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RELATIONAL 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 effect of relational supply chain governance on performance of agro processing firms in Kenya. The study was anchored on the Game Theory 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 and questionnaires were used to collect primary data. A pilot study was carried out to test the reliability and validity of the research instrument. 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 SSPS version 25. Data analysis was conducted using descriptive statistics and inferential statistics by use of moderated multiple regression analysis. The data was presented using statistical techniques. The study revealed that relational 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 relational supply chain governance to enhance their productivity, profitability, sales growth and market share. The study findings are important to regulators to enhance the level of implementation of relational supply chain governance in agro processing firms. This study recommends 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 recommends future research study in other areas of manufacturing sectors to establish the performing trends regarding the adoption of relational supply chain governance. The study provides future researchers with a useful methodological reference to carry out studies in this area of relational supply chain governance.

Keywords: Relational Supply Chain Governance; Customer Relationship; Supplier Relationship; Relational Norms; Performance; Agro Processing Firms

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 effect of relational supply chain governance on performance of agro processing firms in Kenya. The relational supply chain governance is one of the conceptions of the supply chain governance (SCG). Relational SCG is the collaborative relationship framework, which defines the set of rules and procedures for empowering the parties to move forward in their relationship based on trust, cooperation spirit, dependence, open communication and sharing of information. Relational governance mechanisms protect the investments involved in transactions and thereby facilitate and promote sustainable and cooperative relationships (Huang & Chiu, 2018). 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, *et al.*, 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, *et al.*, 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 increasingly implementing the concept of relational 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, *et al.,* 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. According to Gyau and Spiller (2012), both exporters and importers in Ghana can improve their economic performance and enhance efficiency in the supply chain if they adopt a more coordinated structure of SCG with appropriate mechanisms for equitable distribution of benefits. According to Aziz and Azim el Hammady (2015), agro processing enterprise development in Egypt has the potential to provide employment for the rural poor in off-farm activities such as handling, packaging, processing, transporting, and marketing of food and agricultural produce. According to Mhazo, *et al.* (2013), agro processing industry in Zimbabwe plays a vital role in the national economic development and has potential to meet the local needs and export requirements. Ponte and Sturgeon, (2014) explained importance of supply chain governance in global value chains with a modular theory-building effort for the Southern African poultry value chain.

The agro-processing sector in Kenya is having three subsectors of nourishment, refreshments and non-sustenance (Kenya Association of Manufacturers (KAM), 2019). The choice of the industry for this study depended on its importance of adding value to the agricultural products before exportation or consumption, provision of employment and contribution to gross domestic product. 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). In 2016, agriculture contributed 33% to Kenya's gross domestic product, 60% of exports and 7% of imports (KNBS, 2018). 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; Maina, Gichira, & Wanjau, 2017). According Vernon (2017), performance of the manufacturing sector in Kenya is affected by the use of obsolete supply chain management practices. This calls for adoption and implementation of modern governance systems like transactional supply chain governance to improve performance and efficiency of the agro processing firms in Kenya.

The performance of a firm is a multi-dimensional construct divided into financial and non-financial models (Roberts, Neumann & Cauvin, 2017; Selvam, *et al.,* 2016). The financial models are productivity, return on assets, profitability, sales growth, cash flow and other financial performance measures. The non-financial models are market shares, market position, product quality and customer satisfaction. Productivity is a crucial factor in production performance of firms and its growth can help businesses to be profitable (Sickles & Zelenyuk, 2019). Profitability, efficiency, solvency and market prospects building blocs for analyzing financial statements and company performance as a whole (Zelenyuk, 2018). Customer satisfaction is a measure of how products and services supplied by a company meet or surpass customer expectation (Pokryshevskaya & Antipov, 2017). According to Dekker, *et al.,* (2018),

performance indicators in agro-food supply chains are efficiency, flexibility, responsiveness and food quality.

Statement of the Problem

The agro processing industry establishes the biggest bit of 38% of Kenya manufacturing sector (KAM, 2019). The manufacturing sector has high and yet untapped potential to contribute to employment and gross domestic product. 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). The manufacturing sector is the largest among all the industrial production activities and accounts for 99 percent of all industrial activities in Kenya, but has been growing at a slower rate than the economy which expanded by 5.6% in 2015. The agriculture sector recorded mixed performance in 2017 that led to a decelerated growth of 1.6% compared to 5.1% growth in 2016 that also affected the agro processing industry (Kenya National Bureau of Statistics (KNBS), 2018). The gross domestic product from manufacturing dropped from Kshs. 118,134 million in the first quarter of 2016 to Kshs. 113,460 million in the second quarter of 2016 (Memia, Ngugi & Odhiambo, 2018). The manufactures of food products declined by 10.8% while the dairy sub-sector production volumes contracted by 12.1% in 2017. Sugar production declined significantly by 41.2% from 639.7 thousand tonnes in 2016 to 376.1 thousand tonnes in 2017. The production of tea dropped by 7% from 473.0 thousand tonnes in 2016 to 439.8 thousand tonnes in 2017. Semi-processed coffee dropped by 15.1% to 33.7 thousand tonnes and production of beverages declined by 5.2% in 2017. The production of tobacco products dropped by 4.4 % because of a 4.1% decline in production of cigarettes in 2017. Leather and related products recorded a decline of 12.0%; and the manufacture of wood and products of wood dropped by 13.2% in 2017 (KNBS, 2018).

The statistics indicated clearly that there was a performance gap of agro processing sector, which this study aimed to resolve. This implied that the share of manufacturing in gross domestic product had been reducing over time (Were, 2016). The major problem of the sector in Kenya is inefficient value addition to agricultural produce (Ndicu, Muchai & Gachanja, 2015; Maina, Gichara & Wanjau, 2017). According to Gyau and Spiller (2012), the exporters and importers in agribusiness in Ghana can improve their economic performance and enhance efficiency in the supply chain if they adopt a more coordinated structure of supply chain governance. According to Kingoo and Chirchir (2013), transactional supply chain governance has a lot of impact on organizational performance of Kenyan parastatals though implementation is limited. In view of the forgoing, this study creates new knowledge to bridge the existing gap on influence of supply chain governance on performance of agro processing firms in Kenya.

Specific Objective

To examine the effect of relational supply chain governance on performance of agro processing firms in Kenya.

Research Hypothesis

Relational supply chain governance does not significantly affect the performance of agro processing firms in Kenya.

Literature Review

Theoretical Framework

Game Theory

Game theory was relevant in understanding the influence of relational supply chain governance on performance of agro processing firms in Kenya and hence provided the theoretical

background for this study. The first known discussion of game theory occurred in a letter written in 1713 by Charles Waldegrave (Bellhouse, 2015). Game theory did not really exist as a unique field until John von Neumann published the paper on the Theory of Games of Strategy in 1928. Modern game theory began with the idea of mixed-strategy equilibria in two-person zero-sum games and its proof by John von Neumann (Neumann, 1928). Many scholars developed game theory extensively in the 1950s. According to Neumann (1928), game theory is the study of mathematical models of strategic interaction between rational decision-makers. Today, game theory applies to a wide range of behavioral relations, and is now an umbrella term for the science of logical decision making in humans, animals, and computers (Dutta & Radner, 1994). According to Jonathan (2018), game theory has been widely recognized as an important tool in many fields like manufacturing and agro processing firms.

The game theory is having two types of cooperative game and non-cooperative game. A game is cooperative if the players are able to form binding commitments externally enforced through contract law, but it is non-cooperative if players cannot form alliances or agreements (Velegol, *et al.,* 2018). Cooperative game theory provides a high-level approach as it only describes the structure, strategies and payoffs of coalitions and provides a simplified approach that allows analysis of the game at large without having to make any assumption about bargaining powers (Webb, 2014). Cooperative games bring together several players looking to maximize a win-win situation by agreeing to coordinate strategies and share pay offs (Mateo & Aghezzaf, 2014). Game theory is defined as the formal study of decision-making where several players are required to make choices that potentially affect the interests of the opposing players and is deemed as the official study of conflict and cooperation (Slimani & Achchab, 2014). According to Wang (2015), game theory contains the method for finding mutually consistent solutions for two-person zero-sum games that relates to relational supply chain governance since the collaborating partners need good relationship to perform well. Game theoretic concepts apply whenever the actions of several agents (individuals or groups or firms) are interdependent.

Theory of Performance

Theory of Performance (ToP) was relevant in understanding the effect of transactional 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) who examined and highlighted how performances are central to human behavior and understanding. Performance theory suggests that every firm puts on a performance in business to be competitive in the global market. Performance can entail observance to a rigid structure of operating but it can also be a means of achieving set goals by the firms. The concept of performance enables an assessment of the ways in which individual firms operate and compete in the world market. It is a means of understanding how firms situate themselves at the national, regional and global levels 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 of perform, performer, level of performance, performer's mindset, immersion and reflective practice. These concepts form a framework that can be used to explain performance as well as performance improvements of companies. To perform is to produce valued results as per the set goals. A performer can be a firm or a group of firms engaging in a collaborative effort. Developing performance is a journey and level of performance describes location in the journey to achieve the set objectives. 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 of the companies (Nielsen, 2013).

According to Schrettle, *et al.,* (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 process within the firm and credits an employee of the firm who assumes responsibility for the performance. Performance at each processing level is key to the company and relies on worker's assumption of responsibility for the emergent event (Osoro, Muturi & Ngugi, 2015). There is need to establish how ToP can help in discussing, appreciating and understanding the role played by agro processing sector in the economy. The 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.

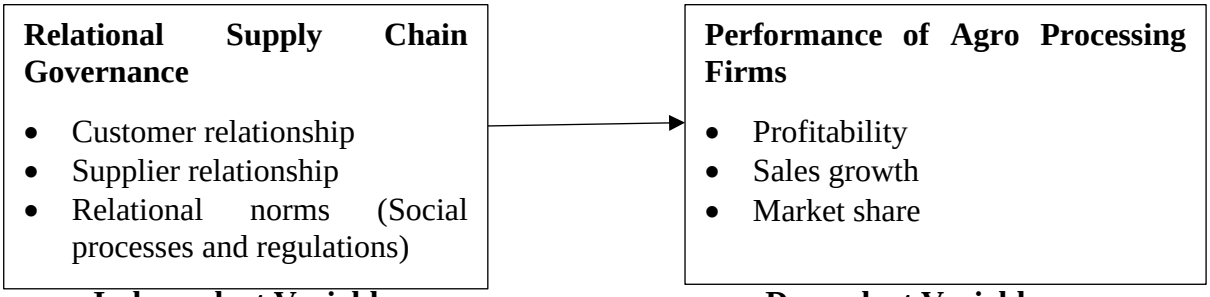

Figure 1: Conceptual Framework

Relational Supply Chain Governance

Relational SCG is a corporate governance structure used to manage the relationships between parties to a transaction and reduce opportunism (Addae-Boateng, *et al.*, 2015). It defines the set of rules and procedures for empowering the parties to move forward in their relationship. Relational governance mechanisms protect the investments involved in transactions and thereby facilitate and promote sustainable and cooperative relationships (Huang & Chiu, 2018). Relational SCG governs transactions through relational norms that refer to social processes and regulations that exist because of the counterparts' relations in a transaction (Nordin & Ravald, 2016). Relational contracts' governance consists of a structure and a process. The relational structure dimension represents a vertical semi-integration while processes underlined in the relationship are joint actions. Relational contracting describes mechanisms that utilize non-legal sanctions that result in decreased opportunism along with improved effectiveness (Kreye, Roehrich & Lewis, 2015). According to Obi, *et al.* (2020), the relational governance has a positive effect on supply chain performance and at the same time has an indirect effect on supply chain performance through both information sharing and quality of information. The concept of relational SCG describes the non-contractual relational mechanisms (trust in its various forms and relational-cooperative norms) that affect the exchange relationship between buyer and supplier (Huang, Cheng & Tseng, 2014).

Relational governance portrays the methodology by which decisions are proposed, adopted and implemented. It describes the rights and remedies of the shareholders to decide upon selection of directors and on major corporate changes that affect their interests, and on the rights and duties of directors (Sjödin, Parida & Kohtamäki, 2019). In outsourcing, relational governance

describes the protocols and procedures for communications between the parties at all levels, and the process for determining the existence disputes (Dyer, Singh & Hesterly, 2018). Without an effective means of relationship governance, the communications fail and the relationship fails (Vesalainen & Kohtamäki, 2015). Relational norms directly influence partners' attitudes and behaviour to engage in collaborative activities in the process of delivering project outcomes. According to Anderson, *et al.* (2015), relational SCG defines the set of rules and procedures for empowering the parties to move forward in their relationship for improved firm performance. Poppo and Zenger (2010) stated that relational governance hinges on trust, cooperation or cooperative spirit, open communication and sharing of information and dependence. Where available, these should promote the flexibility, solidarity and information exchange needed to enforce obligations, promises and expectations. In their absence, it will be difficult for exchange partners to adapt to unforeseeable events, get a bilateral approach to problem solving, and acquire new information and opportunities that could aid the attainment of goals in short-term and long-term. Through these social processes and the resulting norms, relational governance may function to mitigate the precise exchange hazards targeted by contractual governance (Kreye, Roehrich & Lewis, 2015).

According to Talay and Akdeniz (2014), relational SCG mechanisms such as trust enhance transaction-specific investments associated with less monitoring and bargaining. The existence of trust between two partners help to facilitate joint planning and problem solving and can help to create a stable and committed relationship, which is important for firm performance. According to Cao and Lumineau (2015), relational SCG complements the adaptive limits of contracts by fostering the continuance of exchange and entrusting both parties with mutually agreeable outcomes. Relational SCG affects manufacturers' ability to flexibly adapt and overcome uncertainty in the supply chain relationship (Ying-Pin Yeh, 2016). The consumer orientation and management innovation directly and positively correlate with relational governance (Dong, Zhenzhong & Zhou, 2017). According to Dekker, *et al.* (2018), relational SCG governs transactions through relational norms (social processes and regulations) which have a value-adding function. According to Anderson *et al.,* (2015), firms use inter-organizational and relational controls to address cooperation and coordination concerns in order to enhance collaboration and the performance of firms.

Empirical Review

Relational Supply Chain Governance

Ying-Pin Yeh, (2016) led an investigation on critical influence of relational SCG on relationship value in strategic supply management on Taiwanese manufacturers. He established that relational SCG is positively associated with relationship quality, relational value and firm performance. In their study, Lu *et al.,* (2015) concluded that contractual and relational governances are effective in improving performance of construction projects in China. Dekker *et al.* (2018) conducted a study on boundary spanner relational behavior and inter-organizational control in supply chain relationships in China manufacturing sector. They stated that boundary spanner relational skills are critical in the successful management of buyer-supplier relationships and helps in avoiding high costs of more formal inter-organizational controls. They summarized that the performance indicators in agro-food supply chains are efficiency, flexibility, responsiveness and food quality. According to Obi, *et al.* (2020), the relational governance has a positive effect on supply chain performance and at the same time has an indirect effect on supply chain performance through both information sharing and quality of information. Talay and Akdeniz, (2014) studied the effects of duration on the dynamics of trust-building processes in inter-organizational relationships. They pointed out that relational governance mechanisms such as trust enhance transaction-specific investments associated with less monitoring and bargaining that improve performance. Cao and Lumineau, (2015) conducted a qualitative and meta-analytic investigation on the interplay between

contractual and relational governance in China firms. They pointed out that both contractual and relational structures assist firms in performance. Kohtamäki, (2012) conducted a study on relational governance and learning in partnership with the aim to find out the impact of relational governance structures on learning in partnerships. He concluded that certain combinations of relational governance mechanisms like price, hierarchical and social mechanism produce the best learning outcomes in partnerships. Dong *et al.,* (2017) studied the relational governance in buyer-supplier relationships among China firms. They stated that relationship management is more flexible than written contracts for governance and without an effective means of relational governance, there will be no communications and relationship. Relational SCG complements the adaptive limits of contracts by fostering the continuance of exchange and entrusting both parties with mutually agreeable outcomes.

Research Methodology

Research Design

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. 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 of 2019. The study adopted census survey. The questionnaires were used to obtain primary data for the study. 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. 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.

The 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).

Research Findings and Discussions

Response Rate

The researcher distributed 344 questionnaires from which, 300 were filled and returned. This represented 87.21% response rate. The response rate 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.

Reliability Analysis

Reliability is the degree to which an assessment tool produces consistent results (Creswell & Creswell, 2017). Cronbach's Alpha (α) was used to test reliability of the proposed constructs. The Cronbach's alpha coefficient should range between 0 and 1. Coefficient of 0.6 - 0.7 is commonly acceptable rule of thumb that indicates acceptable reliability and gives unbiased estimate of data generalizability (Cronbach, 1951; Heale & Twycross, 2015).

Table 2: Reliability Tests of the Factors

Factors/Variables	Cronbach's Alpha Value	Items	Comments
Relational SCG	0. 708	10	Accepted
Performance of agro processing firms	0.833	10	Accepted

The variables in table 2 above showed that the Cronbach's Alpha was above the required coefficient of 0.70 thus the results of the study are highly reliable. The higher alpha coefficient value means there is consistency among the items measuring the concept of interest (Taber, 2018). The factors showed that the Cronbach's Alpha were above the required coefficient of 0.70 thus the results of the study are highly reliable. This is in tandem with the findings of Park (2018), who observed that reliability is the extent to which a measurement of an instrument or procedure yields the same results on repeated trials.

Descriptive Analysis for Relational Supply Chain Governance

Descriptive analysis expressed the variables in frequencies, percentages, means and standard deviation as shown on table 3 below. The mean is the average score of the data values (Sekaran, 2015). 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 respondents were requested to indicate their levels of agreement on specific statements regarding transactional supply chain governance based on a five-point Likert scale.

Table 3: Descriptive Statistics for Relational Supply Chain Governance

Statements	mean	Std.Dev
The firm manages customer relationship through regulations	4.37	0.646
The firm manages supplier relationship through collaborative activities	4.51	0.590
The firm maintains relational norms with stakeholders through social processes, regulations and open communication	4.51	0.721
The firm share information with its customers and suppliers regularly.	4.47	0.551
Trust and cooperative spirit help the firm to facilitate joint planning that create a stable and committed relationship	4.49	0.601
The firm coordinate and hold regular meetings with its suppliers	4.34	0.910
The firm orient and train their customers and suppliers to build the right capacity	4.61	0.632
The firm is flexible and consider views of their suppliers to improve performance	4.53	0.633
Relational processes enhance relationship quality, cooperation and coordination between buyers and suppliers	4.41	0.847
Relational SCG helps in smoother problem solving and restraints on unethical uses of power	4.30	0.983

n=300; Key: Strongly Disagree=1, Disagree=2, Not Sure=3, Agree=4, and Strongly Agree=5

The findings as shown in table 3 above revealed that on the statement of "The firm manages customer relationship through regulations", the majority of the respondents, 181 (60.3%) gave strongly agreed and 119 (39.7%) agreed, while none of the respondents indicated any disagreement to the statement as evidenced by a mean of 4.37 and a standard deviation of 0.646. On the statement of "The firm manages supplier relationship through collaborative activities", the majority of the respondents, 165 (55%) gave strongly agreed and 127 (42.3%) agreed to the statement, while a few of the respondents, 8 (2.7%) were not sure with the statement as indicated by a mean of 4.51 and a standard deviation of 0.721. On the statement of "The firm maintains relational norms with stakeholders through social processes, regulations and open communication", the majority of the respondents, 184 (61.3%) gave strongly agreed and 109 (36.3%) agreed to the statement, while a few of the respondents, 7 (2.3%) were not sure with the statement as supported by a mean of as shown by a mean of 4.51 and a standard deviation of 0.590. This echoes the findings of Kiriinya, Ngugi, & Mwangangi (2021), who observed that when relationship management is properly done in regard to collaboration, transparency and process alignment, then it will support performance of pharmaceutical firms in Kenya through increased market share, higher returns on investment, improved customer service levels, reduced lead times, responsiveness and stable supply chains.

On regarding the statement of "The firm share information with its customers and suppliers regularly", the majority of the respondents, 174 (58%) gave strongly agreed and 126 (42%) agreed to the statement as supported by a mean of 4.47 and a standard deviation of 0.551. Concerning the statement of "Trust and cooperative spirit help the firm to facilitate joint planning that create a stable and committed relationship", the majority of the respondents, 225 (75%) gave strongly agreed and 67 (22.3%) agreed to the statement, while a few of the respondents, 8 (2.7%) were not sure with the statement shown by a mean of 4.49 and a standard deviation of 0.601. About the statement of "The firm coordinate and hold regular meetings with its suppliers", the majority of the respondents, 180 (60%) gave strongly agreed and 104 (34.7%) agreed to the statement, while a few of the respondents, 16 (5.3%) were not sure with the statement as supported by a mean of 4.34 and a standard deviation of 0.910. On the statement of "The firm orient and train their customers and suppliers to build the right capacity", the majority of the respondents, 209 (69.7%) gave strongly agreed and 67 (22.3%) agreed to the statement, while a few of the respondents, 16 (5.3%) were not sure and 8 (2.7%) disagreed to the statement as indicated by a mean of 4.61 and a standard deviation of 0.632.

Regarding the statement of "The firm is flexible and consider views of their suppliers to improve performance", the majority of the respondents, 164 (54.7%) gave strongly agreed and 97 (32.3%) agreed to the statement, while a few of the respondents, 23 (7.7%) were not sure and 16 (5.3%) disagreed to the statement as supported by a mean of 4.53 and a standard deviation of 0.633. Concerning the statement of "Relational processes enhance relationship quality, cooperation and coordination between buyers and suppliers", the majority of the respondents, 201 (67%) gave strongly agreed and 69 (23%) agreed to the statement, while a few of the respondents, 30 (10%) were not sure with the statement as shown by a mean of 4.41 and a standard deviation of 0.847. Finally on the statement of "Relational SCG helps in smoother problem solving and restraints on unethical uses of power", the majority of the respondents, 174 (58%) gave strongly agreed and 126 (42%) gave agreed to the statement as supported by a mean of 4.30 and a standard deviation of 0.983. This is in line with the findings of Kiriinya, Ngugi, & Mwangangi (2021), who observed that when relationship management is properly done in regard to collaboration, transparency and process alignment, then it will support performance of pharmaceutical firms in Kenya through increased market share, higher returns on investment, improved customer service levels, reduced lead times, responsiveness and stable supply chains.

The results were a clear indication that relational supply chain governance plays a vital role in the performance of agro processing firms in Kenya as summarized in table 4.9. The findings agree with those of Lu *et al.,* (2015) that relational governance is effective in improving performance of construction projects in China. According to Ying-Pin Yeh, (2016), relational supply chain governance is positively associated with relationship quality, relational value and firm performance. Dekker *et al.,* (2018) established that relational skills are critical in the successful management of buyer-supplier relationships and help in avoiding high costs of more formal inter-organizational controls. Addae-Boateng *et al.,* (2015) established that relational 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 findings are in tandem with Kiriinya, Ngugi, & Mwangangi (2021), who observed that when relationship management is properly done in regard to collaboration, transparency and process alignment, then it will support performance of pharmaceutical firms in Kenya through increased market share, higher returns on investment, improved customer service levels, reduced lead times, responsiveness and stable supply chains. According to Obi, *et al.,* (2020), the relational governance has a positive effect on supply chain performance and at the same time has an indirect effect on supply chain performance through both information sharing and quality of information. They further stated that the higher levels of information sharing and quality of information can lead to enhanced effect of relational governance on supply chain performance. Cao and Lumineau, (2015) pointed out that relational supply chain governance structures assist on performance of China firms. Dong *et al.* (2017) stated that relational supply chain governance improves the buyer and supplier relationships to be more flexible than written contracts in enhancing the performance of China firms.

Descriptive Statistics for Performance of Agro Processing Firms

The study sought to find out the performance of agro processing firms in Kenya as the dependent variable for this study. The main measures used to unveil the performance of the firms included productivity, return of assets, market shares, sales growth, profitability, processing costs, cash flow, customer satisfaction, market position and product quality. The respondents were asked to rate performance of their respective firms based on these performance indicators. The respondents gave their views on how they ranked the performance metrics in principle siting no definitive measurements like ratios or percentage points, but based on their reviews of previous data present in their respective firms.

Table 4: Descriptive Statistics for Performance of Agro Processing Firms

Statements	mean	Std. Dev
Productivity level in terms of output or volume increased for the last five (5) years	4.47	0.551
The return of assets level in terms of profits improved for the last five (5) years	4.37	0.646
Growth of market share in terms of firm's sales was registered for the last five (5) years	4.51	0.590
The sales growth in terms of revenue increase continued for the last five (5) years	4.40	0.856
The profitability level in terms of revenue generation was favourable for the last five (5) years	4.37	0.646
The processing or manufacturing costs reduced for last five (5) years	4.51	0.590
The cash flow level in terms of cash and cash-equivalents being transferred into and out of a business was adequate for last five (5) years	4.40	0.856
The customer satisfaction level in terms of meeting customer expectation and loyalty improved for last five (5) years	4.37	0.646
The market position level in terms of consumer's perception of firm's products was stable for last five (5) years	4.51	0.590
Product quality standards in terms of consumers' preference was maintained for last five (5) years	4.61	0.632

n=300; Key: Strongly Disagree=1, Disagree=2, Not Sure=3, Agree=4, and Strongly Agree=5

The findings based on these measures are presented on table 4 above. On the productivity and return of assets levels, the findings revealed that the respondents significantly ranked their firm performance as evidenced by mean of 4.47 and 4.37 respectively and standard deviation of 0.551 and 0.646 respectively. This is in tandem with the findings of Njuguna and Wanjohi (2021), who observed that performance of agro processing firms is measured using cost reduction, profitability market shares and productivity. This in line with the results of Mwaura and Okeyo (2020), who concluded that return on assets, return on equity, market share, sales volume, customer satisfaction and employee satisfaction, measure the performance of large manufacturing in Kenya. This in agreement with Wamiori, Namusonge and Sakwa (2019), who observed that financial performance of manufacturing firms in Kenya, is measured through return on assets and profitability.

The findings are in tandem with Kiriinya, Ngugi and Mwangangi (2021), who observed that profitability, customer satisfaction and market share play a big role in measuring the performance of pharmaceutical firms in Kenya. The results are in agreement with that of Sickles and Zelenyuk (2019), who established that productivity describes various measures of the efficiency of production that is a crucial factor in production performance of firms and its growth can help businesses to be profitable. This is also in tandem with Shimenga and Miroga (2019) who observed that financial performance points out to the performance of manufacturing firms in Kenya. The return on assets measures how effectively a firm uses its assets to create profits and how much it generates by the firm from investing any amount in one individual employee. The findings compare with those by Mwangi, *et al.*, (2019), who established that the performance of manufacturing firms in Kenya is measured in terms of return on assets, return on equity, sales growth and profit margin. Muchiri and Jagongo, (2017) found out that return on assets measure performance of the Kenya Meat Commission in Kenya.

The respondents were asked to rate performance of their respective firms based on growth of market shares and sales growth levels. The findings revealed that the respondents agreed that their firms improved in market shares and sales growth because of adopting supply chain governance as shown by a mean of 4.51 and 4.40 respectively and standard deviation of 0.590 and 0.856 respectively. This is in line with the findings of Onyando and Naikuru (2021), who observed that profits and sales growth are used in measuring the performance of Kenya vehicle manufacturers limited. The market share is a key metric in understanding performance of a firm relative to the growth of the market as measurement of internal sales growth or decline. According to Sickles and Zelenyuk (2019), sales growth is a strategic indicator used in decision-making, and influences the formulation and execution of business strategy to improve firm's performance. Odalo, Njuguna & Achoki (2016) established that organizational performance is measured in terms of market share using sales per year, level of profitability and return on assets.

The findings revealed that the respondents were in agreement that transactional supply chain governance significantly increased profits and lowered processing costs of their firms as indicated by a mean of 4.37 and 4.51 respectively and standard deviation of 0.646 and 0.590 respectively. This is tandem with the findings of Kyengo, Muathe & Kinyua (2019), who observed that profitability, market share and customer retention indicate performance of food processing firms in Kenya. The results compare with those by Zelenyuk (2018), who established that profitability is ability of a company to use its resources to generate revenues in

excess of its expenses. The findings are in agreement with those of Memia, Ngugi & Odhiambo, (2018) who found that the financial metrics including profitability, return on assets and market share measure the performance of large manufacturing firms in Kenya. The findings compare with those by Musau, *et al.*, (2017) who found that profitability measure the organizational performance among textile manufacturing firms in Kenya. Nielson (2013) asserted that there are two types of performance reports, which are service and cost performance reports.

The respondents indicated that the adoption of supply chain governance improved cash flow and led to improved customer satisfaction of their respective firms as shown by a mean of 4.40 and 4.37 respectively and a standard deviation of 0.856 and 0.646 respectively. The findings compare with those by Selvam, *et al.,* (2016), who found that the performance of a firm is a multi-dimensional construct that is measured with the cash flow, customer satisfaction and market position. According to Pokryshevskaya and Antipov (2017), customer satisfaction is a key performance indicator within business and is often part of a Balanced Scorecard, and provides a leading indicator of consumer purchase intentions and loyalty. The result was in tandem with Shimenga and Miroga (2019), who observed that financial leveraging positively influences financial performance of manufacturing firms in Kenya and manufacturing firms with effective financial leveraging mechanisms could realize an increase in their profitability.

The respondents were asked to rate performance of their respective firms based on market position and product quality levels. The findings revealed that the respondents agreed that their firms improved in the market position and product quality because of adopting supply chain governance as shown by a mean of 4.51 and 4.61 respectively and standard deviation of 0.590 and 0.632 respectively. This finding is in line with Bor, Ngugi & Odhiambo (2021), who observed that product quality and cost management, measures the performance of food and beverage processing sector in Kenya. This is in line with Nimpano, Shalle and Mulyungi (2021), who concluded that customer satisfaction and quality measure performance of agri-manufacturing firms in Rwanda. The financial and cost indicators should be complemented by non-financial measures related to market position, quality of products, delivery and flexibility and be integrated with management's strategic objectives. According to Dekker, *et al.,* (2018), performance indicators in agro-food supply chains are efficiency, flexibility, responsiveness and food quality. Osoro, Muturi & Ngugi, (2015) used right quality, right quantity, right source and timeliness to measure performance of supply chain systems in the petroleum industry in Kenya.

Test of Hypothesis and Multiple Regression Analysis Results

The purpose of hypothesis testing is to determine the accuracy of the study hypothesis because the researcher has collected a sample of data. In hypothesis, testing the main question is whether to accept the null hypothesis or not to accept the null hypothesis (Denzin, 2017). 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). The pre-chosen level of significance is the maximal allowed (false positive rate). One wants to control the risk of incorrectly rejecting a true null hypothesis. 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 transactional supply chain governance and performance of agro processing firms in Kenya. The hypothesis in this study was tested using regression models.

Regression Analysis of Relational SCG on Performance of Agro Processing Firms

The objective of the study was designed to establish the effect of relational supply chain governance on performance of agro processing firms in Kenya. Following the theoretical arguments, the following hypothesis was formulated and tested:

> **H_0**: Relational supply chain governance does not significantly effect the performance of agro processing firms in Kenya.

Table 5: Model Summary for Relational SCG and Performance of Agro Processing Firms

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.718[a]	0.515	0.514	0.21336

a. Predictor: (Constant), Relational supply chain governance
b. Dependable Variable: Performance of agro processing firms

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 H_0 is not rejected but if it is less than 0.05, the H_0 fails to be accepted. The model summary in table 4.23 demonstrates the coefficient of determination as indicated by Adjusted R square to be 0.514 implying that 51.4% performance of agro processing firms in Kenya is explained by relational supply chain governance. The researcher rejected the null hypothesis and considered the alternative hypothesis as relational supply chain governance has 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 agreement with the findings of Armstrong (2019), who observed that where 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.

This finding is in agreement with that of Dekker *et al.,* (2018), who established that relational supply chain governance skills are critical in the successful management of buyer-supplier relationships and help in avoiding high costs of more formal inter-organizational controls leading to performance of firms. It is in line with the finding of Dong *et al.*, (2017), who observed that the relational supply chain governance improves the buyer and supplier relationships to be more flexible than written contracts in enhancing the performance of China firms. The findings agree with of Lu *et al.*, (2015), who concluded in their study that relational supply chain governance is effective in improving performance of construction projects in China. The finding is in tandem with Benítez-Ávila, *et al.,* (2018), who concluded that relational supply chain governance improves public-private partnerships in Netherlands.

The result is in tandem with Ying-Pin Yeh (2016) and Huang and Chiu (2018), who observed that relational supply chain governance is positively associated with relationship quality, relational value and firm performance. This finding that relational supply chain governance effects the performance of agro processing firms in is in line with Addae-Boateng *et al.,* (2015), who established that relational 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. It is also in agreement with the finding of Cao and Lumineau, (2015), who observed that relational supply chain governance structures assist on performance of China firms. According to Obi *et al.*, (2020), the relational governance has a positive effect on supply chain performance of manufacturing firms in Ghana.

ANOVA for Relational SCG and Performance of Agro Processing Firms in Kenya

In table 6, the ANOVA was used to show the overall model significance. 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 H_0 is not rejected but if it is less than 0.05, the H_0 fails to be accepted. Since the p-value is less than 0.05, then relational supply chain governance had a significant explanatory power on performance of agro processing firms (F=316.850 and p-value <0.05). The finding was further supported by p-value of 0.000. The researcher rejected the null hypothesis stating that relational supply chain governance does not influence performance of agro processing firms in Kenya, and considered the alternative hypothesis since the relational supply chain governance has significant influence on performance of agro processing firms in Kenya.

Table 6: ANOVA Table for Relational SCG and Performance of Agro Processing Firms

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.423	1	14.423	316.850	.000[b]
	Residual	13.565	298	0.046		
	Total	27.988	299			

a. Dependent Variable: Performance of agro processing firms
b. Predictor: (Constant), Relational supply chain governance

This finding is in agreement with that of Dekker *et al.,* (2018), who established that relational supply chain governance skills are critical in the successful management of buyer-supplier relationships and help in avoiding high costs of more formal inter-organizational controls leading to performance of firms. It is in line with the finding of Dong *et al.,* (2017), who observed that the relational supply chain governance improves the buyer and supplier relationships to be more flexible than written contracts in enhancing the performance of China firms. The finding agrees with of Lu *et al.,* (2015), who concluded in their study that relational supply chain governance is effective in improving performance of construction projects in China.

The result is in tandem with Ying-Pin Yeh (2016), who observed that relational supply chain governance is positively associated with relationship quality, relational value and firm performance. This finding that relational supply chain governance effects the performance of agro processing firms in is in line with Addae-Boateng *et al.,* (2015), who established that relational 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. It is also in agreement with the finding of Cao and Lumineau, (2015), who observed that relational supply chain governance structures assist on performance of China firms. The result is in line with According to Obi *et al.,* (2020), who concluded that the relational governance has a positive effect on supply chain performance of manufacturing firms in Ghana.

Conclusions of the Study

The study sought to determine the effect of relational supply chain governance on the performance of agro processing firms in Kenya. The results showed that relational supply chain governance had effect on the performance of agro processing firms in Kenya. This indicates that the proper implementation and adoption of relational supply chain governance improves the performance of agro processing firms in Kenya. From the descriptive and inferential findings, this study established that there is a significant positive relationship between relational supply chain governance and performance of agro processing firms. A positive

increase of relational supply chain governance within the processes increases the performance of firms. It is therefore concluded in the study that relational supply chain governance within the operations of the firm is positively significant on their performance. The study concluded that sound relationship with customers and suppliers is good for the performance of firms. The study also concluded that a good relationship with stakeholders (staff, customers, suppliers, etc.) would lead outcome of quality products and promote customer satisfaction. This study concludes that relational norms directly effect suppliers' attitudes and behaviour to engage in collaborative activities hence improving the performance of the firms.

Recommendations of the Study

This study established a significant positive relationship between relational supply chain governance and performance of agro processing firms. The study therefore recommends the inclusion of relational supply chain governance in process of the agro processing firms in Kenya. Relational supply chain governance is capable to enhance the productivity, increase return on assets, ensure market shares, improve quality of products and customer service of the agro processing firms thus impacting positively on both financial and none financial performance of the firms. This study further recommends that the firms should manage their relationships with the customers and suppliers through social processes and regulations. The firms to encourage open communication and regularly share information with their customers and suppliers. It is important for the firms to coordinate and hold regular meetings with their suppliers, and train their customers and suppliers to build the right capacity.

Limitations of the Study

This study faced various limitations including the fact that relational 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 agro processing sector. The introduction letter provided by the university 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 National Commission for Science, Technology and Innovation indicating the purpose of the study and potential contributions. The respondents were asked not to indicate their names on the questionnaires. This enabled respondents to freely avail the requested information towards the success of this study.

There was a 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. This 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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