Here the level of dependence is high for the supplier due to the heavy investments incurred, putting him in a lock-in chokehold.

Cell 3 illustrates the low uncertainty and low asset specificity scenario. According to Allen (2015), the absence of specific investment leads to the incentive of handling transactions via a market mechanism. The interaction of both low levels of uncertainty and low asset specificity is expected to result in low opportunistic behavior due to low switching costs.

Cell 4 shows the scenario of low specific investment in a highly volatile business environment. In this scenario, the supplier is faced with adaptation problems due to the inability to predict future events. Therefore, there are transaction costs incurred by the

supplier in the formulation of extensive contracts, which also tend to have loopholes that might result to intermediate levels of opportunism.

Based on this reasoning, the study proposes the following hypothesis;

H2 a: The association between environmental uncertainty and buyer opportunism is significantly increased when supplier specific investments are introduced.

The Negative Association of Asset Specificity on Opportunism

The preceding section has illustrated the safeguarding problems that arise with the idiosyncratic investments in buyer-seller relations that put parties in hold-up situations. However, asset specificity has been deemed very important in co-operating partners out of task needs and goodwill (Lui, Wong and Liu, 2009). The extant literature further suggests appropriate governance structures based on the level of asset specificity to reduce the hazards of opportunism (Williamson, 1985; Anderson, 1992; Lui, Wong and Liu, 2009).

Scholars such as Dyer and Singh (1998) and Rokkan et al., (2003) have treated asset specificity and a relation-specific asset as being profoundly the same. This can be argued from a Relation Exchange Theory relation-specific asset signal the desire for parties to invest in an endured relationship. Dyer and Singh (1998) and Rokkan et al (2003) argue that the idiosyncratic investments increase co-operation and transaction value of the partnership hence explaining the relationship between asset specificity and partnership performance. Rokkan et al. (2003) have included relationship extendedness (continuity) and solidarity norms as two moderators to resolve the TCA's conflicting views on asset specificity. To add on, Lui, Wong and Liu (2009) have suggested that specific investments have a significantly and positive relationship with trust, which in turn has facilitated cooperative behavior, which enhanced satisfaction in a partnership.

The work of Buvik and Haugland (2002) discuss of symmetric exposure of asset specificity through the argument of motivation, described as uncertain evaluation and ability of transacting parties (balanced dependence structure) to implement contractual safeguarding. Buvik and Reve (2002) further posit the concerns of inter-firm dependence as both the motivation and the ability to structure marketing relationships in a specific way in combating risks and reducing costs through various governance structures. Furthermore, Buvik and

Haugland (2002) argue that relation duration is important in officiating balanced dependence structures and relax the need for safeguarding mechanisms.

According to Buvik and Reve (2002) the deployment of specific assets adds value that should provide more advantageous trade conditions for the transacting parties such as reductions in production cost and/or better product performance/ quality) than that which conventional market transactions would provide. This therefore makes the suppliers very valuable and in such typical fashion be of accreditation to the relationship. In this instance, if the supplier employs substantial specific assets by tailoring his production process (for instance adherence to quality, quantity and lead time) to the special needs of the buyer, it will be establishing substantial bilateral dependence to this buyer (Buvik and Reve, 2002). This situation therefore might reduce the buying firm's motivation to act opportunistically towards the supplier even in the existence of the ability to do so.

In fact, extant literature such as Williamson's (1985) original framework talk on relationships characterized by reciprocal specific investments as an additional safeguard device against opportunism. The argument is that reciprocal investments can signal a credible commitment by both parties in an exchange relationship and, hence, reduce the trading hazard that can arise from idiosyncratic investments through the creation of a symmetrical mutual reliance relation (Williamson, 1985). Rokkan et al. (2003) have included relationship extendedness (continuity) and solidarity norms as two moderators to resolve the TCA's conflicting views on asset specificity.

Inderst and Wey (2007) found out that powerful buyers may reduce the supplier's profits, though argue that the supplier's incentives to undertake certain types of product or process innovation could in fact increase putting in mind that the suppliers intend to reduce increasing production costs and enhance exchange efficiency by investing in specific investments.

- ***The Ability and Motivation Argument on Asset Specificity and Opportunism***

Moreover, the ability and motivation argument has been put forward as support for asset specificity having negative effects on opportunism in exchange relationships (Buvik and Andersen, 2002). The argument of ability is that the buyer has relative power to the supplier in a monopsony market situation (sole buyer and many suppliers) resulting from multiple

sourcing resulting to less dependence on a sole supplier (Buvik and Andersen, 2002). Moreover, in this multiple sourcing situation, the buyer's ability to assess and evaluate suppliers' performance is pronounced and acts as a safeguard for opportunistic behavior from sellers. This sort of relative power resulting from multiple sourcing and asset specificity is a catalyst to opportunistic behavior (Emerson, 1962; Wathne and Heide, 2000; Buvik and Grønhaug, 2000).

On the other hand, is the subject of the motivation argument. Specific investments bring safeguarding problems along with them, but also add value to an exchange relationship. Dyer and Singh (1998) and Rokkan et al (2003) argue that the idiosyncratic investments increase co-operation and transaction value of the partnership hence explaining the relationship between asset specificity and partnership performance. If partnership performance is vital for the continuity of the business relationship, then the buyer's opportunistic behavior will tend to dampen to keep the strategic supplier in the equation.

Furthermore, Anderson (1992) argues that specific investments stabilize relationships by altering firms' own incentive structure by realigning their self-interests despite their ability to be expropriate their partners. The bonding effect therefore brought about by the investments tends to lower the powerful parties' motivation to act opportunistically (Buvik and Reve, 2002; Rokkan et al, 2003).

In the light of the above argument, this study further hypothesizes the following;

H2 b: The association between environmental uncertainty and buyer opportunism is reduced when supplier specific investments are introduced.

- ***Relationship Duration***

Extant literature regarding relational contracting theory advocates continuous relationships between exchange parties is a vital element that fosters businesses' desired outcomes (Anderson, 1995; Dwyer et al., 1987). Moreover, Ozkan-Tektas (2014) cements the preceding notion by claiming business partners should distinguish themselves by creating strong relationships that create value in the globally competitive environment. RCT theorists further denote that since relational dimensions are not easy to develop, maintain, and duplicate, they become strategic tools of competitive advantage in business relationships

especially under unstable, risky, and highly competitive environment (Ozkan-Tektas, 2014; Barry, Dion, and Johnson, 2008).

Heide (1994), notes that many exchange relations are governed by formal contracts as form of governance mechanism to combat unforeseen exchange hazards. However, as more interactions occur between the parties, relationships start to nurture, and over time relational norms, trust and shared values develop and act as a form of governance. (Ozkan-Tektas, 2014; Buvik, Andersen and Grønhaug, 2014; Heide and John, 1990; Macneil, 1980). These relational norms, to RCT theorists, are deemed as vital recipes for maintaining stable and mutual interrelationships and create certain behaviors and code of conduct expected in a certain exchange relationship (Heide and John, 1992; Pfeffer and Salancik, 1978). The developed shared norms such as trust, honesty and integrity therefore act as a cushion of counteracting arising opportunistic exploitations of the exchange parties (Buvik and Reve, 2002; Buvik and Halskau, 2001; Buvik and Burki, 2010).

Morgan and Hunt (1994) argue that the most driver of trust in exchange relationships is opportunism that arises due to intense competition, hence each exchange party tries to maximize its time, resources and investment, and incline themselves opportunistically at the expense of their partners hence strain the relationship. Ozkan-Tektas (2014) also argues that the examination of opportunistic behavior is vital in long-term business relationships rather than for individual transactions, since through its interactions with other relational constructs such as trust and commitment that strengthens the relationship in the long-run with focus on continuity of conducting business transactions. Considering the literature review and the preceding discussion, the prior length of relationships attenuates adversarial tendencies in exchange relationships due to social bonds created from personal relationships between exchange parties. In light with this argument, the researcher expects that that sugarcane farmers who have been in a longer buyer-seller relationship with the sugar mills perceive the latter as being less opportunistic due to the accrued relational norms and shared values. Therefore, this study proposes the following hypothesis;

H3: There is a negative association between longer relationship duration between sugarcane farmers and sugar mills and the buyers' opportunism.

4.3.3 Control Variables

This study incorporates two control variables in the conceptual model namely Supplier Sales Volume (SALESVOL) and the Size of the Supplier depicted by the suppliers' work force (WORKFORCE).

- ***Supplier Sales Volume***

Supplier sales volume in the conceptual model refers to the annual amount of sugarcane sales by the sugarcane farmers to the buyer (sugar mills). Sales volume is expected to influence opportunism negatively. Supplier sales volume denote the annual needs of the sugar mills, and relatively higher sales volume translates to 'supplier power' as relationships are characterized by asymmetric interdependences (Anderson and Weitz, 1989). As argued by the researcher, high volumes of sales by the farmers are expected to be a driving force in the sugar mills achieving their production targets, hence playing an important role in dampening the opportunistic behavior of sugar mills.

- ***Firm Size of Suppliers***

According to Gulbrandsen and Haugland (2000), firm size is a crucial variable and plays important roles in shaping exchange relationships. According to Williamson (1985), larger firms tend to easily integrate compared to small firms due to their high economies of scale. Furthermore, large firms are more likely to develop close personal and social ties with their trading partners than small ones, thus negatively impacting opportunistic behavior of the buyers. Large firms also possess influential power thus getting preferential treatment from their exchange partners compared to small ones. In this study, the size of the supplier is depicted by the work force (number of workers employed by a sugarcane farmer or institution). Accordingly, this study claims that the size of the supplier is negatively associated with buyer opportunism.

4.4 Summary

This chapter presented an overview of the research model and hypotheses. The development of the research model and the hypotheses at hand were formulated in accordance to the literature review on transaction costs analysis (TCA) and relational contracting theory (RCT). Four hypotheses were formulated, with one interaction effect between environmental uncertainty and asset specificity, and two control variables of supplier work force and supplier sales volume. Discussion on independent control variables has also been presented. The next chapter presents in depth the research methodology applied in this study.

CHAPTER FIVE
RESEARCH METHODOLOGY

CHAPTER FIVE - RESEARCH METHODOLOGY

5.1 Introduction

This chapter presents the study's methodology used in this study. The chapter shows how the researcher approached the study by elaborating the research design and data collection methods and techniques used. It also discusses the population of interest, sampling procedure, as well as the sampling size.

5.2 Research Design

Research design is a systematic master plan for used when conducting a scientific study within qualitative, quantitative and mixed methods approaches that provides a specific direction for procedures in a research (Williams, 2007; Creswell, 2014). Research design can be viewed as a plan that offering connectivity between the conceptual research problems to the pertinent empirical research through articulating required data, data collection, data analysis to answer the research questions at hand (Burns and Grove, 2005; Creswell, 2014). Kothari (2004) points out an appropriate research design should entail five of the following factors; (1) the means of obtaining information; (2) the availability and skills of the researcher and his staff, if any; (3) the objective of the problem to be studied; (4) the nature of the problem to be studied; and (5) the availability of time and money for the research work.

Depending on the purpose, research design can be classified as descriptive, exploratory, or causal and effects designs (Churchil and Brown, 2004; Creswell, 2014). Descriptive design is majorly concerned with description of a behavior or type of a subject or relationships between two variables. Exploratory designs or formative research designs deals with discovery of new ideas and insights. The causal research design is pertinent to causes and effect relationships (Kothari, 2004). The extant literature posits research design can be either cross-sectional (one-time research) or longitudinal based on a time point-of-view (Malhotra and Birks, 2006; Kothari, 2004). Cross-sectional research is confined to a single-time whereas longitudinal research is based on several time series (Kothari, 2004).

5.2.1 Cross Sectional Research Design

This study incorporates both qualitative and quantitative techniques of research designs, which are under a cross-sectional research based on the duration. The qualitative research aspect tests the preceding theories by examining the relationship among variables that can

be measured on instruments to allow numerical data to be analyzed through statistical procedures (Creswell, 2014).

Cross-sectional research is confined to a single-time whereas longitudinal research is based on several time series (Kothari, 2004). In fact, this type of research study selects its entire population or a subset and the concerned individuals from where the data is collected helps answer the research questions at hand (Olsen, 2004). This research design is termed as cross-sectional because the information gathered represents what is going on at only one point in time as compared to the longitudinal design and also is used in identifying the degree of association between the X and Y variables in a research model through the administration of questionnaires in surveys (Levin, 2006; Churchill and Brown, 2004; Sedgwick, 2014).

Therefore, the rationale of employing a cross-sectional research design in this study was time and financial constrain factors as these research design studies are generally quick, easy, and relatively cheap to perform compared to other research designs (Sedgwick, 2014).

Cross sectional research design has however received criticism for its shortcomings. Firstly, this research design cannot be employed in the analysis of a behavior over a certain duration of time. Moreover, this snapshot design does not determine cause and effect, but rather establish a direction of influence of the study through the proposed hypotheses (Glavee-Geo, 2012; El Meladi, 2016).

5.3 Data Sources

The data in this study is concerned with both primary and secondary collected data that is used in the hypothesis test, to achieve scientific address. The researcher conducted a survey with the help of a questionnaire as a data collection instrument to gather primary data from the sugarcane farmers that has been analyzed in the study. In fact, Creswell argues that questionnaires or structured interviews are best for data collection with the intent to draw conclusions for the whole population based on the findings from the sample collection. The researcher randomly selected the sample of sugarcane farmers based in Upper Egypt to fill the questionnaires. A questionnaire can be administrated by mail, telephone or in person through the face-to-face interview (Churchill, 1999), however the researcher opted a face-to-face approach to achieve a higher response rate from the sugarcane farmers.

The secondary data is also important in the study and has been a blueprint in developing theoretical perspectives and the conceptual framework as seen in the preceding chapters 3 and 4 respectively. Furthermore, the secondary data has given an insight of the operationalization of the relations between farmers and the respective buyers of the Egyptian sugar industry. The main secondary data sources used in the study include journal articles relating to transaction costs analysis, relational contracting and power dependence theories and the sugar industry publications relating to both Egypt and the world at large, conference papers, specifically on the Egyptian sugar industry; industry annual reports such as reports from United States Department of Agriculture from various years and some annual reports from the Egyptian Ministry of Agriculture pertaining on production, consumption and import and exportation of sugar, books relating to the sugar industry, research methods and data analysis, online sources such as websites (from the government and different sugar companies in Egypt) and daily news articles from various domestic and international outlets that addressed the Egyptian sugar industry.

5.4 Population, Sampling Frame, Sample Size

Kothari (2004) argues that a researcher must decide the sample design, which is a definite plan before data collection. Churchill and Brown (2004) define the five steps in sampling designs selection as follows (1) definition of the population in question; (2) selection of the sampling frame; (3) selection of sampling procedures; (4) choosing the sample size; and (5) selection of the sample elements.

5.4.1 Population of the Study

Kothari (2004) posits that all items under a study consideration constitute a universe or population. Population is the totality of cases that conform to some designated specifications (Churchil and Brown, 2004).

This population in this study consists of all licensed sugarcane farmers in Upper Egypt. There are no specific reports or databases of the exact number of the registered farmers from the various government institutions. The researcher has employed a list some of farmers selling to the sugar factories operating in Upper Egypt towns of Aswan, Qena, Sohag, Luxor and Assiut, with the highest concentration of sugarcane growers in the country.

5.4.2 Sampling Frame

Sampling frame according to Kothari (2004) is defined as a list containing sampling units which form the basis of sampling process. Turner (2003) defines sampling frame as a set of

source materials from which the sample is extracted. Moreover, a sampling frame is a list of all population elements from which a sample is drawn (Churchill and Brown, 2004). A sample frame also provides quantitative information for estimation of population parameters based on sample observations. According to Saunders et al (2009), the sampling frame should be accurate, updated and complete prior to the research process.

Accuracy is a vital characteristic for a sample frame. A frame can be said to be characteristically accurate if each member of the target population is included once in the frame. Moreover, a frame should be current in order for it to fulfill the other two properties of completeness and accuracy while the attribute of completeness means the frame would be complete with respect to the target population if all of its members (the universe) are covered by the frame. (Turner, 2003) Frame coverage is therefore an essential feature in judging whether it is suitable for a survey or, if not, whether it can be repaired or further developed to make it suitable. (Turner, 2003; Saunders et al, 2009).

Once the sampling frame is established, the choice of sampling designs based on the selection procedures is then employed. The extent literature categorized sampling procedures into two kinds, that is probability sampling and non-probability (Henry, 1990; Kothari, 2004).

Probability sampling is also termed as random or chance sampling. Churchill and Brown (2004) argue that probability sampling assumes that each of the target population in the previous method has a non-zero chance to be included in the sample. The elements in the universe have an opportunity of being included in the sample, and the mathematical probability that any one of them will be selected can be calculated. Moreover, Kothari (2004) further posits probability sampling as a blind chance or lottery method where individuals are picked by a mechanical or mathematical process.

Random sampling technique has been considered as crucial in selection of representative samples. This is due to the implication of equal probability or chance of individuals getting selected as all choices are independent and also possible sample combination an equal probability of being chosen. In fact, probability sampling results in high external validity compared to the non-probabilistic procedures (Crano et al, 2014). Probability sampling

comprises of four classifications: simple random sampling; stratified random sampling; systematic random sampling; and cluster sampling (Kothari, 2004).

Simple random sampling: In this sampling method, a researcher develops a sampling frame, then selects elements from the sample frame according to a mathematically random procedure, and then locates the exact element that was selected for inclusion in the sample. This method is most applicable in cases of very small and homogenous populations.

Stratified Random Sampling: This is a sampling technique where the population embraces several distinct categories, the frame can be organized into separate strata. The strata are sampled, each as an independent sub-population, out of which individual elements can be randomly selected. All elements in each stratum have equal chance of being selected. (Kothari,2004).

Systematic Random Sampling: Kothari (2004) elucidates systematic random sampling practically by using a structured list to select the items or the required population. This sampling relies on arranging the target population according to specific ordering schemes such as numerical or alphabetical and then picking up elements at regular intervals from the structured list. Thus, in systematic random sampling only the first unit is selected randomly, and the remaining units of the sample are selected at fixed intervals. (Kothari, 2004).

Cluster Sampling: Cluster sampling technique or two-stage sampling involves selecting sample areas, then selecting a sample of respondents from the sample areas. (Kothari, 2004). The population is divided into clusters of homogeneous units, based on geographical basis.

The second sampling design is non-probability sampling which is a procedure which does not afford any basis for estimating the probability that each population item has of being included in the sample. It is also known as deliberate sampling, purposive sampling and judgement sampling (Kothari, 2004). In this type of sampling, items of the population are selected deliberately by the researcher thus some elements of population stand no chance of selection. Due to the non-randomness of selection of elements, this type of procedure does not allow the estimation of sampling errors. Moreover, non-probability sampling techniques can be classified into: convenience sampling; judgmental sampling; and quota sampling (Kothari, 2004).

Thus, the sample frame for this study consists of registered farmers of sugarcane in the Upper Egypt region from the towns of Aswan, Qena, Sohag, Luxor and Assiut, specifically those that sell to the Kom Ombo factory, consisting of 681 farmers (Abdel-Mawla, 2012). The list of 681 farmers was obtained from a hard copy register from the Kom Ombo factory kept as a reference of the transactions that took place between the farmers and the sugar mill. Thus, this research has employed a simple random sampling technique in chosen representative sample in selecting the sample size from the sample frame of 681 sugarcane farmers from the Kom Ombo sales register.

5.4.3 Sample Size

Extant literature posits sample size as the number of items to be selected from the universe (Kothari, 2004; Churchill and Brown, 2004). To add on, Kothari (2004) argues that sample size is a major problem before a researcher. Moreover, the size of sample should be optimum, i.e. neither should it be excessively large, nor too small, as it fulfills the requirements of efficiency, representativeness, reliability and flexibility (Kothari, 2004). In fact, authors such as Hussey and Hussey (1997) point out that the sample size depends on the research, the expected level of confidence for the answers and the expected response rate. Furthermore, the sample size also depends on the power of the study, expected effect size, underlying event rate in the population and the standard deviation in the population (Kadam and Bhalerao, 2010). Scholars such as Schumaker and Lomax (2004) suggest a sample size of at least 100, while others like Hair et al (2006) state a sample size between 100 to 150.

Van Voorhis and Morgan (2007) posit the general rule of thumb is not less than 50 participants for a correlation or regression with the number increasing with larger numbers of independent variables. Green (1991) suggests a comprehensive breakdown of the procedures used to determine regression sample sizes, suggesting $N > 50 + 8m$ (where m is the number of Independent Variables) for testing the multiple correlation and $N > 104 + m$ for testing individual predictors. Hattie (1985) also argues that the number of participants should exceed the number of predictors by at least 50 (i.e., total number of participants equals the number of predictor variables plus 50) --a formula aligned with Green's (2001) argument above.

This study employed a total of 5 independent variables, thus the minimum sample based on criterion (a) is $50 + 8 * 5 = 90$, however the researcher targeted a total of 120 respondents to foster adequate representative responses for analysis of the conceptual model.

5.5 Questionnaire Development

Diem (2002) points prerequisites in the development of effective questionnaires. The researcher should determine the purpose of the study, what the researcher is going to measure and the measurement scale (Diem, 2002). During the questionnaire development process, the latent constructs and their corresponding variables were developed based on an intensive theoretical literature review from TCA, RCT and Power-Dependence theories whilst incorporating the prerequisites of the questionnaire development and construction. Moreover, the researcher based the questionnaire development questions by referring to some few sugarcane-growing farmers from Egypt for their insight about the on-going situation and the various challenges facing the farmers in the sugar supply chain to come up with precisely effective questions.

Furthermore, more inputs from the thesis supervisor who is an experienced researcher was incorporated. and a pre-test by a few farmers. At this stage, the researcher focused on the content validity such questionnaire structure, readability, ambiguity and completeness (Dillman, 1978).

The questionnaire was first constructed in English language and later translated to Arabic by a professional native Arabic language translator with a PhD in English linguistics studies. The main purpose of translating the questionnaire to Arabic from English was to curb the language barrier problem for the respondent farmers without the English background and skills.

The latent constructs in the questionnaires were based on a 7-point likert scale, with 1= 'strongly disagree' to 7='strongly agree' with regard to sugarcane farmers' exchange relations with their most relevant sugarcane buyers. Furthermore, the questionnaire was stratified into 3 major parts. Part 1 consisted of questions gathering background information of the farmers and their major supplier. Part 2 consisted of independent variables relevant to the conceptual framework and were measured in the 7-point likert scale. The last category comprised of single item measures and both open-ended and closed general questions designed to capture some aspects of the dyadic relations between the farmers and sugar mills.

5.5.1 Data Collection Techniques

According to Kothari (2004), there are several methods of collecting primary data for surveys and descriptive researches. The most commonly used include; (i) observation

method, (ii) interview method, (iii) through administering questionnaires, (iv) through schedules, and (v) other methods which include using available information such as (a) information on warranty cards; (b) distributor audits; (c) pantry audits; (d) consumer panels; (e) using mechanical devices; (f) through projective techniques; (g) depth interviews, and (h) content analysis (Kothari, 2004; Peersman, 2014).

Data collection for this research was mainly conducted through survey with questionnaire as the main data collection instrument. A questionnaire can be administered in various ways such as mail, telephone or in person through face-to-face interview (Churchill, 1999). In this study, the questionnaires were administered by the researcher through face-to-face interviews for a higher response rate as there is still an underdeveloped information and communication infrastructure in the rural Upper Egypt that bring about higher costs especially when using lengthy telephone interviews.

The researcher visited sugarcane farmers from the period of 17 January to 28 February 2017, holding face-to-face interviews with either the owners or managers of the farms whom have sufficient knowledge on their exchange relationships with their most relevant buyers of raw sugarcane. The process went relatively smoothly due to rapport building with the farmers prior to going to the field.

- ***Response Rate***

Malhotra and Birks (2006) posit face-to-face interviews have very high response rates. Therefore, in this study the respondents were asked to fill a questionnaire form about at the presence of the researcher who further elaborated on the opportunism aspect regarding independent variables in question during the personal interviews (see Appendix 1). Thus, the response rate for this study was 100% where 120 forms were passed to 120 respondents that were targeted.

5.4 Summary

In this chapter, the study's methodology was presented elaborating in detail the research design, sources of data, and data collection criteria. Moreover, the population, sampling frame, sample size and sampling procedures in the study were discussed. Finally, questionnaire development and data collection techniques have also been discussed in this chapter. The upcoming chapter will focus on the definition and operationalization of variables which are considered the constructs used in this study.

CHAPTER SIX

DEFINATION AND OPERATIONALIZATION OF VARIABLES

CHAPTER SIX - DEFINATION AND OPERATIONALIZATION OF VARIABLES

6.1 Introduction

In this chapter, there are three sections will be present. The first section shows measurement theory. The second section displays the development of measurement model, and the third section discusses operationalization of variables and its definition. All perceptual items in this study have been adopted from previous studies and modified due to fit this context.

6.2 Measurement Theory

Measurement is defined by Stevens (1946) as, “*the assignment of numerals to objects or events according to rules*”. Furthermore, Edwards and Bagozzi (2000, p.156) identify a measure as “*an observed score gathered through self-report, interview, observation, or some other mean*”.

As Gerbing and Anderson point out, (1988), that in all branches of sciences; measurement is a central activity that quantifies the perception of interest. A theory is considered complete if it tested (De Vellis, 2003). Therefore, for testing a theory, measurement presents an experimental estimate for each theoretical construct of interest. Moreover, as (Bagozzi and Phillip, 1982) point out, that the theory is involved two parts, one that determining the associations between theoretical construct, and another that elaborates the relationships between constructs and its measures where construct can be defined as “*an abstract term that attempts to describe a phenomenon*” (Edwards and Bagozzi, 2000, p.157). However, this phenomena or event cannot be observed directly (Byrne, 2010).

Therefore, a phenomenon is called a latent variable and it has two characteristics; one is “*latent rather than manifest*” which is not directly observable, second, is the construct which “*variable rather than constant*” so that means it can be varied according to specific factors like people, time and place (De Vellis, 2012). Accordingly, in order to examine and investigate the relationships between the constructs, the constructs need to be measured. Therefore, it is very important to know the relationship between constructs and measures as they are providing a supplementary theory that connects the gap between the measurable observed phenomena and the abstract theoretical constructs.

Thus, all the constructs in this conducted study are operationalized based on the recommendations from Churchill (1979), which display the guidelines for designing measures of constructs that used in this study. Therewith, all measurement items that used in this context were adapted and modified from previous research. Specially, multi-item scales which recommended by Churchill (1979), to reduce the measurement difficulties and to increase the reliability as well as reduce the measurement error. Hence, that multi-items were used herein to operationalize all latent constructs except for the annual workforce that determines the size of the supplier and the relationship duration were operationalized using single items scales (Gardner et al; 1998). Furthermore, as Rokkan et al, (2003), point out all single items scales will not be subjected to validity tests as on contrary for multi items scales.

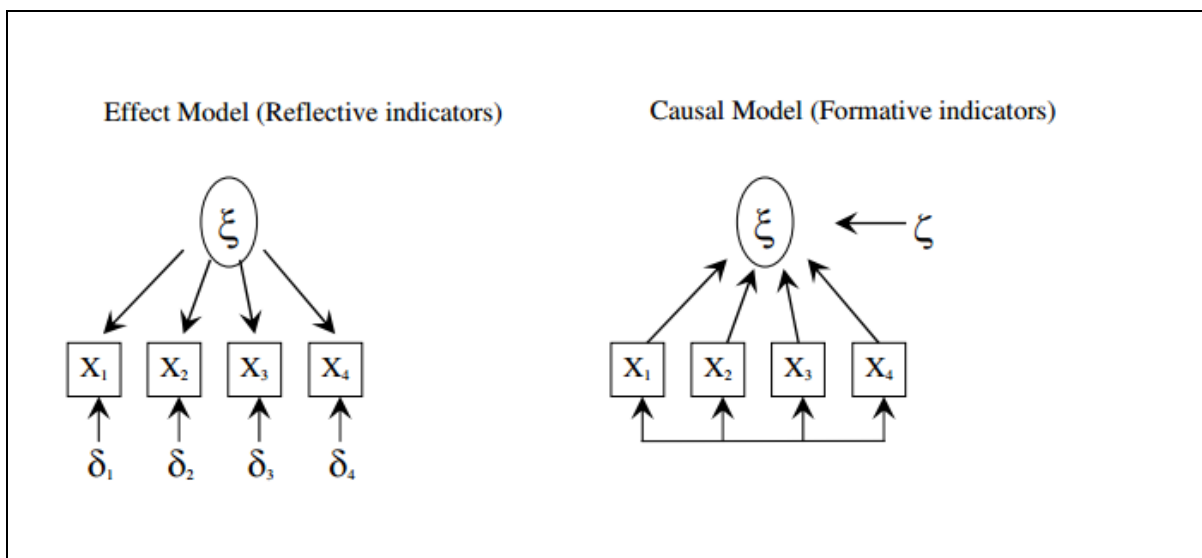
6.3 Measurement Model

According to Bollen and Lennox (1991), there are differences between indicators that are “effects” of a latent construct (reflective indicators) and indicators that are “causes” of a latent construct (formative indicators). Therefore, it is very important to identify the latent variable very correctly and recognize its actual concept and nature to determine to which measurement model the latent variable and their measures should relate (Coltman et al, 2008; Hair et al., 2010). Extant literature informs that there are three theoretical aspects in deciding whether the measurement model is formative or reflective as follows: (1) the nature of the construct, (2) the direction of causality between the indicators and the latent construct, and (3) the characteristics of the indicators used to measure the construct (Coltman et al.2008).

Furthermore, based on these three aspects; the nature of the construct in the reflective model, is subsisting independently of the measures. In contrast, in the formative model is dependent upon a constructivist. The second aspect, the direction of causality; in the formative model causality direction flows from the indicators to the construct. On the other hand, the causality direction flows in the reflective model from the construct to the indicators (see figure 10). Finally, the Characteristics of indicators, there are a Significant differences characteristic of the indicators that measure the latent constructs under reflective and formative scenarios. As for the formative model, the indicators identify the construct, therefore, it is sensitive for the domain of the construct to determine the number and types of indicators that representing the construct. However, deleting or adding an indicator can change the conceptual domain of the construct (Rossiter, 2002; Bollen and Lennox 1991).

In contrast, in the reflective model, any change in the latent variable should precede variation in the indicators. Therefore, all the indicators have the same theme and are interchangeable (Churchill, 1979; Nunnally and Bernstein, 1994). However, few cases of the formative model have been seen in the business literature (Mackenzie and Jarvis et al, 2003). As in this conducted study, all the constructs have been operationalized and measured as reflective scales.

Figure 10: Measurements Model



Source: Coltman et al; (2008)

6.4 Measurement Process

This section presents all the variables that included in this study, as well as shows a brief definition of each variable, and all its question items that make up for each latent variable. This study has one dependent variable which is buyer opportunism (BUYOPPOR) and three independent variables: supplier specific investment (SSPI), environmental uncertainty (ENVIRO UNCERT), relationship duration (DURAT); and two control variables: annual sales volume (SUP SAL VOL) and annual workforce (Size of Supplier).

6.4.1 The Dependent Variable

- **Buyer Opportunism**

In this study, the dependent variable is buyer opportunism which is the sugar mills in Egypt, whereby this dependent variable is affected by the other independent variables which are mentioned above. The author has asked questions about this underlying construct based on the extant literature review (Provan and Skinner, 1989; Moore and Cunningham, 1999;

Knemeyer and Murphy, 2005; Gundlach et al. 1995), as well as the empirical data collected in the initial phase of data collection. The construct consists of six items that were adopted and modified from the previous study to fit this context, using a 7- point likert scale from 1 = 'strongly disagree' to 7 = 'strongly agree'. Thus, the upcoming items have been used to measure the buyer opportunism from the seller's prospective. The items are presented in table 1.

Table 1: Questionnaire items for Buyer Opportunism

BUYOPPOR 1	This sugar mill very often makes false promises regarding the prices of sugarcane it will finally pay to its seller.
BUYOPPORT 2	This sugar mill always refuses to offer extension services of supervisors to improve our farms output.
BUYOPPORT 3	This sugar mill always try to force the prices as low as possible.
BUYOPPORT 4	This sugar mill very often makes false accusations regarding the quality of sugarcanes in order to benefit on low buying prices.
BUYOPPORT 5	Very often this sugar mill uses false weighing scales in order to cheat our farm of the actual tonnage supposed to be paid for.
BUYOPPORT 6	This sugarmill always uses unforeseen events toextract extra payment from our farm.

6.4.2 The Independent Variable

- *Supplier Specific Investment*

This latent construct measures any investment that the suppliers may have made it (time and/or money specifically) to accommodate these sugar mills transactions. These investments would be lost if the sugar mill stopped purchasing from their farm. Therefore, this construct was measured by using a 7-point likert scale from 1 = 'strongly disagree' to 7 = 'strongly agree'. Moreover, this construct has made up of 7 items which are selected from previous research work by Buvik and Haugland (2005); Rokkan et al., (2003); Heide and John (1990, 1992), Masten, Meehan, and Snyder (1991), and Walker and Poppo (1991). The items are presented in table 2.

Table 2: Questionnaire items for Supplier Specific Investment

SSPI 1	We have invested a lot of time and resources in the construction of storage facility for the sugarcane enrout to this sugar mill.
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SSPI 2	Our farm has heavily invested in special machinery for the harvesting of the sugarcane for this sugar mill.
SSPI 3	We have strongly adopted our farm to accommodate specific types of sugarcane variety (breed) needed by only this sugar mill.
SSPI 4	Our farm has heavily invested in a quality assurance program require by this sugar mill to ensure that we meet the sugar mill required sugarcane quality standards.
SSPI 5	Our farm has made significant investement in irrigation facilities that are spacific for the transactions with this sugar mill.
SSPI 6	If this sugar mill stops buying from our farm we would lose a significant part of our investment that we have made for dapping to this sugar mill.
SSPI 7	Our farm has invested significant amounts of money and time in skilful training of workers to adhere to the production standerds of the sugar mill.

- ***Environmental Uncertainty***

The scale of the environmental uncertainty variable is constructed from previous research work by Buvik and Haugland (2005); Rokkan et al., (2003); Balakrishnan and Wernerfelt (1986); Heide and John (1990); it is measured by five items where value 1 = 'strongly disagrees' to 7 = 'strongly agree'. the items are formulated as presented in table 3.

Table 3: Questionnaire items for Environmental Uncertainty

ENVIROUNCERT 1	It is very difficult for us to predict the demand for sugarcane from our farm.
ENVIROUNCERT 2	The price of the sugarcane paid by this sugarmill is rapidly changing.
ENVIRO UNCERT 3	Often It is very difficult for us to predict the levels of sugarcane production that will be provided by other sugarcane farms.
ENVIRO UNCERT 4	It is very difficult for us to predict the price that this sugarmill will pay.
ENVIRO UNCERT 5	A lot of uncertainties are involved with regard to availability of tools needed in our production activities (fretilizers, purge canals, new equipment, new tools to resist insect and diseases).

- **Relation Duration**

According to Palmatier et al. (2006, p.140), relationship duration is defined as “the length of time that the relationship between the exchange partners has existed”. In another word, relationship duration in this study is presenting the number of years that the sugarcane growers(supplier) have been working with a particular sugar mill. Thus, this construct has been adopted from Buvik and Halskau (2001) and Buvik and Haugland (2005) and was operationalized by computing the natural logarithm of the actual duration between the sugar mill and sugarcane growers in years. However, this construct is measured using a single open question:

How long have you been having trade relations with this sugar miller? Years

- **Annual Sales Volume**

In this study, supplier sales volume is defined as a control variable to capture the possible effect of supplier sales volume on the buyer opportunism. This construct has been adapted from previous research work by Heide and Miner (1992) and Sheng et al. (2010) and was operationalized as a single item scale. Moreover, this construct was measured as a natural logarithm of the total annual sales value earned by a particular sugar cane grower in selling sugarcane crop to its most important buyer (sugar mill). The construct is measured by a single open question:

What is your approximate annual sales L.E last year(2016) to this sugarmill?

- **Annual Workforce (Size of Supplier)**

This construct has been adapted based on Homburg and Stock (2004) and Hult, Ketchen, and Slater (2005), which is using the number of the workforce as a measure of the supplier size. In addition, the supplier size was measured by computing the natural logarithm of the actual number of employees working in the supplier farm. As this construct measured by using a single open-ended question:

What is your approximate annual workforce in your farm?.....

6.5 Summary

In this chapter, a general overview of each construct has been presented and defined. The underlying items of each dependent and independent variables have been discussed and evaluated. Moreover, both of measurement theory and measurement model were elaborated. In the upcoming chapter, the preliminary data analysis and the validity tests are presented.

CHAPTER SEVEN
MEASUREMENTS ASSESSMENT AND DATA VALIDATION

CHAPTER 7 - MEASUREMENTS ASSESSMENT AND DATA VALIDATION

7.1 Introduction

For assuring the quality of data and further analysis, data examination is a required procedure. In this chapter, the preliminary assessment of data quality is presented to assess the validity and reliability of the measurements used for the constructs under study, as well as the assessment of the hypothesized measurement model. Furthermore, the chapter shows data screening and cleaning under the study followed by descriptive statistics, testing data for outliers, missing data and skewness, kurtosis for checking normality.

7.2 Data Screening and Cleaning

7.2.1 Assessment of Missing Data

Missing data is a grave issue that is a main concern in quantitative data analysis and has the potential to negatively impact the results of the study (Graham 2009, Malhotra and Perks 2006; Hair et al. 2010). Consequently, it is important to verify the availability of the missing data and then address them appropriately. In the light of this, there are several ways to deal with missing data, including removing cases listwise, pairwise deletion, estimating missing values using earlier experiments, and using the calculated mean value of available data (Hair et al. 2010; Mertler and Vanata 2005).

As Meyers et al (2006), pointed out that the advantage of using list wise deletion is that this instrument can be used in a variety of multivariate techniques and there are no accounts are required. However, listwise is used to refer only to a subset of situations that present a complete set of results (Pallant, 2007). Nevertheless, Myers et al. (2006) claim that this approach restricts the size of the sample, which may increase the measurement error, and in accordance with Hair et al. (2010), statistical strength may be less. In contrast, pairwise deletion method is maximizing the use of valid data leading to a larger sample size (Hair et al., 2010). However, the sample size will vary for every imputation and can produce a value outside of the range of the correlation and Eigenvalues. Meyers et al., (2006) recommended not using pairwise deletion when conducting multiple regression, structure equation modeling, or factor analysis.

Nevertheless, in this empirical study in the 120 questionnaires which has been collected, there was no missing data. This is due to the data collection method that has been implemented in the first place, which runs the questionnaire in person, in an individual interview mode. This has enabled the researcher to ensure that all questions are filled out before splitting up with participants.

7.2.2 Assessment of Outliers

According to Byrne (2010), outliers denote a data object that deviates significantly from the normal objects as if it were generated by a different mechanism. In another word, an outlying observation, or extreme value, is one that appears to deviate markedly from other members of the sample in which it occurs (Pallant, 2011, Hair et al., 2010).

As Kline (2011) and Tabachnick and Fidell (2007) point out, there are two forms of observation in any case study either a univariate or multivariate outlier; therefore, the case of univariate outlier has large scores on a single variable, while in the case of a multivariate outlier, it has extreme scores on two or more variables.

Nevertheless, as there is no an unanimity on the definition of extreme observation, accordingly, the rule of thumb is defined it as observation any scores more than three standard deviations from the mean is an outlier (Kline, 2016). Thus, extreme values or outlier can deform the result, leading to biased estimators and affecting the importance of statistical tests (Yuan and Bentler; 2001). In addition, if the outliers are non-randomly distributed, they can reduce normality; therefore, in multivariate analysis, they contravene the presumption of specificity and multivariate normality, affecting the possibility of both Type 1 and Type 2 error. Thus, they can affect some variables of interest in a study (seo 2006). Therefore, in a large sample size, cut-off points of 4.0 or greater in absolute value to identify the outliers is the most accurate method. However, as Kline., (2011) posits, the extreme values can be detected by using z scores, while cases are considered outliers with an absolute z-scores greater than 3.

In this study data cleaning and screening have been done due to the light of suggestions by Kline (2011). In this study, the potential extreme values were examined based on the Hair et al (2010) recommendations and the observations above the cut-off point 4.0 were

classified as extreme values. Standard scores in the SPSS were calculated for all items and resulted in a maximum value of 3.24. This indicates that all observation falls under the cutting point that depicts the absence of an outlier problem. In addition, the value of actual items, such as the number of workforces ranged from eight to three thousand employees, the duration of the relationship ranged from one to eighty years, and sales volume ranged from 45 to 4900 tons, which was mathematically converted to the natural logarithm to ensure normality. See Appendix 5.

7.2.3 Skewness and Kurtosis for Normality Check

Checking the normality of data is a hypothesis that is required to be filled in the most inferential statistical analysis (Kline,2016).

Normal is defined by Pallant., (2007) as, " the symmetrical bell-shaped curve which has the greatest frequency of scores in the middle and smaller frequencies towards the extremes". Thus, for assessing the normality of the distribution in this study obtaining skewness and kurtosis are the most commonly used statistical tools (Hair et al., 2006; Tabachnick and Fidell, 2007). Therefore, kurtosis indicates to the degree to which the observations of a given distribution are converged around the central mean of a given standard deviation. As positive kurtosis values refer to that the distribution is concentrated around the center with long thin tails, while the negative kurtosis values portray that the distribution is very flat (Pallant 2007). On the other hand, skewness is a measure of the degree of symmetry of distribution (Pallant 2007). Whereas a positive skewness refers that the distribution has shifted to the left, while a negative skewness reflects the shift to the right.

A normal distributed observation has a zero value for both skewness and kurtosis. Therefore, in this study all the observations for skewness fall within the acceptable range that is within +3 to -3 and kurtosis values in the range of +1 to -1 (Kline, 2011). The SPSS output of skewness and kurtosis values are shown in Appendix 2.

7.3 Descriptive Statistics for Variables Under Study

According to Pallant (2011), descriptive statistics are used to represent the basic characteristics of the data in a study. They provide simple summaries about the sample and the measures. simultaneously with simple graphics analysis, they form the basis of virtually

every quantitative analysis of data. Thus, descriptive statistics consisted of two categories, which are the numerical methods encompass measures of variability such as variance, standard deviation and range; and measures of skewness and kurtosis; measures of central tendency such as mean, median, and mode and normality (Gaur and Gaur; 2009; Tabachnick and Fidell, 2007).

In this study, the author used IBM SPSS 20 to describe a measure of variability; standard deviation of constructs and the measure of central tendency; mean and median: Relation duration, Sales volume, Workforce, Buyer opportunism, SSPI and Environmental uncertainty. Therefore, both of table 4 and 5 are presented the descriptive statistics of measurement constructs under this study.

Table 4: Descriptive Statistics of Sample Characteristics

<i>Descriptive Statistics</i>					
	N	Minimum	Maximum	Mean	Std. Deviation
DURAT	120	.69	4.38	3.2891	.70240
SALESVOL	120	3.22	8.51	5.7304	1.17496
WORKFORCE	120	2.08	8.01	5.0221	1.31771

Table 5: Descriptive Statistics of Constructs

<i>Descriptive Statistics</i>					
	N	Minimum	Maximum	Mean	Std. Deviation
Buyer Opport	120	1.33	6.83	4.4403	1.31265
SSPI	120	-2.52	2.82	.0000	1.05130
UNCERT	120	-3.81	1.69	.0000	1.03991
DURAT	120	.69	4.38	3.2891	.70240
SALESVOL	120	3.22	8.51	5.7304	1.17496
WORKFORCE	120	2.08	8.01	5.0221	1.31771
SSPI X UNCERT	120	-1.70	6.45	.3993	1.37952

Source: SPSS Output

7.4 Scale Reliability

According to Hair et al (2010), reliability is defined as “an assessment of the degree of consistency between multiple measurements of a variable”. It is “the ratio between the true score variance to observed score variance” (Hattie, 1985, p.139). However, and according

to (Mentzer and Flint, 1997) assessment of reliability is an indispensable but not adequate term for construct validity.

Furthermore, there are various forms used for measuring reliability, (1) Test-retest: which the reliability coefficient obtained with a repetition of the same measure on a second occasion. thus, the higher the coefficient is, the better the test-retest reliability, and consequently, the stability across the time (Dunn, Seaker and Waller 1994; Churchill 1979). (2) Alternative forms method that one measures a variable with two various measurement tools at two different points in time. (O'Leary-Kelly and Vokurka,1998). (3) Internal consistency of estimates which is indicative of the homogeneity of the items in the measure that tap the construct (Kline, 2011; Creswell, 2009). It consisted of: (a) Inter-term Consistency Reliability: this is a test of the consistency of respondent's answers to all the items in a measure. The most popular test of inter-term consistency reliability is the Cronbach's coefficient alpha and composite reliability (Peterson and Kim 2013). (b) Split-Half Reliability: reflects the correlations between two halves of an instrument.

In this study, both of Cronbach's coefficient alpha and composite reliability are used to estimate the reliability of scales. In a light of that, Litwin (2003), defined Cronbach alpha as "It is an indication of how well the different items complement each other in their measurement of different aspects of the same variable or quality". So, Its value ranges between zero to one. Thus, the values which are closer to one indicates to a higher internal consistency; the opposite for the values that closer to zero that one indicates a lower internal consistency (Zhong et al. 2017).

On the other hand, composite reliability is used to derive a composite reliability index by using confirmatory factor analysis. Where composite reliability index falls between 0 to 1, thus the values which are closer to one indicates to a higher internal consistency; the opposite for the values that closer to zero that one indicates a lower internal consistency and expose that all the measures consistently perform the same construct (Hair et al., 2010).

As depicts below in (Table 6), that Cronbach's alpha coefficient for most of the constructs is above 0.7. For BUYOPPOR $\alpha = 0.941$, ENVIROUNCERT $\alpha = 0.862$. Although, the construct SSPI is $\alpha = 0.697$ which slightly below .70. However, Cronbach's alpha coefficient

¹ Composite Reliability (CR) = $SSI / (SSI + SSV)$; whereby SSI= square of the sum of all factor loadings of a construct, SEV = sum of all error variances of a construct, and error variance is equal to one minus squared multiple correlation (Zahoor et al. 2017)

is still within the recommended threshold of reliability as long as it is greater than or equal to 0.5, and reliability within 0.5 thresholds is quite common and acceptable in existing literature. On the other hand, most of the result of CR also exceeds 0.70 for all constructs which imply that good construct reliability. Although, the construct SSPI is $\alpha = 0.691$ which slightly below the minimum acceptable threshold criterion, it can be approximated to 0.70, which is the acceptable threshold criterion (Ab Hamid et al. 2011, Hair et al. 2010, Rencher 2003). From this, it can be said that the data collection method for this study has strong reliability and internal consistency.

Table 6: Construct Reliability Scores

Construct	Items	No of Items	Cronbach's Alpha (α)	Composite reliability
BUYOPPOR	BUYOPPOR 1,2,3,4,5,6	6	.941	0.944
SSPI	SSPI 1,4,7	3	.697	0.691
ENVIROUNCERT	ENVIROUNCERT 1,3,4,5	4	.862	0.898

Source: SPSS Output

7.5 Validity

Data validity is, according to Moskal, Leydens, and Pavelich, (2002); Kimberlin, and Winterstein,(2008), the degree to which the evidence that supports the interpretations of data is correct and that interpretations are used in an appropriate manner. Therefore, to pursue data validity, a researcher must reduce the uncertainty associated with his\her findings (Brinberg and McGrath, 1983). Considering that, there are four major's forms of data validity suggested by Cook and Campbell. (1979) and Hair et al. (2010):

- Construct validity: testifies to how well the results obtained from the use of the measure fit the theories around which the test is designed. This is assessed through discriminant and convergent validity (Clark and Watson, 1995).
- Discriminant validity: is established when, based on theory, two variables are predicted by measuring them are indeed empirically found to be so (Churchill,1979; Hair et al., 2010).

- Face validity: indicates to the extent to which the content of observed variables is concrete with the definition of the latent construct based on researcher's own judgment (Hair et al., 2010).
- Convergent validity: According to is established when the scores obtained with two different instruments measuring the same concept are highly correlated.

7.5.1 Construct Validity

According to John and Reve, (1982) the construct validity is defined as “*the extent to which an operationalization of a construct actually measures what it purports to measure*”. As pointed out early, construct validity is assessed by both convergent and discriminant validity which are robust in capturing the domain of construct validity (Shuttlesworth,2009; Dunn, Seaker and Waller, 1994). In the light of that, all items that are used in this study were adopted from previous studies; knowing that those items were adjusted to suitable the context of the research problem. However, every construct in the questionnaire was developed by integrating inputs from practitioners and experienced researchers in the Egyptian's sugar industry to meet the requirement for establishing content validity (Hawkins, Pohlen, and Prybutok, 2013; Thatcher 2010).

7.5.2 Discriminant validity

According to Churchill (1979) and Buvik and Haugland, (2005), to prove the discriminant and convergent validity in this study, the author conducted EFA with varimax rotation on all the perceptual measures. Furthermore, Fornell and Larcker (1981) suggests that neither item estimate of reliability nor a composite measure indicate the amount of variance that is captured by the construct in relation to the amount of variance due to measurement error, thus (Zait and Berteau,2011) recommends the use of average variance expected (AVE) to examine discriminant validity which act as a means of acquiring the variance information. The basic assumption of discriminant validity is that items correlate higher among them than they correlate with other items from other constructs (Buvik and Haugland, 2005; Zait and Berteau,2011), thus for this study the author has employed average variance expected (AVE) and cross-loading estimates methods to support this assumption which is consistent to previous scholars (Segars 1997; Fornell and Larcker 1981; Hair et al. 2010).

Findings from the exploratory factor analysis (EFA) shown in (Appendix 3) provide evidence for discriminant validity by examining the cross-loading values which was below 0.5 thresholds as suggested by (Hair et al. 2010). Items were loading strongly among the same construct compared to another construct with loading estimate (see in Appendix 3) above 0.6 thresholds as recommended by (Segars,1997) to support evidence of discriminant validity. Similarly, the AVE values computed from the results of confirmatory factor analysis (CFA) of this study (see Appendix 4), is providing evidence of discriminant validity (Segars 1997; Churchill 1979), by comparing the squared value of AVE with bivariate correlation (see table 7) whereby all values of squared ²AVE were found to be greater than bivariate correlations suggesting that discriminant validity is supported (Segars 1997; Zait and Berteau 2011).

Table 7: Construct Correlation, Descriptive statistics, Discriminant validity and Average Variance Extracted

<i>Constructs</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
1. OPPORT	1.0	.468	.507	-.451	-.675	-.533	.533
2. SSPI		1.0	.368	-.213	-.174	.006	.817
3. ENVIUNCERT			1.0	-.076	-.451	-.252	.680
4. DURAT				1.0	.455	.373	-.190
5. SALVOL					1.0	.865	-.290
6. WF						1.0	-.074
7. INTER SSPI*UNCERT							1.0
• AVE	-	.416	.695	-	-	-	-
• Mean	4.44	.00	.00	3.28	5.73	5.02	18.20
• Std. Deviation	1.31	1.05	1.04	.702	1.17	1.31	6.922
• Tolerance		.175	.107	.730	.167	.214	.1 22
• VIF		8.47	9.35	1.369	5.97	4.66	5.88

(source SPSS Output)

7.5.3 Convergent Validity

In this study, convergent validity has been conducted to estimate the extent to which the multiple indicators used to measure a construct correlate with each other. The initial EFA results as depicted in (table 7) above and Appendix 3 showed the existence of convergent validity, in addition the Eigenvalue for each construct is exceeded the criterion threshold of

²AVE = (Sum of squared standardized loadings) / [(Sum of squared standardized loadings) + (Sum of indicator measurement error)].

1.0 which was ranges between 1.487 and 2.743 (Chen and Bulrag, 2004; Hair et al., 2010; Chen, Wang, and Chen 2012). in addition, the output of CFA as depicted in (table 8) below is showing the significant of t-value >0.05. On the other hand, composite reliability (CR)for BUYOPPOR, SSPI and ENVIROUNCERT are well over 0.60 recommended criterion threshold (Yen and Hung, 2013; Bagozzi and Yi, 1988) each 0.944, 0.691 and 0.898 respectively. It follows that the convergent validity is supported.

Table 8: Measurement Model Confirmatory Factor Analysis (CFA) Results (n=120)

Construct	Factor Loading (t-value) ^b	Seven-point Likert- Scale type- items with end points strongly disagree and strongly agree
Buyer opportunism OPPORT: 4 items $X^2(2) = 3.31, p = 0.19$ CFI = 0.96; IFI = 0.97 RMSEA = 0.07 $\alpha = 0.64; CR = 0.944$	0.87 ^a	OPPORT1: This sugar mill very often makes false promises regarding the prices of sugarcane it will finally pay to its seller.
	0.82	OPPORT2: This sugar mill always refuses to offer extension services of supervisors to improve our farms output.
	0.86	OPPORT3: this sugar mill always tries to force the prices as low as possible.
	1.03	OPPORT4: this sugar mill very often makes false accusations regarding the quality of the sugarcane in order to benefits in low buying prices.
	1.00	OPPORT5: very often this sugar mill uses false weighing scales in order to cheat our farm of the actual tonnage supposed to be paid for.
	0.91	OPPORT6: this sugar mill always uses unforeseen events to extract extra payment from our farm.
Supplier specific investment SSPI: 3 items CFI = 1.00; IFI = 1.00 RMSEA = 0.05 $\alpha = 0.64; CR = 0.691$ Trivial fit for three-item scale	0.04 ^a	SSPI1: We have invested a lot of time and resources in the construction of storage facility for the sugarcane enroute to this sugar mill.
	0.94	SSPI4: Our farm has heavily invested in a quality assurance program require by this sugar mill to ensure that we meet the sugar mill required sugarcane quality standards.
	1.00	SSPI7: Our farm has invested significant amounts of money and time in skillful training of workers to adhere to the production standards of the sugar mill.
Environmental uncertainty ENVIROUNCERT: 4items $X^2(2) = 3.31, p = 0.19$ CFI = 0.96; IFI = 0.97 RMSEA = 0.06 $\alpha = 0.64; CR = 0.898$	0.77 ^a	ENVIROUNCERT1: It is very difficult for us to predict the demand for sugarcane from our farm.
	0.96	ENVIROUNCERT3: often it is very difficult for us to predict the levels of sugarcane production that will be provided by other sugarcane farms.
	0.78	ENVIROUNCERT4: it is very difficult for us to predict the price that this sugar mill will pay.
	1.00	ENVIROUNCERT5: a lot of uncertainties are involved with regard to availability of tools needed in our production activities.

^aFixed variable.

^bStandardized loadings significant at $p < 0.05$

Source (SPSS and AMOS 22)

7.6 Assessment of the Hypothesized Measurement Model

A confirmatory factor analysis (CFA) uses several appropriate indicators in this study to review the fit of the predictable measurement model (Hair et al. 2010; Kline,2011) and examination of unidimensional that provides proof of items of a scale approximation one factor (Dunn, Seaker and Waller,1994). The outcomes found out from SPSS and Amos 22 (see table 8), show acceptable fit of our model to the data. In accordance with previous studies (Zahoor et al. 2017; Xiong, Skitmore and Xia 2015) four mostly goodness-of-fit indicators were utilized to review the measurement model suitable in this study together with Chi-square (X^2), accustomed Ch-square(X^2/df): Chi-square to degree of freedom ratio, RSMEA; root-mean-square fault of approximation, comparative fit index (CFI) and Incremental fit index (IFI). The results from CFA depicted in (table 8 and Appendix 4), shows that, IFI=0.97, CFI=0.96 were above 0.9 threshold for satisfactory model fit (Xiong, Skitmore and Xia,2015), at the same time as the value of RMSEA=0.07 was in the range of 0.05 to 0.08 threshold of reasonable model fit therefore the measurement model fitted the data (Sydorenko, 2012; Kline 2011).

Additionally, the Chi-square (X^2) and adjusted/normalized Chi-squared was used to review the overall of the model fit by analyzing the inconsistency between the sample (Xiong Skitmore and Xia 2015). The outcome shown in Appendix 2(a), discovered that Chi-square goodness fit of overall model was momentous ($X^2=283.917$, $df =21$, $p=0.000$) which indicates insufficiently good fit (Kline,2011), however Chi-square has been criticized for being sensitive to sample size which tends to refuse the model when sample size increases (Hair et al.,2010; Kline, 2011; Bryne, 2010), therefore adjusted Chi-square was used to assess the overall model fit which takes the impact of sample size. The value for adjusted Chi-square (X^2/df) were 283.917which is in the range of 3.1 or 2.1 of recommended overall model fit (Kline 2011; Hair et al. 2010; Zahoor et al. 2017). Furthermore, every item of scale probable one factor which provides the proof of unidimensional (Suhr 2006, Ab Hamid et al. 2011).

7.7 Summary

This chapter has inspected the reliability and justification of the measurement model. It assessed missing data, outliers and normality. Besides, an exploratory factor analysis (EFA)

followed by factor analysis that was performed (CFA) to assess the measurement model. The next chapter deals with estimating the regression model and testing the hypothesis.

CHAPTER EIGHT
HYPOTHESES TESTS AND EMPIRICAL FINDINGS

8.3 Estimation Results

8.3.1 Correlation Matrix

The challenge faced by this study in the initial phase was the interaction effect among variables that carriage a risk of multicollinearity. Since the purpose of the regression model is to measure dependency and non-interdependence of variables, this is indication of weak empirical design that poses a threat to precisely measure and determine the relationship regression analysis pursues to establish (Farrar & Glauber, 1967; Hair et al.,2010 and Buvik et al, 2014; Pallant,2011). In this circumstance, the hypothesis that the explanatory variables must be independent of each other is violated.

The main challenge in regression analysis arises when one of the predictors appears to be related to another, which looks to be redundant. This occurs when two or more explanatory variables overlap in a sample (Hair et al., 2010; Willis and Berlak 1978, Rencher 2002). This problem is alarming in regression analysis because it results in an error estimation of the regression coefficient; it affects the R square, resulted in a large variance in estimates and thus to poor quality for outcome parameter estimates. In some circumstances, it also leads to a poor identification of the model, resulting in a less-valued biased square. It makes the estimates for a given data set very delicate, consequently changing the estimated coefficient. The separation of the effect of explanatory variables and the inability to explain variance in the dependent variable is a problem (Willis and Berlak 1978).

The author uses the factor of tolerance and variance inflation factor, to solve this problem and avoid its negative impact on estimates (Hair et al.,2010; Pallant, 2011; Kline,2011; Voss 2004). Using the tolerance method to moderate the multicollinearity effect, the Pearson coefficient is settled with independent variables and deducted from one (1-R square). The higher the value, the lower the degree of risk of multicollinearity. Hence, the threshold criterion for admissibility is a value equal to or greater than 0.1 (Hair et al.,2010; Pallant, 2011; Kline ,2011). On the other hand, Kline, 2011 and Pallant, 2011 argue that variance inflation factor values should not be greater than or equal 10.

The author adopted the mean centering of the independent variables used in the interaction effect, as a resolution to a multicollinearity problem. This was done to increase the accuracy of the estimation of the regression coefficient as used in many of the existing literature (Robinson and Schumaker, 2009; Jaccard, Wan and Turrisi 1990, Rokkan, Heide and Wathne

2003, Buvik, Andersen and Gronhaug 2014). Adopting the mean centering of the independent variable and the moderator variable ensures the moderation of the independent variable's effect on the dependent variable at the given moderator variable exhibitions its mean. Thus, the interaction effect is not negatively affected (Rencher 2002; Rokkan et al, 2003). Furthermore, this study revealed a heteroscedasticity but found no evidence of it.

Table 9, below depicts bivariate correlation matrix and descriptive statistics of the constructs of this study. The results show that Environmental uncertainty(ENVIUNCERT), Supplier specific investment(SSPI), Relationship Duration(DURAT), Supplier Sales volume (SALVOL) and Workforce (WF) and the interaction effects, are significantly related to Buyer Opportunism (BUYEROPPORT).

Furthermore, as it shows in the correlation matrix below there is no value greater than or equal 0.9 as recommended by Pallant.,2011. Likewise, by looking to both factor of tolerance and variance inflation factor, for tolerance factor there is no value is less than or equal 0.1, in addition to variance inflation factor, shows that there no is value greater than 10 (Pallant.,2011; Kline., 2011). From this analysis, the author found that multi collinearity is not a problem in this research model and the variables are not highly correlated.

Table 9: Correlation Matrix, Descriptive Statistics and Collinearity Diagnostics

<i>constructs</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
<i>1. OPPORT</i>	<i>1.0</i>	<i>.468</i>	<i>.507</i>	<i>-.451</i>	<i>-.675</i>	<i>-.533</i>	<i>.533</i>
<i>2. SSPI</i>		<i>1.0</i>	<i>.368</i>	<i>-.213</i>	<i>-.174</i>	<i>.006</i>	<i>.817</i>
<i>3. ENVIUNCERT</i>			<i>1.0</i>	<i>-.076</i>	<i>-.451</i>	<i>-.252</i>	<i>.680</i>
<i>4. DURAT^b</i>				<i>1.0</i>	<i>.455</i>	<i>.373</i>	<i>-.190</i>
<i>5. SALVOL^b</i>					<i>1.0</i>	<i>.865</i>	<i>-.290</i>
<i>6. WF^b</i>						<i>1.0</i>	<i>-.074</i>
<i>7. INTER SSPI*UNCERT</i>							<i>1.0</i>
<i>• Mean</i>	<i>4.44</i>	<i>.00</i>	<i>.00</i>	<i>3.28</i>	<i>5.73</i>	<i>5.02</i>	<i>18.20</i>
<i>• Std. Deviation</i>	<i>1.31</i>	<i>1.05</i>	<i>1.04</i>	<i>.702</i>	<i>1.17</i>	<i>1.31</i>	<i>6.922</i>
<i>• Tolerance</i>		<i>.175</i>	<i>.107</i>	<i>.730</i>	<i>.167</i>	<i>.214</i>	<i>.122</i>
<i>• VIF</i>		<i>8.47</i>	<i>9.35</i>	<i>1.369</i>	<i>5.97</i>	<i>4.66</i>	<i>5.88</i>

^aMean-centred variables

^bTransformed variables into natural logarithm

8.3.2 Regression Analysis

In accordance with Montgomery, Pick and Winning 2012, regression analysis is one of the most widely used methods of multivariate data analysis in various fields of research. Furthermore, Tabachnik and Fidel 2007; Pallant., 2011, were defined regression analysis as “a set of statistical techniques that allow one to evaluate the relationship between a single dependent variable and numerous independent variables for a given range of data”.

the results of the hierarchical multiple regression analysis which has been used in the analysis are depicted in (Table 10 and 11) below for two models. The formulation for model 1 was as follows (i) Dependent variable: Buyer’s opportunism(BUYEROPPORT); (ii) Independent variables: Environmental Uncertainty (ENVIUNCERT), Supplier Specific Investment (SSPI), Relation Duration (DURAT) (iii) Control variables: Supplier Sales Volume(SALVOL) and Supplier workforce (WF). Moreover, for model 2 the formulation was included all the main constructs plus the Interaction term: Environmental Uncertainty (ENVIUNCERT) and Supplier Specific Investment (SSPI). Thus, we can be able to compare the estimates and the strength of the two models by using both the difference in R^2 and F-change statistic.

As depicted in (table 10 and 11) below results from the hierarchical multiple regression analysis is signposted fit of model 1 and model 2. An overall assessment of Model 1(see Appendix 5b) was found to be statistically significant at $p < .05$, ($t = 8.12$, $p < .05$, $R^2 = 0.632$, $R^2_{Adj} = 0.612$, $F(6,92) = 29.234$). In the light of that, the interpretation of the Value of $R^2_{Adj} = 0.612$, which means that 61% of the variance of buyer’s opportunism can be explained by a model whereby 39% can be explained by other factors not encompassed in this study hence not counted in the model. Thus, Field (2009) claimed that R^2 shows how much variance is explained by the model compared to how much variance there is to explain in the first place. It is the proportion of variance in the outcome variable that is shared by the predictor variable. Moreover, Faraway 2002, has defined the square of the correlation coefficient as for the proportion of the variance that has been explained using the explanatory variable.

Similarly, an overall assessment of the model 2 (see Appendix 5b) which has interaction effects portrays that, the model is statically significant at $p < .05$, ($t = 8.99$, $p < .05$, $R^2 = 0.666$, $R^2_{Adj} = 0.633$, $F(7,43) = 30.284$). In model 2, the Value of $R^2_{Adj} = 0.633$, which means that 63.3% of the variance of buyer’s opportunism can be explained by a model whereby 36.7% can be explained by other factors not involved in this study hence not counted in the model.

By comparing the two models it can be noticed that R^2_{Adj} has increased due to the existence of interaction effects in this model; i.e. Environmental uncertainty*Supplier specific investment. The increment in the change in R^2 by introducing the interaction effect was 0.021.

Table 10: Hierarchical Regression Analysis: Dependent Variable-Buyer Opportunism (BUYEROPPORT)

Model (1)	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant (b ₀)	11.038	1.359		8.121	.000
MEANSSPI (b ₁)	1.156	.380	.925	3.038	.003
MEANUNCERT (b ₂)	.662	.220	.524	3.003	.003
LOGTIME (b ₃)	-.322	.125	-.173	-2.582	.011
LOGSALES (b ₄)	-.385	.156	-.345	-2.470	.015
LOGWORKFORCE (b ₅)	-.104	.123	-.104	-.843	.401

Model 1 Fit: $R^2=0.632$, $R^2_{Adj}=0.612$, $F(6,92)=29.234$, $p=0.000$, $n=120$

Table 11: Hierarchical Regression Analysis with interaction effect

Model (2)	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant (b ₀)	11.055	1.459		8.99 ^a	.000
MEANSSPI (b ₁)	1.149	.390	.975	3.038 ^a	.003
MEANUNCERT (b₂) H₁(+)	.654	.260	.554	3.003 ^a	.003
LOGTIME (b₃) H₃(-)	-.300	.165	-.153	-2.582 ^a	.011
LOGSALES (b ₄)	-.375	.166	-.335	-2.470 ^a	.015
LOGWORKFORCE (b ₅)	-.104	.153	-.104	-.843 ^d	.401
Intraspixuncert (b₆) H₂(-)	-.154	.063	-.713	-2.103 ^b	.038

Model 2 Fit: $R^2=0.666$, $R^2_{Adj}=0.633$, $F(7,43)=30.284$, $p=0.000$, $n=120$

^aSignificant at $p < 0.01$ for t -values greater than 2.33 one tail

^bSignificant at $p < 0.05$ for t -values greater than 1.65 one tail

^cSignificant at $p < 0.10$ for t -values greater than 1.28 one tail

^dNot significant

8.4 Test of Hypotheses

The author reformulates the regression equation as follows by substituting the figures in Table 11 above:

$$OPPORT = 11.055 + 0.654UNCERT + 1.149SSPI - 0.300DURAT - 0.375\$SALVOLO - 0.104WF - 0.154SSPI \times UNCERT + \varepsilon \dots \text{Equation (8.2)}$$

The relationship between dependent variable buyer opportunism (OPPORT) and (i) independent variables: supplier specific investment(SSPI), environmental uncertainty (ENVIUNCERT), relationship duration (DURAT). (ii) control variable: annual sales volume (\$SALVOL) (iii) one interaction term: environmental uncertainty (ENVIUNCERT) and supplier specific investment(SSPI) (ENVIUNCERT x SSPI) is demonstrated by the regression model in Equation 8.2.

Hypothesis 1

The effect of environmental uncertainty (ENVIUNCERT) is commensurate positively with buyer opportunism (OPPORT), the more the environmental uncertainty increases, the more the buyer acts opportunistically. as an evidence to support H₁ at P < 0.05 (b₂ = 0.654, t = 3.003, p < 0.003, one tail).

Hypothesis 2

Hypotheses H₂ is divided into two sub-hypotheses (H_{2a}, H_{2b}) related to interaction terms ENVIUNCERT x SSPI respectively. As for H_{2a}, the association between environmental uncertainty and buyer opportunism is significantly increased when supplier specific investment is introduced. The output of the regression analysis in (Table 11) above indicates that interaction term for H_{2a} is negative and significant, with (b₆ = -0.154, t = -2.103, p < 0.038), which leads to rejecting hypothesis H_{2a}.

On the other hand, H_{2b} states that; the relation association between interaction term and buyer opportunism has a negative impact, as environmental uncertainty and buyer opportunism are inversely proportional to supplier-specific investment, this has verified to be statistically significant at p < 0.05 which gives us the strong evidence both empirically and statistically to support hypothesis with (b₆ = -0.154, t = 2.103, p < 0.038).

Hypothesis 3

This hypothesis (H₃) depicts a negative impact of the relationship duration on the buyer opportunism. The hypothesis expects that the sugarcane farmers who have been in a longer buyer-seller relationship with the sugar mills perceive the latter as being less opportunistic due to the accrued relational norms and shared values. this hypothesis is indicated to be statistically significant at p< 0.05 which gives us the strong evidence both empirically and statistically to support hypothesis with (b₃ = -0.300, t = 2.582, p < 0.011).

8.4.1 Interpretation of Interaction Effects

According to Preacher et al., (2006), interaction effects are usually measured by testing the significance of the product's multiplier term between two or more variables that control the most relevant low-key impacts. The existence of interaction term in the regression model of this study increases the opportunity of multicollinearity problems by either increasing or decreasing the correlations between the items. Therefore, Buvik and Anderson, 2015 suggested using of mean-centered scales of the two variables entering the interaction term ENVIUNCERT*SSPI to avoid the problem of multicollinearity. Thus, the author of this study has used mean-centered values for environmental uncertainty and supplier specific investment to compute the interaction term of these two variables.

According to Buvik et al., (2014) and Rokkan et al., (2003), in order to evaluate the effect of interaction term in regression Equation 8.1 above the author took the partial derivative of environmental uncertainty (ENVIUNCERT) and supplier specific investment (SSPI) with respect to buyer opportunism (OPPORT) we considered the partial effect of the environmental uncertainty (ENVIUNCERT) on buyer opportunism in the existence of a supplier specific investment (SSPI) of buyer-seller relationship. The partial derivative is presented in Equation 8.2 below:

$$\frac{\delta \text{OPPORT}}{\delta \text{UNCERT}} = b_1 - b_2 \text{SSPI} \dots\dots\dots \text{Equation 8.3}$$

According to the values that shown in Equation 8.2 above, the coefficient values were replaced by equation 8.3. The results of the interaction derivative are as follows:

$$\frac{\delta \text{OPPORT}}{\delta \text{UNCERT}} = 0.654 - 0.154 \text{SSPI} \dots\dots\dots \text{Equation 8.4}$$

Constructed on the result of equation 8.4 the partial derivative of environmental uncertainty with respect to buyer opportunism in consideration with the supplier assets specificity was plotted in Figure 11 below where $y = \frac{\delta \text{OPPORT}}{\delta \text{UNCERT}}$ and $x = \text{SSPI}$.

The Figure demonstrates that with the increasing level of supplier specific investment in their farms, the increasing consequence of buyer opportunism and environmental uncertainty reduce. This provides an empirical support for hypothesis (H2a).

Figure 11 Effect of Environmental Uncertainty on Buyer Opportunism at Different Levels of Supplier Assets Specificity



Source: Researcher's own drawing (2017)

8.5 Effects of Control Variables

This study includes two control variables in the theoretical model namely Supplier Sales Volume (SALESVOL) and the Size of the Supplier depicted by the suppliers' work force (WORKFORCE).

As depicted in (table 11) above of the hierarchical regression analysis, the assessment of supplier sales volume has a negative effect on buyer opportunism with $b_4 = -.375$; $t = -.2470$; $p < 0.01$. this significant relation is reducing the buyer acting opportunistically due to the

importance of the supplier that considered as a strategic supplier due to its large volume of sales. In another word, as a supplier has a large amount of sales to the sugar mills, thus the sugar mills have to act less opportunistically (Guldbrandsen and Haugland 2000). On the other hand, the second control variable in this study supplier workforce refers to the number of workers employed by a sugarcane farmer or institution. The findings reveal that there is also a negative association between supplier workforce and buyer opportunism with insignificant impact on determining the level of buyer opportunism with $b_5 = -.104$; $t = -.843$; $p > .40$.

8.6 Summary of Hypotheses Test

Table 12, below presents the summary of the hypothesized effects and the findings. The results show that all three hypotheses were supported significantly except hypotheses H2a.

Table 12: Summary of Hypotheses Test

Hypothesis	Coefficient	t-Value	Findings
<i>H1: There is a positive association between the level of environmental uncertainty and opportunism in the sugar mills-sugarcane farmer's relationships.</i>	0.662	3.003**	Supported
<i>H2a: The association between environmental uncertainty and buyer opportunism is significantly increased when supplier specific investments are introduced.</i>	-	-	rejected
<i>H2b: The association between environmental uncertainty and buyer opportunism is reduced when supplier specific investments are introduced.</i>	-0.154	-2.103***	Supported
<i>H3: There is a negative association between longer relationship duration between sugarcane farmers and sugar mills and the buyers' opportunism.</i>	-0.322	-2.582***	Supported

^aSignificant at $p < 0.01$ for t-values greater than 2.33 one tail

^bSignificant at $p < 0.05$ for t-values greater than 1.65 one tail

8.5 Summary

In this chapter, OLS regression technique was used to derive the estimated regression model used in this study. Furthermore, the chapter shows the results of hierarchical regression analysis of the buyer's opportunistic discretion and subsequent tests of hypotheses. All

hypotheses (H1, H2_a, H2_b, H3) were strongly supported in this study. The following chapter provides a summary of the findings and provides an extensive discussion in the light of the relevant theoretical foundations.

CHAPTER NINE
DISCUSSIONS, IMPLICATIONS, LIMITATIONS AND FUTURE
DIRECTION

CHAPTER 9 – DISCUSSIONS, IMPLICATIONS, LIMITATIONS AND FUTURE DIRECTION

9.1 Introduction

This final chapter of the study concludes the discussions raised in previous chapters in relevance to preceding three theories of TCA, RCT and Power-Dependence. Furthermore, the chapter presents an overview of the analysis and results, and further incorporates the analysis' in presenting the theoretical and managerial implications of the study to the extant literature and real world. Finally, the limitation of the study and areas for further research are also presented.

9.2 Discussions and Implications

9.2.1 Theoretical Implications

The main aim of the study is to draw empirical evidence of opportunistic behavior between sugarcane farmers and the sugar mills in the Egyptian sugar industry in the light of Transaction Cost Analysis, Relational Contracting Theory and the Power-Dependence theory. This study focuses solely on the buyer-seller relationships as the unit of analysis in determining the prerequisites of opportunism persisting between the Kom Ombo sugar mill, which is the biggest in the country, and the sugarcane farmers. The study has brought forth four hypotheses to enlighten the existing opportunistic behaviors by predetermining the antecedents based on the mentioned preceding theories.

Opportunism construct

Opportunism has been defined as self-interest seeking with guile and ranges from lying, stealing, cheating and all kinds of deceit, with calculated efforts to mislead, distort, disguise, obfuscate or confuse. Williamson (1985) further argues the introduction of asymmetric information gives room for people to act opportunistically for their own interest instead of the other party. The definition of opportunism includes two forms; as blatant or strong form opportunism and may manifest in the initiation stage of an exchange relationship through deliberate misrepresentations of some kind (ex-ante) or through violations over the course of the relationship (ex-post), (Williamson 1975;1985; Masten, 1988, Wathne and Heide, 2000). According to Wathne and Heide (2000), opportunism can manifest in existing or new conditions in the form of active or passive forms. This study therefore has asserted the

arguments from Wathne and Heide (2000) and Williamson (1975) from the different actions the sugar mill has taken in existing and new conditions taking the shape of sugarcane price manipulation, not offering extensive services to farmers even after putting forth promises, and manipulation of the total tonnage farmers bring in by using false scales in the weighbridges.

Environmental Uncertainty

Extant literature posits that high environmental volatility enforces ex-ante problems of formulating comprehensive contracts that in turn result to adaptation problems (Williamson, 1979; Rindfleisch and Heide 1997) Buvik and Grønhaug (2000) argue that the dynamics of economy and technology pronounce uncertainty, leading to adaptation problems that are a prerequisite for opportunistic behavior in exchange relationships hence the need for writing very complex contracts covering all future uncertainties (Williamson, 1991).

The study hypothesized a positive association between the level of environmental uncertainty and opportunistic behavior of the Kom Ombo sugar mill, an argument that has been supported by the findings of the study. The findings of the study are consistent with the extant literature as environmental uncertainty had positive relationship with opportunistic behavior at $b_2 = .654$, $t = 3.003$, $p < 0.003$. Therefore, the study cements the findings in the extant literature such as works of Aldrich, (1979); Chen, (2013); Baker, (2015) and Lim et al (2014).

The Moderating Effect of Supplier Asset Specificity on Environmental Uncertainty

The preceding sub-chapter sheds light on the relationship between environmental uncertainty and opportunism. The research further goes to study the impact of introducing asset specificity in the presence of environmental uncertainty in hypotheses H_{2a} and H_{2b}. Specific investments facilitate transactions in exchange relationships, however they tend to be uniquely dedicated to specific transactions (Wathne and Heide, 2000; Buvik and Reve, 2002).

Asset specificity has led to two schools of thought. Some scholars debate that the idiosyncratic nature of specific investments means that they cannot be redeployed puts the focal receiver in a driving seat to expropriate the investments (Rokkan, Wathne and Heide, 2003). Moreover, extant literature argues that the introduction of idiosyncratic investment

brings about contractual difficulties as transactions involved are prone to exchange hazards and high switching costs leading to opportunistic tendencies due to the expropriation effect that comes with the specific investment (Allen, 2015; Williamson, 1979).

In fact, scholars such as Williamson (1979) incorporate asset specificity and environmental uncertainty, claiming that as the degree of uncertainty increases, it makes it more imperative that the parties devise a machinery to ‘work things out’ such as specific investments—since contractual gaps will be larger and the occasions for sequential adaptations will increase in number and importance, however exposing parties to opportunism. The second school of thought supports the argument of the importance of specific investments in marketing strategies and inter-firm relationships due to their value creation hence giving dyads competitive advantages (Rokkan, Heide and Wathne 2003; Ghosh and John (1999).

The findings of this study on the second hypothesis of the moderation effect of specific investments in the presence of environmental uncertainty are in alignment with the second school of thought discussed above. The findings show that the introduction of asset specificity by the sugarcane farmers offset negatively the environmental uncertainty’s impact on the buyer’s opportunism at $b_6 = -0.154$, $t = -2.103$, $p < 0.038$. Farmers that have invested heavily on investments such as machinery, specific sugarcane breeds, quality assurance programs are valued by the sugar mills as strategic suppliers and this leads to competitive advantages (Ghosh and John, 1999) over the farmers that have little or no specific investments in their businesses, especially the small-scale farmers. This study therefore contributes to the second school of thought of the negative impact of the moderating effect specific investments have on opportunistic behavior of sugar mills in the presence of environmental uncertainty.

Relationship Duration

According to Anderson, (1995) and Dwyer et al., (1987) relational contracting theory advocates continuous relationships between exchange parties is a vital element that fosters businesses’ desired outcomes. Moreover, RCT theorists further denote that relational dimensions become strategic tools of competitive advantage in exchange relationships especially under unstable, risky, and highly competitive environment (Ozkan-Tektas, 2014; Barry, Dion, and Johnson, 2008). Scholars such as Macneil (1980); Buvik, Andersen and Grønhaug, (2014); Heide and John, (1990); and Heide (1994), note that many exchange

relations are governed by formal contracts as form of governance mechanism to combat unforeseen exchange hazards and as more interactions occur between the parties, relationships start to nurture, and over time relational norms, trust and shared values develop and act as a form of governance and act as a cushion of counteracting opportunism.

The findings of the study regarding relationship duration's association with opportunism are in alignment with the works of many scholars at $b_3 = -0.300$, $t = 2.582$, $p < 0.011$. such as Heide and John (1990); Heide (1994) and Burki and Buvik (2010) just to name a few. This study therefore contributes to the extant literature by shedding light on the role relationship duration and the derived relational norms play in curbing opportunistic behaviors in exchange relationships.

Supplier Sales Volume and Work Force (Firm Size)

This study advocates supplier power in terms of the sales volume and the work force suppliers employ. Bigger farmers tend to have larger sales volume and a larger work force compared to small-scale farmers, and this translates that bigger farmers are strategic suppliers hence sugar mills will tend to reduce their opportunistic tendencies to keep them. In fact, bigger farmers tend also to employ specific assets that are needed to facilitate exchange relationships with the sugar mills. The subject of power-dependence can therefore not be ignored in such cases.

Guldbrandsen and Haugland (2000) argue firm size is a crucial variable and plays important roles in shaping exchange relationships. Williamson (1985) also posits larger firms tend to easily integrate compared to small firms due to their high economies of scale. Large-scale farmers therefore are more likely to develop close ties with their trading partners compared to small-scale farmers, thus negatively impacting opportunistic behavior of the buyers. Large firms also possess influential power thus getting preferential treatment from their exchange partners compared to small ones. This influential power therefore dampens opportunism.

The findings of the study suggest firm size and supplier workforce are negatively associated to opportunistic behavior at $b_4 = -0.375$, $t = -0.2470$, $p < 0.01$ and $b_5 = -0.104$, $t = -0.843$, $p > 0.40$, respectively. This study therefore contributes to the understanding on the role power-dependence as vital antecedents to opportunistic behaviors in exchange relationships. More

power translates to less dependence therefore less opportunism, and more dependence translates to less power hence prone to opportunistic behaviors of powerful exchange partners.

9.2.2 Managerial Implications

This study brings forth the implications for the stakeholders in the sugarcane business with stress being put on the farmers' side by advocating measures that can help them curb opportunism.

According to the findings of the study, relationship duration is a vital factor in dampening the impact of opportunism in the exchange relationships between the Kom Ombo sugar mill and the sugarcane farmers. Extant literature purports relation contracting as a form of governance of exchange relationships through the exchange norms such as trust (Macneil, 1978; Ozkan-Tektas 2014). Some scholars have argued that some exchange parties opt to opportunistic behavior in short-term relations or in early stages of the exchange relationship where the trust and other norms are still underdeveloped (Burki and Buvik, 2010; Ozkan-Tektas, 2014). Based on this argument, the study therefore suggests the farmers should align their long-term organizational goals with those of the sugar mills to enhance the buyer-supplier relationships through the formation of relational norms that curb opportunistic behavior. Furthermore, most of the transactions between sugar mills and the sugarcane farmers are conducted through gentlemen's' agreements. This leaves the sugarcane farmers exposed in case sugar mills decide to act opportunistically. The farmers therefore should review their governance structures by supplement relational contracts with formal contracts to further reduce expropriation from sugar mills that underrate relational contracts.

According to USDA (2017) Upper Egypt's economy is heavily dependent on sugar cane production. This dependency on sugarcane growing leaves the farmers susceptible to opportunistic behaviors by sugar mills as farmers have no alternative crops in their farms. In fact, sugarcane is a perennial crop, taking over two years of crop husbandry to the time of harvesting. The managerial implication of the study to the sugar cane growers is that they can diversify their crop portfolio such as sugar beets and other short-term crops that can sustain their business especially when facing uncertainty and price volatility for sugarcane. Moreover, most farmers individually sell directly to the sugar mills. According to Williamson (1985), suggests that unions and collective agreements reduce opportunistic

tendencies, acting as a source for exchange relationship efficiency. The farmers can therefore opt for collective bargaining mechanisms through trade unions that will facilitate supplier power to some extent and help farmers in case sugar mills try to extort benefits from farmers.

9.2.3 Public Policy Implications

The existence of buyer opportunism in the Egyptian sugar industry is imminent and cannot be ignored as such expropriations undermine parties who experience exchange hazards in exchange relationships. Wathne and Heide (2000) have illustrated the various faces opportunism such as breach of contracts, bait-and-switch tactics, quality shirking, falsification of reports and violation of promotion agreements. The Egyptian sugar industry depicts a power-dependence situation in a monopsony market with power inclined towards the sugar mills at the expense of the sugarcane growing farmers. In such a scenario, this study brings forth the problems facing this industry and proposes the Egyptian government intervention in curbing the buyers' opportunism to stimulate growth in this industry. Therefore, the study proposes some measures the government of Egypt could undertake in resolving the situation.

The Egyptian could review the contracts they offer to farmers and assert clauses that are balanced or favor the farmers from the environmental uncertainty, especially on the price volatility of the raw sugarcane and inflation of input. The government should ensure a reimbursement scheme is in place to compensate and support farmers especially on all matters arising from environmental uncertainty and stabilize the prices or stick to the prices as per contracts and not underpay the farmers. Moreover, the government should ensure transparency during offloading of farmers' tonnage to curb the practices of tonnage cheating by the sugar mills. This should further be enforced by ensuring transparency and fairness by the judicial system of the country.

Moreover, the government should ensure the offering of more inputs and investments related to improve sugarcane growing and boost production in form of extension services, farming equipment and even irrigation systems that can reclaim desert lands to productive lands. This will enable to empower local farmers and safeguard the Egyptian sugar industry especially from the imported sugar market.

The Egyptian government should also ensure strict measures are put in place for the exporters by imposing high export taxes to discourage the exportation of sugar that leads to sugar deficit in the country. To the sugar importers, the government can use mechanisms such as floating the Egyptian pound (currency devaluation) making it expensive to import large amounts of cheap sugar.

This study also suggests a partial privatization of the Egyptian sugar mills to increase competition both in prices and quality. The introduction of private sugar mills under high government regulations will change the market structure from a monopsony structure to oligopoly and increase competition and offer better prices to farmers hence reduce opportunism from the powerful government-owned sugar mills and ensure fair marketing practices.

9.3 Limitations of the Study and Areas of Further Research

This sub-chapter addresses the limitations of the study that need to be addressed for future research. This study has focused on only three antecedents of the buyer opportunism in the Egyptian sugar industry. The three drivers discussed in the study include supplier asset specificity, environmental uncertainty and relationship duration that influence the sugar mills' opportunistic behavior towards the sugarcane farmers. Although these drivers have some relations with the dependent variable, this study has not exhausted many factors that influence opportunism.

This study offers a further room for research on other drivers of opportunism such as the use of contracts, information asymmetry, the role of collective bargaining and the frequency of transactions to name a few that can be derived from other theoretical frameworks necessary to challenge the opportunism variable.

Moreover, the nature of the Egyptian sugar industry's environment is characterized by volatility and dynamism in terms of climate change, production output, prices of raw sugarcane, prices of raw materials such as fertilizers, and transportation costs of raw sugarcane to mills (USDA, 2016; USDA, 2017). Uncertainty is an aspect of time. However, the study is a cross-sectional design, which assesses the industry in a specific 'snapshot' time (Creswell, 2014). Therefore, this study gives room for a longitudinal approach which employ continuous or repeated measures to study particular behaviors or drivers of the

conceptual framework over prolonged periods of time. Longitudinal research designs have the prospects of studying the dynamism of the Egyptian sugar industry with respect to the dependent and independent variables over time. Moreover, longitudinal studies also offer the benefits of establishing sequence of events, excluding a recall of bias participants and the ability to identify and relate events to exposures in chronological orders (Caruana et al, 2015).

The Egyptian sugar industry supply chain comprises of many actors such as importers and exporters of sugar, agents, the by-product market, wholesalers, retailers and consumers. This study has solely focused on the producers (sugar-cane farmers) and the processing sugar mills. In fact, other producers (beet-root growers) have been omitted although their contribution to the Egyptian sugar industry is highly acknowledged. This is a room for further research where studies could base on determining the relationship performances of different actors in this supply chain.

In this study, the dependent opportunism variable has been investigated from the side of the sellers (sugarcane producers) to determine the extent of the sugar mills exploitation towards farmers. Data has been collected from the farmers' perspectives and the results give one-sided illustrations of dyadic relationships with the sugar mills. However, future researchers can consider studying the same relationship between the farmers and sugar mills at a different perspective: collecting data on both sides of the dyad in order to curb the problem of biasness and further see the opportunistic behaviors of farmers in this relationship.

According to the study, the nature of the research setting is in a monopsony situation, where there is only one buyer and many sellers. This is a scenario that is very rare in the real-life economic world, drawing the absolute power the buyer has over the sellers (van Weele, 2009). This research also further gives room for other opportunistic studies to be done in other market settings such as perfect competitive markets, monopoly and oligopoly market structures to determine the impact market structures have on the opportunistic behavior of exchange partners and how those market structures can counter-act such negative business practices.

Finally, the results and findings of the study are strictly confined to the Egyptian sugar industry. Generalizing the results in other manufacturing and service industries such is not feasible as the study solely focused on a single industry analysis. This study therefore has a

high internal validity making it difficult to explicitly draw conclusions in other industry settings. The study therefore proposes future opportunism studies across different industries and or cross-country studies to ensure findings of high external validity.

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APPENDICES

Appendix 1: Questionnaire

Dear Respondent,

RE: SURVEY ON

ANTECEDENTS OF BUYER OPPORTUNISM IN THE EGYPTIAN SUGAR INDUSTRY: AN EMPIRICAL STUDY BETWEEN SUGAR MILLERS AND SUGARCANE GROWERS IN UPPER EGYPT.

This Master thesis investigates the relationship of buyer– supplier in sugar industry and for such purpose we are working on a survey to have accurate information on the subject. This Thesis is the under supervision of Professor Arnt Buvik, Molde University College, a specialized University in Logistics, Molde Norway.

The Egyptian sugar industry is an important source of food security due to its strategic significant for the country. Sugar industry is a key pillar of the Egyptian national economy which employs about 10% of the total country's workforce, and contributes about 8% of the national GDP. In addition to its contribution to the provision of food for the ever-growing Egyptian population it also provides crude materials necessary for many other national industries with a further contribution to the process of capital accumulation in the national economy.

The survey is conducted to point out the reality of the relationship of buyer_ supplier in sugar industry, thus the thesis constitutes an output of such survey. Note that, the written thesis may be provided to you upon your request.

The information provided in the questioner will be kept strictly confidential, which means that in no case will any information of the survey be assigned to any individual respondent. Finally, your response to the survey is highly needed as this survey only includes a small group of suppliers of sugarcane in Upper Egypt as a sample. Kindly complete the questionnaire below by answering all questions accurately reflecting, from your point of view, the reality of the relationship of your farm with the major sugar mill you deal with. Please, pay more attention to the most recent cases of conflicts or settlements.

Thank you in advance for taking time to answer the questionnaire. Your support in this study is highly appreciated.

Sincerely,

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A: Background information to the Supplier (Farmer)						
1. Supplier's Farm name						
2. Approximate annual workforce in your farm						
3. Name of the most relevant sugar mill to your farm Name _____						
4. Approximate annual sales last year (2016) to this sugar mill						
BUYER OPPORTUNISM:						
<i>Based on the sugar mill you have identified above please circle the number that best represents your view regarding the following statements</i>						
	Strongly disagree			Strongly agree		
1. This sugar mill very often makes false promises regarding the prices of sugarcane it will finally pay to its seller	1	2	3	4	5	6 7
2. This sugar mill always refuses to offer extension services of supervisors to improve our farm's outputs	1	2	3	4	5	6 7
3. This sugar mill always try to force the prices as low as possible	1	2	3	4	5	6 7
4. This sugar mill very often makes false accusations regarding the quality of the sugarcanes to benefit on low buying prices	1	2	3	4	5	6 7
5. Very often this sugar mill uses false weighing scales to cheat our farm of the actual tonnage supposed to be paid for	1	2	3	4	5	6 7

6. This sugar mill always uses unforeseen events to extract extra payment from our farm	1	2	3	4	5	6	7
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Your farm may have made investments in time and/or money specifically to accommodate this sugar mills transactions. These investments would be lost if the sugar mill stopped purchasing from your farm

<i>SUPPLIER SPECIFIC INVESTMENT: Please circle the number that best represents your view regarding the following statements with respect to your most important sugar mill</i>							
	Strongly disagree			Strongly agree			
1. We have invested a lot of time and resources in the construction of storage facility for the sugarcane enroute to this sugar mill	1	2	3	4	5	6	7
2. Our farm has heavily invested in special machinery for the harvesting of the sugarcane for this sugar mill.	1	2	3	4	5	6	7
3. We have strongly adapted our farm to accommodate specific types of sugarcane variety (breed) needed by only this sugar mill	1	2	3	4	5	6	7
4. Our farm has heavily invested in a quality assurance program required by this sugar mill to ensure that we meet the sugar mill required sugarcane quality standards	1	2	3	4	5	6	7

5. Our farm has made significant investment in irrigation facilities that are specific for the transactions with this sugar mill	1	2	3	4	5	6	7
6. If this sugar mill stops buying from our farm we would lose a significant part of investment that we have made for adapting to this sugar mill	1	2	3	4	5	6	7
7. Our firm has invested significant amounts of money and time in skillful training of workers to adhere to the production standards of the sugar mill	1	2	3	4	5	6	7

<i>ENVIRONMENTAL UNCERTAINTY: Please circle the number that best represents your view regarding the following statements with respect to your most important buyer</i>							
	Strongly disagree			Strongly agree			
1. It is very difficult for us to predict the demand for sugarcane from our farm	1	2	3	4	5	6	7
2. The price of the sugarcane paid by this sugarmill is rapidly changing	1	2	3	4	5	6	7
3. Often It is very difficult for us to predict the levels of sugarcane production that will be provided by other sugarcane farms	1	2	3	4	5	6	7

4. It is very difficult for us to predict the price that this sugarmill will pay	1	2	3	4	5	6	7
5. A lot of uncertainties are involved with regard to availability of tools needed in our production activities (fertilizers, purge canals, new equipment, new tools to resist insect and diseases) .	1	2	3	4	5	6	7

GENERAL INFORMATION: *Kindly complete the following statements regarding your most important sugarmill by filling in the blank spaces or ticking where appropriate*

1. How long have you been having trade relations with this sugar miller?
_____ years

2. How much in terms of **EGP L.E** did your farm sell to this sugarmill during the last year
_____ **EGP L.E**

3. How much tonnage did your farm produce in the last year (2016)

4. Are you a member of any sugarcane growers' association? Yes No
If Yes; Organization name

Thank You For Your Time. 😊

عزيزي المشارك في الاستبيان،

دراسة استقصائية عن انتهازية المشتري في صناعة السكر المصرية: دراسة تطبيقية بين مصانع

السكر ومزارعي قصب السكر في صعيد مصر.

يشرف على رسالة الماجستير هذه الأستاذ/ Arnt Buvik ، بجامعة مولدي، النرويج. وهي جامعة متخصصة في الخدمات اللوجستية، والغرض الرئيسي من هذه الرسالة هو دراسة العلاقات بين المشتري والمورد في صناعة السكر في صعيد مصر. نحن نجري حالياً دراسة استقصائية عن الموضوع للحصول على درجة الماجستير.

تُعد صناعة السكر المصرية مصدرًا هامًا للأمن الغذائي نظرًا لأهميتها الاستراتيجية للدولة. إذ تُعد صناعة السكر ركيزة أساسية للاقتصاد الوطني المصري ويعمل بها حوالي 10% من القوة العاملة في البلاد، كما تساهم هذه الصناعة في حوالي 8% من الناتج المحلي الإجمالي. بالإضافة إلى مساهمتها في توفير الغذاء لعدد السكان المتزايد، فضلاً عن إنها توفر المواد الخام اللازمة للعديد من الصناعات الوطنية الأخرى وتساهم في عملية تراكم رأس المال في الاقتصاد الوطني.

يُرجى العلم بأن المعلومات التي يتضمنها هذا الاستبيان سرية تمامًا ولن يتم تحديد أي مشارك فردي لتفنيد كل سؤال يتم تجميعه للمساعدة في التحليل النهائي للمعلومات الواردة في هذا الاستبيان، وبالتالي فإنه من غير الممكن تعيين المعلومات التي وردت في الدراسة الاستقصائية للمشاركين الفرديين.

يشمل هذا المسح عينة صغيرة من موردي قصب السكر في صعيد مصر، من ثم، يُعد ردك هام للغاية. يرجى المشاركة ببضع لحظات من وقتك لاستكمال الاستبيان أدناه عن طريق الإجابة على جميع الأسئلة التي تعكس الوضع الحقيقي بدقة بشأن علاقتك مع مصنع السكر الرئيسي لمزرعتك. وخاصة فيما يتعلق بالحالات الأخيرة من النزاعات أو التسويات. شكرًا لكم مقدمًا على وقتكم في الإجابة على الاستبيان. دعمكم في هذه الدراسة موضع تقدير كبير.

وتفضلوا بقبول وافر الاحترام والتقدير،

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أ: المعلومات الأساسية عن المورد (المزارع)						
1- اسم مزرعة المورد:						
2- القوى العاملة السنوية التقريبية في المزرعة:						
3- اسم مصنع (مطحنة) السكر الأقرب لمزرعتك: الاسم _____						
4- حجم المبيعات السنوية التقريبية للسنة الماضية (2016) إلى مصنع (مطحنة) السكر المذكورة:						
بناءً على مصنع (مطحنة) السكر المحدد أعلاه، يُرجى وضع دائرة حول الرقم الذي يمثل أفضل إجابة لديك فيما يتعلق بالعبارات التالية:						
أوافق بشدة		لا أوافق على الإطلاق				
7	6	5	4	3	2	1
1- يقدم مصنع السكر هذا دائماً وعود كاذبة بشأن الأسعار التي سيدفعها مقابل قصب السكر المباع إليه.						
7	6	5	4	3	2	1
2- يرفض مصنع السكر دائماً تقديم الخدمات الإرشادية للمشرفين لتحسين إنتاج مزرعتنا.						
7	6	5	4	3	2	1
3- يحاول دائماً مصنع السكر تقديم أقل الأسعار الممكنة.						
7	6	5	4	3	2	1
4- يدعي مصنع السكر دائماً ادعائات باطلة حول جودة قصب السكر بهدف الانتفاع من تقليل أسعار الشراء.						
7	6	5	4	3	2	1
5- يستخدم مصنع السكر في أحيان كثيرة موازين خاطئة بهدف خداعنا فيما يتعلق بالأوزان الحقيقية ومن ثم خداعنا بشأن السعر المفترض لشراء قصب السكر.						

7	6	5	4	3	2	1	6- يستخدم مصنع السكر دائماً أحداث غير متوقعة لتلقي دفعات إضافية من مزرعتنا.
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هل قامت مزرعتك باستثمارات بوقت و / أو مال تحديداً من أجل أن تتوافق مع معاملات مصانع السكر. هل كنت ستفقد هذه الاستثمارات في حال توقف مصنع السكر عن الشراء من مزرعتك.

يُرجى وضع دائرة حول الرقم الذي يمثل أفضل إجابة من وجهة نظركم بخصوص العبارات التالية فيما يتعلق بأهم مصنع للسكر بالنسبة لكم:							
أوافق بشدة				لا أوافق على الإطلاق			
7	6	5	4	3	2	1	1- لقد استثمرنا وقت طويل وموارد كثيرة في انشاء مخزن لقصب السكر لأجل هذا المصنع.
7	6	5	4	3	2	1	2- استثمرت مزرعتنا استثماراً كبيراً في ماكينات خاصة لحصاد قصب السكر من أجل مصنع السكر هذا.
7	6	5	4	3	2	1	3- لقد جعلنا مزرعتنا ملائمة لإنتاج أنواع محددة من قصب السكر يحتاجها فقط هذا المصنع.
7	6	5	4	3	2	1	4- استثمرت مزرعتنا في برنامج ضمان جودة طلبه مصنع السكر هذا لضمان تلبية معايير جودة قصب السكر المطلوبة من مصنع السكر هذا.
7	6	5	4	3	2	1	5- انفقت مزرعتنا استثمارات كبيرة في مرافق الري المحددة من أجل المعاملات مع مصنع السكر هذا.

7	6	5	4	3	2	1	6- إذا توقف مصنع السكر عن الشراء من مزرعتنا فقد نفقد جزء كبير من استثمارتنا التي قمنا بها من أجل التوافق مع هذا المصنع خصيصًا.
7	6	5	4	3	2	1	7- استثمرت مزرعتنا أموالًا كثيرة وأمضت وقتًا طويلاً لتدريب العاملين تدريبًا ماهرًا للالتزام بمعايير الانتاج الخاصة بمصنع السكر هذا.

يُرجى وضع دائرة حول الرقم الذي يمثل أفضل إجابة من وجهة نظركم بخصوص العبارات التالية فيما يتعلق بأهم مشتري بالنسبة لكم:							
أوافق بشدة				لا أوافق على الإطلاق			
7	6	5	4	3	2	1	1- من الصعب أن نتنبأ بالطلب على قصب السكر من مزرعتنا.
7	6	5	4	3	2	1	2- السعر الذي يدفعه مصنع قصب السكر هذا يتغير بسرعة كبيرة.
7	6	5	4	3	2	1	3- في الغالب، من الصعب علينا التنبؤ بمستويات انتاج قصب السكر التي تنتجها مزارع قصب السكر الأخرى.
7	6	5	4	3	2	1	4- من الصعب علينا التنبؤ بالسعر الذي سيدفعه مصنع السكر هذا.

7	6	5	4	3	2	1	5- يوجد الكثير من الأمور التي لا يمكن التيقن بها فيما يتعلق بمدى توافر الأدوات التي نحتاجها في أنشطة الانتاج (الأسمدة وقنوات التطهير والمعدات الجديدة، والأدوات الجديدة لمقاومة الحشرات والأمراض).
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معلومات عامة: يُرجى استكمال العبارات التالية بشأن أهم مصنع سكر لديكم وذلك عن طريق ملء الأماكن الفارغة أو وضع علامة عند اللزوم.

1- منذ متى تجمعكم علاقات تجارية مع مصنع السكر هذا؟ ----- سنة

2- بكم من المال بالجنيه المصري باعت مزرعتكم لمصنع السكر هذا في خلال العام الماضي جنيه مصري.

3- كم طن انتجته مزرعتكم في السنة الماضية
(2016)

4- هل انت عضو في أي رابطة / مؤسسة / جمعية خاصة بمزارعين قصب السكر؟ --- نعم ----- لا
إذا كانت الإجابة نعم ، ما هو اسم المنظمة -----

شكرًا على وقتك الثمين 😊

Appendix 2: Descriptive Statistics and Univariate Normality

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
BUYOPPORT1	120	1	7	4.43	1.471	-.205	.221	-.407	.438
BUYOPPORT2	120	1	7	4.32	1.335	-.148	.221	.108	.438
BUYOPPORT3	120	1	7	4.71	1.428	-.527	.221	-.294	.438
BUYOPPORT4	120	1	7	4.60	1.585	-.463	.221	-.477	.438
BUYOPPORT5	120	1	7	4.59	1.537	-.388	.221	-.548	.438
BUYOPPORT6	120	1	7	3.99	1.585	.130	.221	-.724	.438
SUPSPEC1	120	1	7	2.38	1.450	.765	.221	-.159	.438
SUPSPEC2	120	1	7	4.76	1.624	-.605	.221	-.258	.438
SUPSPEC3	120	1	7	5.19	1.272	-.891	.221	.874	.438
SUPSPEC4	120	1	7	3.63	1.645	.138	.221	-1.103	.438
SUPSPEC5	120	1	7	5.14	1.605	-1.165	.221	.922	.438
SUPSPEC6	120	1	7	5.69	1.419	-1.268	.221	1.158	.438
SUPSPEC7	120	1	7	4.54	1.582	-.531	.221	-.171	.438
UNCERT1	120	1	7	5.20	1.082	-.814	.221	2.134	.438
UNCERT2	120	1	7	5.08	1.284	-.408	.221	.250	.438
UNCERT3	120	2	7	4.92	1.139	-.337	.221	.393	.438
UNCERT4	120	1	7	4.98	1.299	-.724	.221	.797	.438
UNCERT5	120	1	7	5.16	1.402	-1.180	.221	1.446	.438
Valid N (listwise)	120								

Appendix 2(a): Factor Analysis; KMO measure of sampling adequacy, Bartlett's Test of Sphericity

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.819
Bartlett's Test of Sphericity	Approx. Chi-Square	283.917
	df	21
	Sig.	.000

Appendix 2(b): Factor Analysis; Total Variance Explained

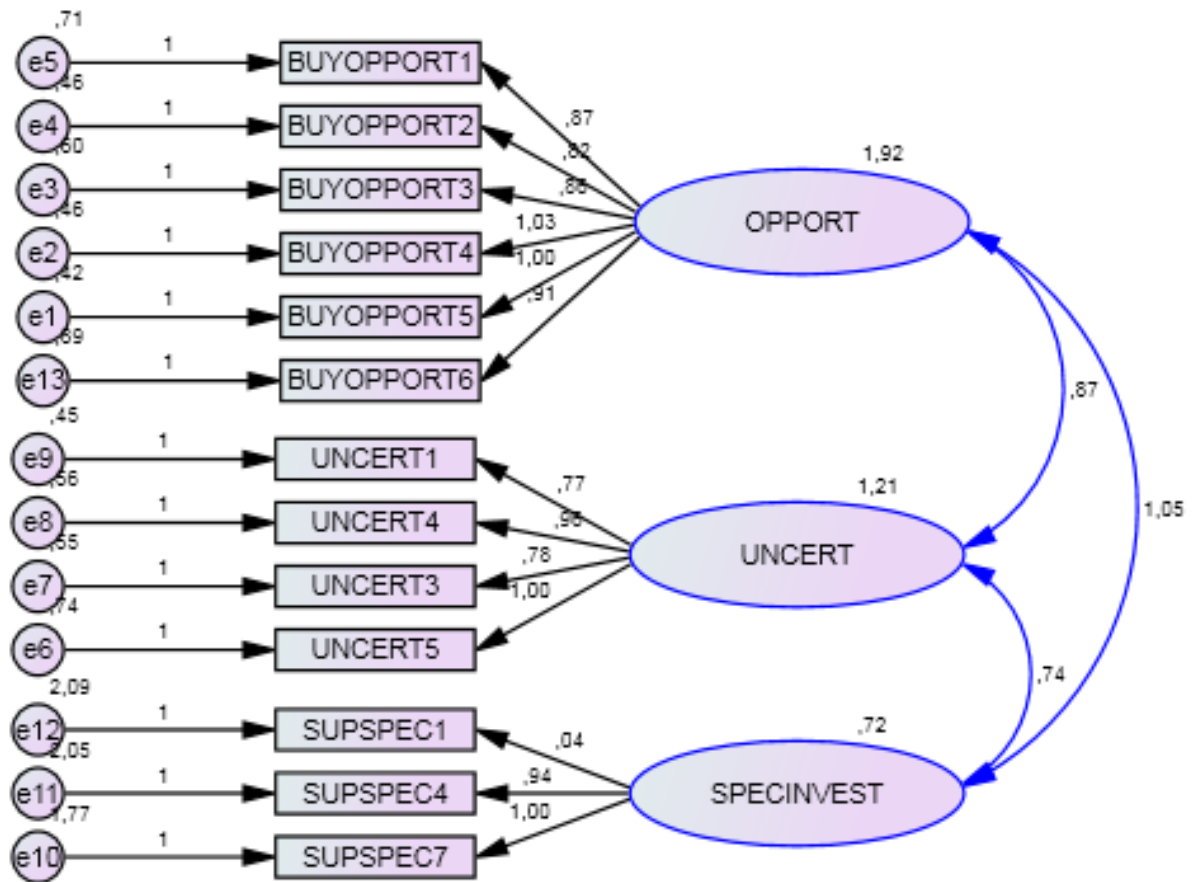
Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.296	47.092	47.092	3.296	47.092	47.092	3.127	44.672	44.672
2	1.157	16.531	63.622	1.157	16.531	63.622	1.327	18.951	63.622
3	.946	13.509	77.132						
4	.530	7.568	84.700						
5	.386	5.513	90.212						
6	.364	5.198	95.410						
7	.321	4.590	100.000						

Extraction Method: Principal Component Analysis.

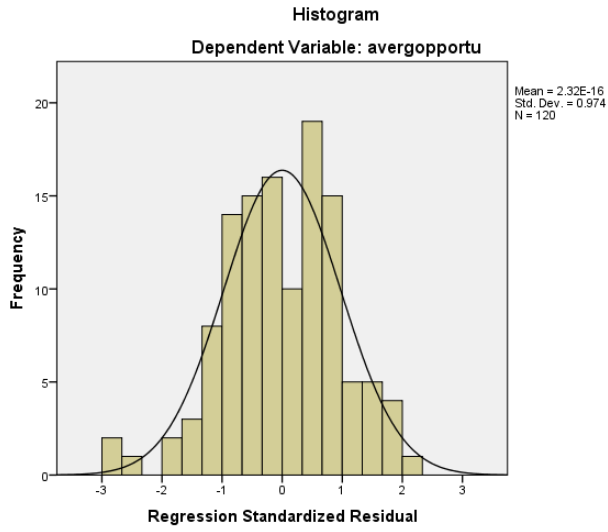
Appendix 3: Exploratory Factor Analysis (n=120)

Rotated Component Matrix ^a		
	Component	
	UNCERT	SUPSPEC
SUPSPEC1	-.151	.831
SUPSPEC4	.161	.487
SUPSPEC7	.565	.567
UNCERT1	.813	.139
UNCERT3	.844	-.045
UNCERT4	.817	.231
UNCERT5	.847	.049
Eigen value	2.743	1.487
Extraction Method: Principal Component Analysis.		
Rotation Method: Varimax with Kaiser Normalization.		
^a Rotation converged in 3 iterations.		

Appendix 4: Confirmatory Factor Analysis (CFA) Model Fit (n=120)

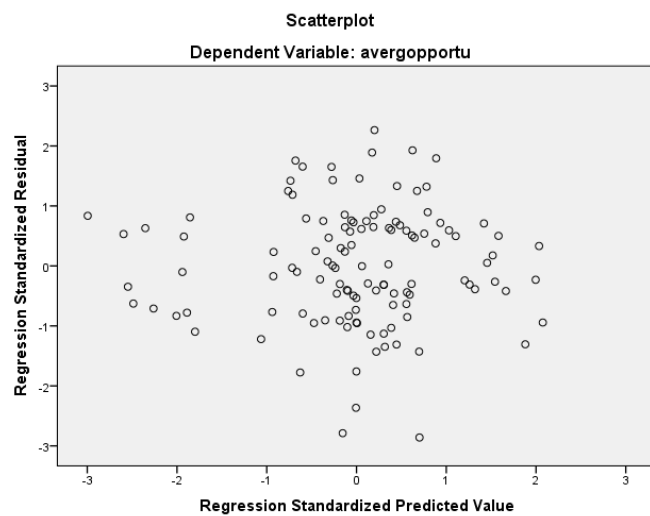
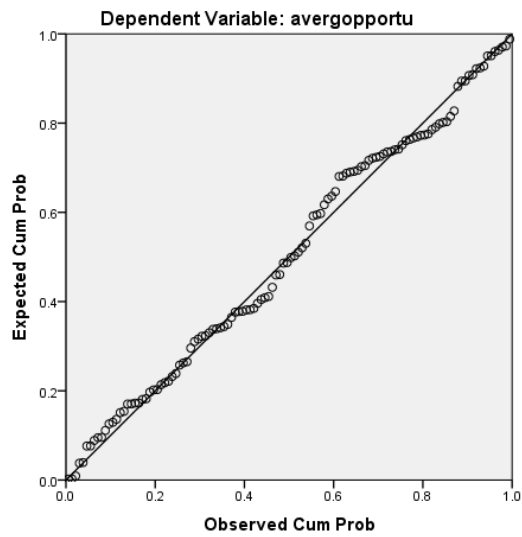


Appendix 5: Linearity Assessment



Normal P-P Plot of Regression Standardized Residual

Normal P-P Plot of Regression Standardized Residual



Appendix 5(a): Research's Model Summary

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.695 ^a	.632	.612	.81764	.632	29.234	6	113 ^a	.000
2	.795	.666	.633	.79654	.033	30.284	5	110	.000

a. Predictors: (Constant), LOGWORKFORCE, LOGTIME, MEANUNCERT, LOGSALES, MEANSSPI

b. Dependent Variable: avergopportu

c. Predictors: (Constant), intraspixuncert, LOGWORKFORCE, LOGTIME, MEANUNCERT, LOGSALES, MEANSSPI

Appendix 5(b): Analysis of Variance (ANOVA)

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	129.499	6	21.583	29.234	.000
	Residual	75.545	113	.669		
	Total	205.044	119			
2	Regression	131.456	5	20.321	30.284	.000
	Residual	70.435	110	.432		
	Total	205.044	119			

a. Predictors: (Constant), LOGWORKFORCE, LOGTIME, MEANUNCERT, LOGSALES, MEANSSPI

b. Dependent Variable: avergopportu

c. Predictors: (Constant), intraspixuncert, LOGWORKFORCE, LOGTIME, MEANUNCERT, LOGSALES, MEANSSPI