



CONTRACTUAL SUPPLY CHAIN GOVERNANCE AND PERFORMANCE OF AGRO PROCESSING FIRMS IN KENYA

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ABSTRACT

Agro processing industry establishes the biggest bit of 38% of Kenya manufacturing sector, but has untapped potential to contribute to employment and gross domestic product growth. The sector is inefficient in terms of value addition to the agricultural produce as Kenya exports raw agricultural produce instead of high-quality value-added products. The aim of this study was to determine the influence of contractual supply chain governance on performance of agro processing firms in Kenya. The study was anchored on the Theory of Constraints and the Theory of Performance. Survey research design was employed for this study as it enabled the combination of both qualitative and quantitative research approaches. The study targeted 344 agro processing firms in Kenya that were registered with the Kenya Association of Manufacturers and grouped into twelve functional sectors. This study used a census survey. The study used Cronbach's alpha (α) coefficient to test reliability, while face and content validity were used for checking for validity of the research instrument. The primary data collected was analysed with the use of SPSS version 25. Data analysis was conducted using descriptive statistics and inferential statistics by use of moderated multiple regression analysis. The data was presented using a combination of statistical and graphical techniques. The study revealed that contractual supply chain governance had a significant influence on performance of agro processing firms in Kenya. The study recommended that agro processing firms should implement the systems of contractual supply chain governance to enhance their productivity and profitability. The study findings are important to regulators to enhance the level of implementation of contractual supply chain governance in agro processing firms. This study recommended that it is necessary for future researchers to undertake similar or replicate empirical studies in agro processing firms that are not members of Kenya Association of Manufacturers in order to validate the findings and conclusions of this study. The study also recommended future research study in other areas of manufacturing sectors to establish the performing trends regarding the adoption of contractual supply chain governance. The study provides future researchers with a useful conceptual and methodological reference to carry out studies in this area of supply chain governance.

Keywords: Contractual Supply Chain Governance; Agro Processing Firms

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INTRODUCTION

The organizations like manufacturing firms are making all efforts to obtain the highest possible performance from their supply chains by utilizing varied assorted means in the contemporary period (Chan, Ngai & Moon, 2017). The competitive edge within the world market can be achieved when a company has adopted an effective supply chain strategy and design by utilizing its capabilities on supply chain to realize productivity, efficiency, flexibility, rapid response and cost reduction. This study determined the influence of contractual supply chain governance on performance of agro processing firms in Kenya. The contractual supply chain governance is a conception of the supply chain governance (SCG). The contractual SCG is the process of systematically and efficiently managing contract creation, execution and analysis for the purpose of maximizing financial and operational performance and minimizing risk. Contractual governance involves governing a transaction through formal contracts and the management of contracts made with customers, vendors, partners, or employees through effective negotiation and support (Zhang, Zhang, Gao & Ding, 2016). The SCG is a governing system of rules, structures and institutions that guide, control, and lead supply chains, through policies and regulations, with the goal of creating greater efficiency (Wible, Mervis & Wigginton, 2014). When adopted and implemented, SCG increases the productivity, sales growth, market shares, return of assets and profitability of the firms (Afsar, Badir, Saeed & Hafeez, 2017). The SCG is a key prerequisite for achieving organizational competitiveness and long-term wealth in the volatile business environment. According to Jiguang and Bing (2018). SCG mechanism is considered the structure that ensures that decisions are made along the lines determined by the organization's corporate strategy, in order to increase or maintain the value of the company in the long term (Dolci, Maçada & Paiva, 2017). The increased globalization and international codependency have

led to the idea that there should be governing system in place to help guide these global supply chains to perform more efficiently (Ying-Pin Yeh, 2016).

The formation of supply chain governance is based on the continuous development of enterprise governance by combining the characteristics of supply chain and the bounded rationality of enterprise decision-makers (Wang, 2021). Supply chain is a system of organizations, people, activities, information and resources involved in moving a product or service from supplier to customer. It should be cost effective and should deliver the results on time (Kozlenkova, Hult, Lund, Mena & Kecec, 2015). Supply chain management (SCM) manages the flow of goods and services from point of origin to point of consumption. The system is required for the timely manufacture of goods and ensuring that consumer requirements are met effectively (Durach & Wiengarten, 2019). In SCM, governance refer to structures and processes that are designed to ensure accountability, transparency, responsiveness, rule of law, stability, equity and inclusiveness, empowerment, and broad-based participation (Dong, Zhenzhong & Zhou, 2017). The elements of SCM (integration, operations, purchasing and distribution) must work cohesively for everyone's benefit. The components of SCM (planning, information, source, inventory, production, location, transportation and return of goods) ensure the success and reputation of a business (Durach & Machuca, 2018). The supply chain has become a source of competitive differentiation and long-term sustainability of firms in a business environment that is constantly changing (Memia, Ngugi & Odhiambo, 2018). The objective of SCG is to govern supply chains to operate in an efficient manner, while SCM deals with the flow of materials through the global supply chain to ensure that the system produces per capita efficiently (Qayyum & Ashraf, 2015). The two systems (SCG and SCM) work to improve the efficiency of the global supply chain with a difference. The SCM deals with

the products in the system and their efficiency in the system, but SCG focuses on the system as a whole and the interactions between firms (Crisan, Paspucea & Liviu, 2011). The global SCG becomes more efficient with greater integration both internally and externally (Jiguang & Bing, 2018). The benefits to creating greater integration allows for the same benefits that come from implementing supply chain governance strategies and concepts in a broader sense since integration is a part of that governance strategy (Huang & Chiu, 2018).

The developing countries within the region of Africa are now increasingly embracing the concept of contractual supply chain governance to have sustainable market competition and economic growth in the agro processing industry. Agro processing is a widely diverse subsector and is vital to the production of food, beverages and non-food products like tobacco, sisal as well as the treatment of wood for furniture and paper products (Ncube, Roberts, Zengeni & Samboko, 2017). Agro processing is the process of converting primary or raw agricultural materials or products into consumable commodities suitable for consumption (Gichuru, Iravo & Arani, 2015). Agro-processing is an important process in agricultural sector for it adds value on agricultural output. The sector contributes in earning foreign exchange, growth of gross domestic product and offer employment opportunities (Were, 2016). In 2015, agriculture was the leading sector of the economy, accounting for 23% of wage employment and providing livelihood for almost 70% of Kenyans (Mitullah, Kamau & Kivuva, 2017). The agro processing firms have been inefficient in terms of value addition to the agricultural produce and Kenya is a net exporter of raw agricultural produce instead of high-quality value-added products (Ndicu Muchai & Gachanja, 2015). The gross domestic product from Kenyan manufacturing sector dropped from Kshs. 118,134 million in the first quarter of 2016 to Kshs. 113,460 million in the second quarter of 2016. The

Production of tea in Kenya dropped by 7% from 473.0 thousand tonnes in 2016 to 439.8 thousand tonnes in 2017. According Vernon (2017), performance of the manufacturing sector in Kenya is affected by the use of obsolete supply chain management practices. The sector has experienced performance issues that include trade imbalances, drop in gross domestic product, unemployment, inflation and closure of international firms in Kenya (Magutu, Aduda & Nyaoga, 2015).

Research Objective

The objective of this study was to determine the influence of contractual supply chain governance on performance of agro processing firms in Kenya. The study was guided by the following research hypothesis;

- **H₀:** Contractual supply chain governance does not significantly influence the performance of agro processing firms in Kenya.

LITERATURE REVIEW

The literature review involves the systematic identification, location and analysis of documents containing information related to the research being investigated. The literature review identifies research gaps recommended for further research (Lamb, 2014). Literature review should be extensive and thorough because it aims at obtaining knowledge of the topic being studied (Moser & Korstjens, 2018). The theoretical review defines the research problem in order to test a relationship in a theory and deal with specific concepts from a theory. A theory is a set of statements or principles devised to explain a group of facts or phenomena repeatedly tested or are widely accepted and can make predictions about natural phenomena (Denzin, 2017). Theories are analytical tools for understanding, explaining, and making predictions about a given subject matter (Creswell & Creswell, 2017). Theories are formulated to explain, predict, and understand phenomena and to challenge and extend existing knowledge within

the limits of critical bounding assumptions (Braidotti, 2019). The underpinning theories in this study included the Theory of Constraints and the Theory of Performance.

Theory of Constraints

The theory of constraints (TOC) was relevant in understanding the influence of contractual supply chain governance on performance of agro processing firms in Kenya and hence provided the theoretical background for this study. Goldratt conceived the theory in 1984 as a methodology for identifying the most important limiting factor that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor (Šukalová & Ceniga, 2015). In manufacturing firms, every process has a constraint or bottleneck and focusing improvement efforts on that constraint is the fastest and most effective path to improved profitability. TOC is a management paradigm that views any manageable system as being limited in achieving more of its goals by a very small number of constraints (Memia, Ngugi & Odhiambo, 2018). Constraint is anything that prevents the system from achieving more of its goal. TOC is based on the principle that a chain is only as strong as the weakest link or constraint and to elevate and manage the constraint as necessary (Mwangi, Muturi & Noor, 2019). The key assumption of TOC is that management of an organization is by measuring throughput, operational expense and investment that together are throughput accounting (Alexandre, 2015). According to Goldratt (2010), TOC takes a scientific approach to improvement and gives explanation that every complex system including contracts and manufacturing processes, consists of multiple linked activities, one of which acts as a constraint upon the entire system. This major constraint hinders global consumers to have ability to access produced goods. The TOC inherently prioritizes improvement activities, and top priority is always the current constraint. In environments where there is an

urgent need to improve, TOC offers a highly focused methodology for creating rapid improvement (Gupta & Snyder, 2015). According to Martinez, Navarro and Ravelo (2015), TOC approach may guide a single firm to concentrate on exploiting resources based on different contractual governance along the supply chain.

Theory of Performance

The theory of performance (ToP) was relevant in understanding the influence of supply chain governance on performance of agro processing firms in Kenya and provided the theoretical background for this study. Performance theory originated from a variety of fields, but it is mostly associated with the work of Schechner (1985) and Turner (1988). They highlighted how performances are central to human understanding. Performance theory suggests that every one of us puts on a performance in our society. With the application of ethnographic research in different societies and contexts, these theorists underscored the importance of performance on human understanding. Performance can entail observance to a rigid structure of operating but it can also be a means of resisting. The concept of performance enables an assessment of the ways in which individuals act and react in the world. It is a means of understanding how people situate themselves in the world, for themselves and for others. Performance offers modern perspectives in multiple environments (Shepherd 2016). According to Agami, Saleh and Rasmy (2012), ToP develops and relates six foundational concepts (perform, performer, level of performance, performer's mindset, immersion and reflective practice) to form a framework that can be used to explain performance as well as performance improvements. To perform is to produce valued results. A performer can be an individual or a group of people engaging in a collaborative effort.

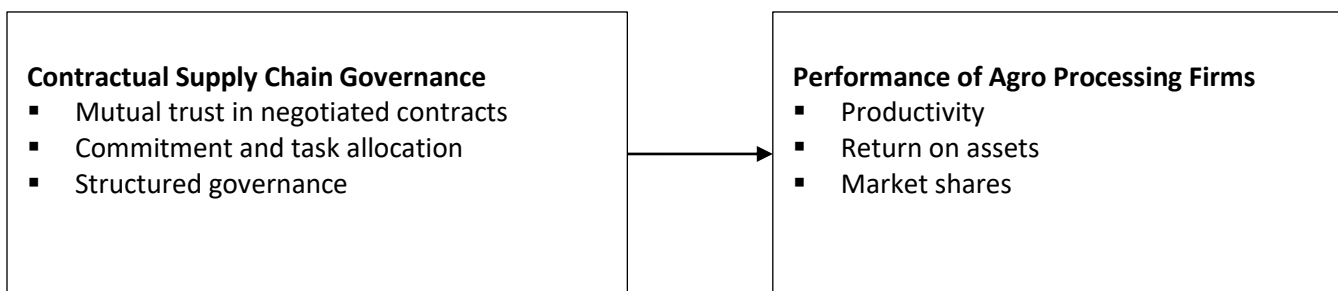
Developing performance is a journey and level of performance describes location in the journey. The

current level of performance depends holistically on six components of context, level of knowledge, levels of skills, level of identity, personal factors, and fixed factors. Three axioms proposed for effective performance improvements. These involve a performer's mindset, immersion in an enriching environment, and engagement in reflective practice. Performer's mindset includes actions that engage positive emotions. Immersion in a physical, social, and intellectual environment can elevate performance and stimulate personal as well as professional development. Reflective practice involves actions that help people pay attention to and learn from experiences. According to Schrettle, Hinz, Rathje and Friedli (2013), the performance theory calls for greater awareness of attention to formal elements of textual representation (structural concerns) and greater focus on context. ToP situates stories to a particular event and credits a narrator who assumes responsibility for the performance.

Each performance is key and relies on a performer's assumption of responsibility for the emergent event. Folklore is not to be conceived any longer as disembodied "text" but rather a rich convergence of performer, situation, setting, audience, and society (Osoro, Muturi & Ngugi, 2016). ToP links well with the performance of agro processing firms in Kenya and it will guide this study to the right direction.

Conceptual Framework

The conceptual framework refers to the conceptualization of the relationship between variables in the research study (Creswell & Creswell, 2017). It is a diagrammatic presentation of the relationship between independent and dependent variables of the study. According to Robson & McCartan (2016), a conceptual framework is a system of concepts, assumptions and expectations that supports and directs research.



Independent Variables

Figure 1: Conceptual Framework

Contractual Supply Chain Governance

Contractual SCG is a corporate governance structure used to manage the relationships between parties to a transaction and reduce opportunism. It is the management of contracts made with customers, vendors, partners, or employees through negotiation to ensure compliance with the terms and conditions agreed on. Corporate governance is the process of governing large companies. It focuses on the internal structure and rules of the board of directors; the

Dependent Variable

creation of independent audit committees; rules for disclosure of information to shareholders and creditors; and control of the management (Addae-Boateng, Wen & Brew, 2015). Contractual governance is a formal mechanism or constitutive rules defined in written documents and sanctioned through a formal position of authority and ownership (Benítez-Ávila, Hartmann, Dewulf & Henseler, 2018). Contractual governance can be summarized as the process of systematically and efficiently managing contract

creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk (Zhang, Zhang, Gao & Ding, 2016). According to Yin and Xu (2014), contractual governance means governing a transaction through formal contracts. Contractual governance is based on control in the extent to which collaboration and resulting project performance is the result of limiting the number of possible future project outcomes by allocating risks and setting enforceable standards aligned to the mission of the project.

The contractual mechanisms move with fewer degrees of freedom and anchor the exchange throughout the life cycle that require both knowledge sharing and protection. Contractual mechanisms reduce opportunism and favor relationship performance (Dahlquist & Griffith, 2017). Contracting facilitates commitment and task allocation, which, in turn, are relevant in successful conflict management. The concept of contractual SCG refers to formal and written collaboration contracts and used for managing buyer-supplier relationships (Lu, Guo, Qian, He & Xu, 2014). Contractual governance consists of having a firm strategy that addresses every aspect of the contract process to ensure transparency into relationships and understanding where risk may arise in future (Fischer, Huber, Dibbern & Hirschheim, 2012). According to Hong, Zhipeng, Govindan and Zavadskas (2015), contractual governance has a positive effect on supply chain performance of construction projects, and trust shows some influence on both cooperation and performance in China. In their study, Lu *et al.*, (2015) concluded that contractual governance is effective in improving performance of construction projects in China. Cao and Lumineau, (2015) pointed out that contractual structure assist the China firms in performance. Huber *et al.*, (2013) found out that contractual governance oscillates between complementarity and substitution in information systems outsourcing. Addae-Boateng *et al.* (2015) stated that contractual

governance structures are used to manage the relationships between parties to a transaction and reduce opportunism among the Chinese and Ghanaian firms.

Empirical Review

Different scholars have carried out studies on the influence of contractual supply chain governance on performance of firms or organizations. Cao and Lumineau, (2015) conducted a qualitative and meta-analytic investigation on the interplay of contractual governance in China firms. They suggested that the effects of contracts depend on the types of provisions included and differentiate between the consequences of control and coordination provisions for better performance. They concluded that both contractual governance improve performance of firms. Lu, Guo, Qian, He and Xu (2015) conducted study on the effectiveness of contractual governance in construction projects in China. They found out that the contractual SCG is important in improving project performance. Hong, Zhipeng, Govindan and Zavadskas, (2015) conducted a study on the impact of contractual governance and trust on projects in construction supply chain performance. They concluded that contractual governance has a positive effect on supply chain performance of construction projects, and trust shows some influence on both cooperation and performance. Addae-Boateng *et al.* (2015) studied contractual and firm performance with the case of Chinese and Ghanaian family and firms. They found out that contractual governance is a corporate governance structure used to manage the relationships between parties to a transaction and reduce opportunism. Huber, Fischer, Dibbern and Hirschheim, (2013) conducted study on a process model of complementarity and substitution of contractual governance in information systems outsourcing. They concluded that the contractual governance oscillates between complementarity and substitution. Mainly three types of contextual events

(goal fuzziness, goal conflict, and goal misalignment) trigger those oscillations.

METHODOLOGY

This study used a survey research design, which is appropriate where large population geographically spread is involved which was the case in this study. The design enabled the study to apply both qualitative and quantitative research approaches as observed by Leavy (2017) that the two approaches reinforces each other. This study was anchored on positivism research philosophy for it accommodates both old and new knowledge. The target population of this study was 344 agro processing firms in Kenya that were members of Kenya Association of Manufacturers as derived from the Kenya Manufacturers and Exporters Directory (2019). The study adopted census survey. The structured and semi-structured questionnaires were used to obtain primary data for the study. According to Truijens, Van Nieuwenhove, De Smet, Desmet, & Meganck (2021), questionnaire is a research instrument consisting of a series of questions and other prompts for gathering information from the respondents. Pilot study was conducted to measure the reliability and validity of the research instrument. Cronbach's alpha (α) was used to measure the reliability, while face validity and content validity was used to test the validity of the research instrument.

The study used both descriptive statistics and inferential statistics. Descriptive statistics give expected summary statistics of variables in simple form (Sarstedt & Mooi, 2019). The inferential statistics deal with the populations based on results obtained from samples that include analysis of variance (ANOVA), correlation analysis, coefficient analysis and multiple regression analysis. The systematic factors have a statistical influence on the given data set, while the random factors do not (Park, 2018). The study used SPSS version 25 to facilitate the analysis of data. Data was analyzed using descriptive

statistics; measures of central tendency, measures of dispersion and measures of symmetry and inferential statistics. Data presentation of the statistics of the findings or results was in the form of frequencies, percentages, mean, median, mode, standard deviation, tables, graphs, and pie charts. Inferential data analysis was performed using Pearson correlation coefficient and regression analysis. Linear regression analysis revealed the correlation and strength of the relationship between both independent and dependent variables. ANOVA sought to test the goodness of fit of the regression models and finally to test the hypothesis of the regression models. Data was analyzed qualitatively through content analysis. The information was presented using a combination of statistical techniques and graphical techniques. The hypothesis was tested by running an Ordinary Least Square regression model for the combined sub-constructs of each independent variable against the combined measures of the dependent variable. The acceptance/rejection criteria was that, if the p-value is greater than 0.05, the study fails to reject the H_0 but if p-value is less than 0.05, the H_0 is rejected. The diagnostic tests were conducted to establish whether the data collected was accurate, reliable and capable of inferring the study results to the target population. The multiple regression analysis is a related technique to assess the relationship between an outcome variable and one or more risk factors or confounding variables (Silverman, 2019).

FINDINGS AND DISCUSSIONS

The researcher distributed 344 questionnaires from which, 300 were filled and returned. This represented 87.21% response rate as indicated on Table 1. This was a perfect representation and enough to make generalizations of the study findings. This response rate conforms to (Dyer, Singh, & Hesterly, 2018) affirmation that a 50% response rate is sufficient for analysis; a rate of 60% is good and that of above 70% is exceptional. The outstanding response rate was

attributed to the method of data collection used, whereby the researcher, with assistance from research assistants administered questionnaires to

the respondents who filled them after which they were then collected.

Table 1: Response Rate

Rate of Response	Respondents	Percentage
Returned	300	87.21
Not Returned	34	12.79
Total Distributed	344	100

Descriptive Analysis of the Study Variable

Descriptive statistics is the examination of data to explain, illustrate or summarize data in a meaningful way. Descriptive analysis was used to describe the basic features of the data in the study providing a summary about the sample and the measure thus helping in simplifying massive amounts of data in a sensible and convenient style. It expressed the variables in frequencies, percentages, means and standard deviation. According to Se Yoon (2021), descriptive analysis is necessary in a study as it helps to stipulate the findings as they are and forms the basis for the researcher to deeply understand the phenomenon under which the research is based on. The type of statistics used depended on the types of variables in the study and the scale of measurements. The main descriptive statistics used in the study were the frequencies, percentages, means and the standard deviation. The mean is the average score of the data values. The interpretation of the mean is that the higher the mean, the higher the data values. A high mean would signify that more respondents indicated the highest values in the Likert scale while a

low mean would signify that more respondents indicated the least values on the Likert's scale. Standard deviation measures the spread of data values around the mean. The smaller the standard deviation, the closer the data values to the mean and the higher the standard deviation, the further the data values are spread from the mean (Derrick & White, 2017). The study adopted a Likert Scale of 1 to 5, where Strongly Disagree=1, Disagree=2, Not Sure=3, Agree=4, and Strongly Agree=5.

Descriptive Analysis for Contractual Supply Chain Governance

The first objective of the study sought to establish the influence of contractual supply chain governance on performance of agro processing firms in Kenya. Descriptive analysis was used to describe the basic features of the data in the study providing a summary about the sample and the measure thus helping in simplifying massive amounts of data in a sensible and convenient style. The findings were expressed as percentages, mean and standard deviation as shown in Table 2 below.

Table 2: Descriptive Statistics for Contractual Supply Chain Governance

	Strongly disagree	Disagree	Not sure	Agree	Strongly agree	mean	Std.Dev
	%	%	%	%	%		
The firm conduct transactions through formal contracts	2.7	2.7	0	38	56.7	4.40	0.856
Contracts help the firm in allocation and distribution of task and risks	2.7	2.7	0	37.6	57	4.40	0.856
The firm uses contractual governance structure to manage the relationships between parties to a transaction	2.7	2.7	0	45	49.6	4.34	0.934
The contracts help the firm in setting enforceable standards	2.7	7.7	15.0	27.3	47.3	4.48	0.935
The firm maintains the independent legal committees that manage firm's contracts with stakeholders	2.7	4.6	5	35	52.7	3.99	0.916
Contractual mechanisms reduce opportunism and favor relationship performance	0	0	5.3	34.7	60	4.34	0.910
Contracting facilitates commitment which leads to successful conflict management	0	2.7	5.3	22.3	69.7	4.61	0.632
Mutual trust in contracts help in managing customer and supplier relationships	0	5.3	7.7	32.3	54.7	4.53	0.633
The firm identify suppliers through the process of vendor rating and accreditation	0	0	10	23	67	4.41	0.847
The firm has long term contracts with its main suppliers	0	0	0	42	58	4.30	0.983

Key: Strongly Disagree=1, Disagree=2, Not Sure=3, Agree=4, and Strongly Agree=5

The majority of the respondents (56.7%) strongly agreed that firms conduct transactions through formal contracts, while 38% agreed and 5.4% disagreed. Of the respondents, 57% strongly agreed that contracts help the firm in allocation and distribution of task and risks, and 37.6% agreed. Majority of the respondents (49.6%) strongly agreed that the firm uses contractual governance structure to manage the relationships between parties to a transaction, while 45% agreed. 47.3% of the respondents strongly agreed that contracts help the firms in setting enforceable standards, while 27.3% agreed. The respondents (52.7%) strongly agreed that

firms maintain the independent legal committees that manage firm's contracts with stakeholders, and 35% agreed to the statement. A good number of the respondents (60%) strongly agreed that contractual mechanisms reduce opportunism and favor relationship performance, while 34.7% agreed. A large number of respondents (69.7%) strongly agreed that contracting facilitates commitment that lead to successful conflict management and 22.3% of the respondents agreed with the statement. Of the respondents, 54.7% strongly agreed that mutual trust in contracts help in managing customer and supplier relationships and 32.3% respondents agreed. A large

number of respondents (67%) strongly agreed that firms identify suppliers through the process of vendor rating and accreditation, while 23% of the respondents agreed. Of the respondents, 58% strongly agreed that firms have long-term contracts with their main suppliers and 42% also agreed with the statement. The findings imply that the application of contractual supply chain governance improve the performance of most agro processing firms in Kenya. This echoed the findings of Cao and Lumineau (2015), who established that contractual supply chain governance enhance performance of firms. According to Hong, *et al.*, (2015), contractual supply chain governance has a positive effect on supply chain performance of construction projects. Zhang, *et al.*, (2016), found out that the contractual supply chain governance is the process of systematically and efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk of the firms. Lu, *et al.*, (2015) observed that the contractual supply chain governance is effective in improving project performance in construction projects in China. Addae-Boateng *et al.*, (2015) established that contractual supply chain governance is a corporate governance structure used to manage the relationships between parties to a transaction and reduce opportunism to enhance performance of Chinese and Ghanaian firms.

Tests of Hypotheses and Multiple Regression Analysis Results

The purpose of hypothesis testing is to determine the accuracy of the study hypotheses because the researcher has collected a sample of data. The hypothesis as stated in this study was tested using regression models. The hypothesis test specifies which outcomes of a study may lead to a rejection of the null hypothesis at a pre-specified level of significance, while using a pre-chosen measure of deviation from that hypothesis (the test statistic, or goodness-of-fit measure). A statistical hypothesis test

is a method of statistical inference, which is the process of using data analysis to infer properties of an underlying distribution of probability (Se Yoon, 2021). The research used multiple regression analysis to establish the linear statistical relationship between contractual supply chain governance and performance of agro processing firms in Kenya.

Regression Analysis of the Influence of Contractual Supply Chain Governance on Performance of Agro Processing Firms in Kenya

The first objective of the study was designed to establish the influence of contractual supply chain governance on performance of agro processing firms in Kenya. The literature that was reviewed in this study as well as theoretical reasoning associated contractual supply chain governance with performance of agro processing firms. The hypothesis to test for this specific objective was:

H₀: Contractual supply chain governance does not significantly influence the performance of agro processing firms in Kenya.

The hypothesis was tested by running an ordinary least square regression model. The acceptance and rejection criteria was that, if the p-value is greater than 0.05, the H₀ is not rejected but if it is less than 0.05, the H₀ fails to be accepted. The model summary in table 3 demonstrates the coefficient of determination as indicated by Adjusted R square to be 0.038 implying that 3.8% of performance of agro processing firms in Kenya is explained by contractual supply chain governance. The findings were further supported by p-value of 0.63010. Therefore, the null hypothesis of contractual supply chain governance does not significantly influence firm performance was rejected and the researcher considered the alternative hypothesis. The alternative hypothesis was that contractual supply chain governance have a significant influence on performance of agro processing firms in Kenya. Regression indicates the strength of the relationship between the independent

variable and the dependent variable (performance). This is in tandem with the findings of Park (2018), who observed that when the Adjusted R square value indicates a strong relationship between the independent variable and the dependent variable, then the null hypothesis is rejected and alternative hypothesis is considered.

The finding implies that if all the agro processing firms can implement contractual supply chain governance, then performance of the firms will be enhanced and leads to high productivity and efficiency as indicted in table 3 below. This is in tandem with the findings of Cao and Lumineau (2015), who established that contractual supply chain governance enhance performance of firms. The finding tally with that of Hong, *et al.*, (2015), who observed that contractual supply chain governance, has a positive effect on supply chain performance of construction projects.

This is in line with the findings of Zhang, *et al.* (2016), who found that the contractual supply chain governance is the process of systematically, and efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk of the firms. This is agreement with the results of Lu, *et al.* (2015), who observed that the contractual supply chain governance is effective in improving project performance in construction projects in China. The same finding is in tandem with that of Addae-Boateng, *et al.* (2015), who established that contractual supply chain governance is a corporate governance structure used to manage the relationships between parties to a transaction and reduce opportunism to enhance performance of Chinese and Ghanaian firms.

Table 3: Model Summary of Contractual Supply Chain Governance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.208 ^a	.043	.038	.63010

a. Predictors: (Constant), Contractual supply chain governance

b. Dependent Variable: Performance of agro processing firms

ANOVA for Contractual Supply Chain Governance and Performance of Agro Processing Firms in Kenya

ANOVA was used to show the overall model significance. Since the p-value is less than 0.05, then contractual supply chain governance had a significant explanatory power on performance of agro processing firms (F=13.51 and p-value <0.05). The ANOVA test shows that there is significance as per table 4 below. This implies that the null hypothesis is rejected and the alternative hypothesis is taken to hold implying that the model is significantly fit. There is a positive linear relationship between contractual supply chain governance and performance of agro processing firms in Kenya. The finding is in agreement with that of Zhang, *et al.* (2016), who established that

the contractual supply chain governance is the process of systematically, and efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk of the firms. The finding also compared well with Cao and Lumineau (2015), who established that contractual supply chain governance enhance performance of firms. This is agreement with the results of Lu, *et al.* (2015), who observed that the contractual supply chain governance is effective in improving project performance in construction projects in China. The same finding is in tandem with that of Addae-Boateng *et al.* (2015), who established that contractual supply chain governance is a corporate governance structure

used to manage the relationships between parties to a transaction and reduce opportunism to enhance performance of Chinese and Ghanaian firms. The finding tally with that of Hong, *et al.*, (2015), who observed that contractual supply chain governance

has a positive effect on supply chain performance of construction projects. The finding is in tandem with Benítez-Ávila, *et al.* (2018), who concluded that contractual supply chain governance improve public-private partnerships in Netherlands.

Table 4: ANOVA of Contractual Supply Chain Governance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.337	1	3.337	13.51	.000 ^b
	Residual	73.450	298	.247		
	Total	76.787	299			

a. Dependent Variable: Performance of agro processing firms

b. Predictors: (Constant), Contractual supply chain governance

Regression Coefficients for Contractual Supply Chain Governance and Performance of Agro processing Firms in Kenya

$$Y = 1.681 + 0.229 X1$$

Where:

Y is performance of agro processing firms in Kenya

X1 is contractual supply chain governance

The regression equation above shows that when contractual supply chain governance is held constant at zero, performance of agro processing firms would be 1.681 units. There is an influence of contractual supply chain governance on performance of agro processing firms in Kenya. A unit increase in contractual supply chain governance increases performance of agro processing firms by 0.229 Units as shown in table 5 below. Since the p-value is less than 0.05 we conclude that there is a significant influence of contractual supply chain governance on performance of agro processing firms in Kenya. The finding is in agreement with that of Zhang, *et al.* (2016), who established that the contractual supply chain governance is the process of systematically, and

efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk of the firms. The finding also compare well with Cao and Lumineau (2015), who established that contractual supply chain governance enhance the performance of firms. This is agreement with the results of Lu, *et al.* (2015), who observed that the contractual supply chain governance is effective in improving project performance in construction projects in China. The finding tally with that of Hong, *et al.*, (2015), who observed that contractual supply chain governance has a positive effect on supply chain performance of construction projects. The same finding is in tandem with that of Addae-Boateng *et al.* (2015), who established that contractual supply chain governance is a corporate governance structure used to manage the relationships between parties to a transaction and reduce opportunism to enhance performance of Chinese and Ghanaian firms. The finding is in tandem with Benítez-Ávila, *et al.* (2018), who concluded that contractual supply chain governance improve public-private partnerships in Netherlands.

Table 5: Regression Coefficients of Contractual Supply Chain Governance

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.681	.350		4.805	.000
	X1	.229	.079	.208	2.899	.004

a. Dependent Variable: Performance of Agro Processing Firms

CONCLUSIONS AND RECOMMENDATIONS

The study established that contractual supply chain governance had a significant influence on the performance of agro processing firms in Kenya. This study concluded that contractual supply chain governance improves the performance of agro processing firms. This study also concluded that contractual supply chain governance to be implemented in the firms with good structures and rules that guide a firm in enhancing competitive edge within the global supply chains. This study concluded that the contracts help the firm in setting enforceable standards, and mutual trust in contracts help in managing customer and supplier relationships. This study revealed that lack of direction from senior management and lack of communication across the entire supply chain could disrupt the efficiency of integration both internally and externally. Other barriers as lack of trust, failure to understand the importance of supply chain governance, fear associated with losing control, misaligned goals and objectives, poor information systems, short-term as opposed to long-term focus, and supply chain complexity issues exist in the actual implementation of supply chain governance. The study further established that supply chain mechanisms protect the investments involved in transactions and thereby facilitate and promote sustainable and cooperative relationships.

The study recommended that the firms should maintain the independent legal committees that manage the contracts of the firms with stakeholders. The firms to identify suppliers through the process of vendor rating and accreditation, and consider long-

term contracts with their main suppliers. The firms to encourage mutual trust in contracts to help in managing customer and supplier relationships. The study outcome has revealed that further research should be carried out to determine the effect of contractual supply chain governance on performance of other organizations. It is a governing system of rules, structures and institutions that guide, control and lead supply chains through policies and regulations with the goal of creating greater efficiency. Therefore, the study should be replicated to cover other manufacturing sector other than the agro processing firms. The studies will be helpful in enhancing performance of many sectors and organizations.

Limitations of the Study

This study faced various limitations including the fact that supply chain governance is still a new area of study in developing countries and especially in Kenya. For this reason, some respondents were not cooperative during the study. The study faced a challenge of resistance by respondents to answer questions relating to performance of agro processing firms, occasioned by the confidentiality policy of most entities in the manufacturing sector. The introduction letter provided by the university that indicated that the data sought in the survey was for academic purposes only, and would be treated with utmost confidentiality mitigated this. The questionnaires were accompanied by a cover letter from the University and a permit from the National Commission for Science, Technology and Innovation (NACOSTI) indicating the purpose of the study and potential contributions. The respondents were asked

them not to indicate their names on the questionnaires. This enabled respondents to freely avail the requested information towards the success of this study. The limitation of the respondents not giving accurate information due to the divided attention of respondents to questionnaires and the desire to safeguard the reputation of their firms was delimited by informing the respondents of the magnitude and importance of the data to be collected as well as the ethical requirements expected of them upon consenting to participate in the study. In addition, securing the valuable time of the respondents to respond to the questionnaires was a big challenge. The researcher allowed the respondent adequate time to respond to the questionnaires and encouraged them on the benefits and significance of the study. The questionnaires were well constructed to capture the performance measures objectively. The contents of the questionnaires were explained to the respondents during the data collection stage. Reminder through follow up calls were made to encourage completion and return of the

questionnaires, and to clarify any questions that had potentially risen.

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