Distribution Partnerships and Supply Chain Performance Of Agrochemicals Production Firms In Kenya.

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Abstract: Characteristically, the supply-chain managers attempt to optimize profitable operations in the manufacturing and distribution in the supply chain. Integrated supply chain optimization is the large-scale streamlining of the links in the supply chain in such a way as to ensure the optimal operation of the links and actors in the supply chain. However, integrated supply chain optimization especially distribution partnerships has not been extensively studied for its effect on the performance of distribution companies as opposed to manufacturing companies. Therefore, the purpose of the study was to examine the influence of distribution partnerships on supply chain performance of agrochemical production firms in Kenya. The theory of partnerships guided the study which was also grounded on a positivist philosophy. This study employed the descriptive survey design targeting 32 agrochemical production firms with the unit of observation consisting of 96 persons being one management, one procurement and one supply chain staff per firm. The study adopted the census method and used primary data collected using researcher designed questionnaire and interview schedule that were both pretested using the test-retest method for reliability and content and construct validity. Data was analyzed using descriptive and inferential statistics with descriptive statistics comprising frequencies, percentages, means and standard deviations while inferential statistics comprised Pearson’s correlation coefficient and multiple regressions. However, distribution partnerships did not have any significant impact on Supply Chain Performance of Agrochemicals production firms in Kenya. The study also recommended that there is need for the firms in the agrochemical supply chain in Kenya to strengthen their distribution partnerships.

Keywords: Distribution Partnerships, Contract oriented, Vertical collaboration, Horizontal collaboration, Supply Chain Performance


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1.0. INTRODUCTION

1.1 Background of the Study
In the present day’s processing and manufacturing environment, one of the key challenges is to be both efficient and contribute to high effectiveness in the supply chain. Most industries will not be able to survive by simply optimizing internal structures and infrastructures based upon business strategy but on optimizing their supply chains. Supply-chain optimization entails adoption and use of tools or processes with the object of optimizing or maximizing the operations the supply chain in respect of the manufacturing and distribution (Unhelkar, Joshi, Sharma, Prakash, Mani & Prasad, 2022). The foregoing incorporates optimal placement of stock or inventory within the supply chain reducing the costs of operations such as costs associated with manufacturing, distributing and transporting products within the supply chain. Indeed, it is asserted that the a fore stated entails the utilization of the mathematical modelling techniques with the aid of computer software’s (Du & Jiang, 2019). Supply chain optimization is often considered to be part of supply chain engineering, although the latter is mainly focused on mathematical modelling-based approaches, whereas supply chain optimization can also be done using qualitative, management-based approaches (Emenike & Falcone, 2020).

Drawing on previous definitions in literature, partnerships are defined in the present study as “an ongoing relationship between two firms involving a commitment over an extended time period and a mutual sharing of information and the risks and rewards of the relationship (Ellram & Hendrick, 2015; Herbig & O’Hara, 2014). This definition is consistent with other descriptions in the literature that have defined partnerships as the associations between suppliers and clients who closely work together in a certain business or transaction (Burnes & New, 2016) and strategic relationships between firms that pursue similar goals and interests and work for shared benefits and appreciate the rationale of high degree of interdependence (Mohr & Spekman, 2014).

The movement towards partnerships between buyers and suppliers has been described in the literature as a movement away from arm’s length or transactional relationships towards planned partnerships (Owenvbiugie, 2019), collective ties (Pournader, Kach & Talluri, 2020), lasting relationships (Perez-Vega et al., 2022) associative relationships (Min, Zacharia & Smith, 2019), closer relationships and relational behavior (Agostini et al., 2020). These descriptions tend to be used interchangeably with the term partnership to enable researchers to distinguish between different types of buyer-supplier relationships. In particular, buyer-supplier relationships are often conceptualized as existing on a continuum ranging from primarily transactional ties to highly collaborative arrangements and numerous researchers have suggested characteristics that distinguish between the two extremes.

A report by the Partnership Sourcing Ltd written by NC State University (2021) documents that partnership sourcing entails development of a close and lasting relationships between customers and suppliers where the two parties work as partners, with the aim of securing a commercial edge and ensures top-notch services to the end customer or consumer (Burnes & New, 1997). Collaboration is the key to partnership which, according to Monczka, Trent, and Handfield (2018) is the cooperation between partners that involves maintaining a trading relationship. This relationship is two-pronged, that is bilateral where either party can influence its nature and direction in due course of the relationship. Collaboration in this respect would also involve mutual commitment to goals, balanced power relationships and avenues for controlling and managing conflicts that arise from the relationship.
Contract-oriented partnership is primarily built on an explicit, formal, and legal contract that typically governs the responsibilities and obligations of interconnected firms (Williams, 2020). While contractual governance is perceived as a signal for lack of trust and harm to a relational development, it was also found to play a complementary role in other studies. Specifically, when the contract use is a culturally accepted legitimized form of commitment, it is a form of relational governance (Warsen, 2021). As long as the purpose and value of a formal contract is aligned with the coordination level, then the contract is rather received as a higher form of relationship commitment. Investment-oriented partnership is represented by the level of relation-specific investment, such as large capital expenditure based on long-term planning. Relation-specific investments are critical for both the interconnected firm’s survival and growth in the industry (Shin, Park & Park, 2019). The role of significant investments made by both the supplier and buyer was long emphasized for effective value creation and strategic partnerships. Both buyers and suppliers are constantly encouraged to make various types of investments: financial investment, such as R&D projects and innovations; technological investment in infrastructure equipment; and human capital investment in training and staff development. Both contract- and investment-oriented partnership building processes are considered core features of collaborative relationships for interconnected firms. Such mutual efforts are expected to drive changes in the relationship, from a basic structural change to even the quantity and quality of the exchange relationship. For instance, in the information technology (IT) outsourcing relationship context, Dyer, Singh and Hesterly (2018) highlighted the importance of maintaining a balance between contractual and relational governance (vs. overemphasizing either one), while Roehrich and Lewis (2015) found that relational governance can produce better performance when accompanied by contractual governance. The highly competitive markets in modern world gradually incline towards collaboration between business partners from traditional management practices. The aim of collaboration is to sustain competitive advantage between strongly collaborating partners since cut-throat competition in the modern day is no longer between partners but between the supply chains (Graça & Camarinha-Matos, 2017; Ben-Daya, Hassini & Bahroun, 2019). It is stated that it is vital for companies to widen their area of analysis in order to embrace the entire supply chain rather than single business units (Fatorachian & Kazemi, 2021). Whereas supply chains involve material flows, information flows and finance, it is critical to manage, coordinate and integrate the flows within a firm and the network in order to attain the effectiveness and efficiency of supply chain management play a crucial role in determining the quality-of-service delivery and the overall performance of a company, measured by its profitability. Long-term interactions between suppliers and buyers provide them with opportunities to collaborate and strengthen their partnership commitment through activities such as revising contract details and making relationship-specific investments (Shin et al., 2019). In electronic waste management and recycling governance perspectives, both the structural and cognitive social capitals have positive impacts on governance parties and the willingness to participate in recycling management. A feature of long-term relationship is supplier development. Finally, Krause and Handfield (2019) define supplier development as a concerted effort by the buying and supplying firms to enhance the performance of the supplier in terms of delivery, cost, time to market, quality, financial viability and environmental awareness (Krause & Handfield, 2019). The development of collaborative relationships with suppliers have been more significant in the United States where the Auto industry has led the line. The foregoing is
also evident in Japan particularly in Big Three’s market (Naqshbandi, 2018). Prompted by this competition, domestic automobile producers have begun to comprehend the essence of incorporating suppliers into their networks and leveraging this into a competitive advantage (Handfield & Nichols, 2004).

Supply chain collaboration refers to the cooperative efforts of two or more independent firms to plan and execute supply chain operations. This collaborative approach brings significant benefits and advantages to the partnering organizations (Manavalan & Jayakrishna, 2019). It is considered a cooperative strategy where companies or business units work together to create mutual benefits (Simatupang & Ramaswami, 2018). Vertical collaboration and horizontal collaboration are the two primary types of supply chain collaboration. Vertical collaboration involves organizations from different levels or stages in the supply chain sharing responsibilities, resources, and performance information to serve similar end customers. On the other hand, horizontal collaboration is an inter-organizational relationship between companies operating at the same level or stage in the supply chain, aiming to facilitate cooperation and work towards a shared objective (Paula et al., 2020).

Regenerate response Collaboration affords two or more firms to share resources to perform a specific, mutually beneficial undertaking (Pereira & Soares, 2017). In such situations, there is explicit consensus between the parties to leverage combined resources for purposes of delivering sustainable mutual advantages, with emphasis on efficiency throughout the supply chain, profitable areas of growth, and a holistic improvement in performance of the entire chain. In collaboration agreements, each party retains its autonomy but succeeds in gaining new opportunities. A strategic arrangement can for instance enable firms create more effective processes, access new markets and achieve a competitive edge over rivals (Cooke, 2018). With respect to the SCM discipline, the concept of collaboration may be seen as yet being in its infantile stages, having emerged in mid-1990s (Ayarkwa et al., 2020) from the most popular form –Collaboration, Before the introduction of Planning, Forecasting, and Replenishment (CPFR), firms commonly engaged in simpler forms of collaboration, such as Vendor Managed Inventory and Continuous Replenishment Programs (Maestrini et al., 2017). More and more manufacturers have concluded that success is impossible without a collaborative pull of resources and skills from partners in the supply chain (Skjoett-Larsen et al., 2013). Collaborative Supply Chain (CSC) is not a newborn concept; it never grows old either. In fact, in the struggle against the increasingly dynamic market and customer demand, collaboration appear to be an effective mean for the contemporary firms to leverage the resources and knowledge of their customers and suppliers, be more responsive, productive, deliver significantly improved performance, and capacities to innovate (Manavalan & Jayakrishna, 2019; Mofokeng & Chinomona, 2019). That being said, the implementation of CSC seems to be easier said than done (Ogunmola & Arogundade, 2019). Several studies have underlined the barriers, conditions and requirements of CSC (Manavalan & Jayakrishna, 2019; Mayer, Borchartd & Pereira, 2016), although in a fragmented way throughout the literature. In fact, it appears that the literature largely lacks structured reviews of sine qua nons in the formation of new and maintenance of established CSC, with help of which, the essential building blocks of SC collaboration can be identified.

It can be observed that CSC collaborations occur in various intensities (Panahifar et al., 2017). As such, the extent of the ‘chosen’ collaboration commensurate with the extent of interactions, interdependencies and responsibilities between and within the SC partners. Typically, in the
CSC literature the pros (of collaboration) are praised and the cons are considered as barriers that should be conquered. In other words, collaboration is the way to go, where some nuances in the possibility of overcoming barriers stem from contingencies and maturity of organizations. However, it is argued that SC partners might deliberately choose for ‘lower’ levels of collaboration for solid strategic reasons, i.e., that the ‘optimal’ level of collaboration is not always the most intense one. In other words, being lower or higher on the collaboration spectrum is not “good or bad” per se (Vargas, Patel & Patel, 2018). The SC partners need to consider several trade-offs when determining their ‘optimal’ level of collaboration. Given their contextual peculiarities and organizational idiosyncrasies, including the strategic and tactical needs, different SCs are likely to make different decisions regarding such trade-offs.

Although collaboration offers many benefits for consumer goods manufacturers and retailers, too often their joint initiatives do not work out. Collaboration between companies, involving joint initiatives that surpass their regular day-to-day operations, holds particular appeal for the consumer-packaged goods (CPG) sector (Huang, Han & Macbeth, 2020). In the face of pricing pressures resulting from cautious consumer spending, retailers may be tempted to shift the burden upstream to suppliers by demanding price reductions and imposing a greater share of costs on them. However, on the supply side, manufacturers have limited capacity to absorb additional costs due to volatile input prices squeezing their profit margins, while the investment needed for marketing and distinguishing branded products from private-label competitors continues to rise. (Frichi et al., 2020). Therefore, strategic collaborations are best anchored in collaborative frameworks.

A collaborative framework in the supply chains is defined as collaboration within the network of organizations, a system of interconnected entities involved in various processes and activities, both upstream and downstream, that collectively generate value in the form of products and services for end consumers.”. According to Marqui et al., (2013), a CSC is commonly differentiated in terms of its structure: vertical (Two or more organizations collaborate by sharing responsibilities, resources, and performance information to cater to end customers) with similar needs. horizontal (two or more unrelated to competing organizations cooperate to share their private information or resources), and lateral (combing and sharing capabilities in both vertical and horizontal manners). Moreover, the intensity of collaboration depends on the impact horizon on chain performance: short term (effects on operational performance within one year), mid-term (effects on operational performance over one to three years), long-term (effects on operational performance over two to five years) (Mayer et al., 2016).

According to El Farouk et al. (2020), the main characteristics required for collaborative relationships in the supply chain are communication, interdependence, transparency, flexibility, leadership, synchronized decision-making, commitment, and organizational culture compatibilities. Additionally, Freitas et al., (2019) have proposed to characterized the supply chain collaboration using five elements, which include appropriate performance system, In the automotive industry, collaborative relationships encompass several essential dimensions. These dimensions include information sharing, decision synchronization, incentive alignment, resource sharing, effective communication, and joint knowledge creation. Mofokeng and Chinomona (2019) have identified these seven key aspects as critical for successful collaborative relationships in the automotive sector, information sharing, joint decision making, and electronic data interchange positively influence the supply chain (Al-Doori, 2019; Vargas, Patel & Patel, 2018). Additionally, trust is considered an essential mechanism in collaborative relationships.
De Freitas et al. (2018) classified the drivers for adopting collaborative relationships into two categories: economic motivators and market-related factors that influence the supply chain and encourage companies to engage in collaborative initiatives. They include (De Freitas et al., 2018): Intense competition: the fierce inter-company competition and the emergence of new firms are forcing companies to develop new practices to improve their efficiency and ensure competitiveness. Product and market characteristics: a consistent element in collaborative relationships is the challenge for companies to reduce their life cycle. Economic globalization: it represents a significant factor in the adoption of collaborative relationships. Market reaction: as companies establish collaborative initiatives in their markets, it can help them boost their competitiveness, and then other firms see the need to follow them. Organizational motivators: they are internal factors related to the company’s organization and among the supply chain companies that lead to the adoption of collaborative initiatives. Organizational motivators comprise supply chain problems, previous experiences, and pressure from the partners. They are associated with the companies’ structure, either internally or between companies, which allows for the adoption of collaborative relationships (De Freitas et al., 2019).

Collaborative supply chains can be categorized variously but the most common being based on the differences in inventory control and the planning collaboration. Wu, Chuang and Hsu (2014) identify four types of CSC: Type zero or the traditional SC where each level in the SC issues production orders and replenishes stock without considering the situation at either up-or downstream tiers; Type one or information exchange, where retailer and supplier still order independently, yet exchange demand information and action plans in order to align their forecasts for capacity and long-term planning; In Type Two or vendor-managed replenishment, the supplier is entrusted with the responsibility of generating the replenishment order and managing the retailer's inventory on their behalf, the retailers’ service levels, and, Type three or synchronized supply, This approach eliminates a decision point by merging the replenishment decision with the supplier's production and materials planning. In this scenario, the supplier assumes responsibility for managing the customer's inventory replenishment at the operational level. By having visibility into the customer’s inventory needs, the supplier can incorporate this information into their own supply operations planning.

El Farouk et al., (2020) point out that a full-blown CSC requires a transition in suppliers’ mindset and strategic orientation, from open-market negotiations, that is, price-based discussions and adversarial relationships, co-operation (fewer supplier, longer-term contracts) co-ordination (information linkages, WIP, EDI linkages), to collaboration (SC integration, joint planning, technology sharing). From a genealogical viewpoint, Doganay and Ergun (2017) identify an intensified trend of collaboration of SCs in the past decades. In line with El Farouk et al., (2020) classification, Doganay and Ergun (2017) stress that SC solutions have evolved from using EDI and From Vendor-Managed Inventory (VMI) to Continuous Replenishment Program (CRP), Efficient Consumer Response (ECR), and more recently, Collaborative Planning, Forecasting, and Replenishment (CPFR), various approaches have been developed to enhance supply chain collaboration and efficiency.
collaboration (e.g., NPD, order fulfillment, and capacity planning), manufacturer/customer collaboration (demand planning, inventory replenishment) and collaboration with third- and fourth-party logistics providers (e.g., joint planning of logistics activities) (Al-Doori, 2019). Ogunmola and Arogundade (2019) propose a typology of CSC, which entails, collaborative transaction management (characterized by high-volume data exchange and task alignment centered on operational issues/tasks), collaborative event management (incorporates decision-making at the tactical/managerial level rather than just at the operational level), and, collaborative process management (which is a more strategic collaboration that relies on knowledge sharing and joint decision-making).

Solaimani et al., (2015) argue that the contemporary supply chains can barely survive without collaboration. Not only to be able to adequately respond to the rapidly and unpredictably changing market, but also to jointly create new opportunities and innovate. This was in contrast to the view of Kampstra et al. (2006) who proposed “the ladder of collaboration”, encouraging a linear evolution or maturity of CSC. Solaimani et al., (2015) further emphasized that CSCs should not be considered along a dichotomous scale (i.e., no-collaboration versus full-collaboration). Instead, it should be regarded along a continuous spectrum from which firms—congruous with their given context and strategic considerations—deliberately opt for an optimum level of collaboration. As such, a mature collaboration does not imply evolving from a basic interaction to full-fledge collaboration per se (horizontal maturity), it means optimizing the collaboration within the confined boundaries of collaboration (vertical maturity).

Kenya’s agricultural sector plays a vital role in economic growth. According to FAO (2017), agricultural sector contributes 26% of Kenya’s Gross Domestic Product (GDP). It contributes to 27% of GDP indirectly via linkages with other sectors of the economy. More than 40% of Kenya’s total population and more than 70% of Kenya’s rural population is employed by the agricultural sector. The agrochemical industry plays a significant role in the sustainability of the agricultural sector by providing vital inputs for the nurturing and protection of the agricultural products. The agrochemical industry is majorly driven by population explosion, increasing demand for food, rising consumer awareness and increased awareness on the benefits of pesticides and fertilizers in crop production, technological development and increased government investments in agriculture.

1.2 Statement of the Problem

The performance of the agrochemical industry in Kenya is threatened by intense competition due to the introduction of the 16 percent VAT on imported agrochemical ingredients (Lusenaka, 2018) and the entry of cheap imports from mainly China and India in the agrochemical industry (Gacuiri, 2018). The compound annual growth rate (CAGR) across all the parameters of performance of the agrochemical supply chain was less than 10% which favor imports rather than exports in the sector by a factor of 8. This indicates that the overall performance of the agrochemical production industry in Kenya is relatively low. In a highly competitive agrochemical market characterized by both domestic and international suppliers and distributors, the supply chain performance and survival of the enterprises could easily translate to losses in millions of shillings both to the distributors and their clients resulting to the collapse of some of them such as Farmchem Limited (Achuora & Gatumo, 2018). For the companies to remain profitable there is need to optimize on supply chain strategies aimed at increasing their competitive advantage hence maximizing the efficiency of a supply chain by evaluating key performance indicators such as total operating expenses and gross margin return on inventory.
invested. The primary objective is to minimize the overall cost of delivering products to customers while maximizing profitability. In order to meet these goals, managers must balance the costs of manufacturing, inventory, transportation, fulfillment and customer service expectations. Given the complexity involved, supply chain optimization (distribution partnerships) is a business activity that is long-term in nature in seeking the supply chain configuration that has the best mix of cost and service as demanded. Multiple studies have shown the increasing significance of distribution partnerships, for example, Jonker et al. (2016) conducted research in Brazil and found that system-wide optimization has a limited effect on the overall production costs in the supply chain optimization of sugarcane and ethanol production. Similarly, Mwangi (2019) discovered that supply chain optimization plays a crucial role in the overall performance of manufacturing firms. However, distribution partnerships have not been examined in existing studies on supply chain performance of agrochemical manufacturing and distributing firms in Kenya. For example, studies such as Kibera and Orwa (2016) examined implementation of integrated supply chain in manufacturing companies Kenya focusing on Bidco Oil Refineries. However, the aspects of optimization through networks were not investigated. Eryn, Tewoldeberhan, Agutu, Cortijo and Moloney (2019) did a cost analysis of integration of the UNICEF nutrition supply chain in Kenya. However, the study did not examine distribution partnerships on performance of firms and therefore, based on the above considerations, the present study sought to examine the distribution partnerships and performance of agrochemical production firms in Kenya.

1.3 Objective of the Study
The objective of the study was to examine the influence of distribution partnerships on supply chain performance of Agrochemicals production firms in Kenya.

1.4 Research Hypothesis
H01: There is no statistically significant influence of distribution partnerships on supply chain performance of Agrochemicals production firms in Kenya.

1.5 Significance of the Study
The findings of the present study are meant to be of benefit to all stakeholders in the agrochemical industry, the agricultural sector, investors, policy makers and academicians as well. The industry players in the agrochemicals industry mainly the producers and their association may use the findings to evaluate the strength of their networks and know how to competitively build and sustain networks. Other stakeholders may also be armed with crucial information regarding the agrochemical commodities and how their position in the value chain can help improve the networks. The policy makers are also intended to find the findings relevant in future decision making regarding the control and regulation of the sector. Finally, the academic community may find the outcome of this study instrumental in giving them insights into the theoretical foundations of the integrated supply chains and network theory from which they can base their future studies.

1.6 Scope of the Study
The study was delimited to the influence of optimization strategies on supply chain performance of agrochemical production firms in Kenya. In particular, the research examined one independent variable, namely distribution partnerships, in relation to the dependent variable of supply chain performance within agrochemical production firms in Kenya. The study obtained data from both primary and secondary sources. Primary data was obtained from the management and staff of 32 agrochemical firms in the country while secondary data was obtained from their
2.0 LITERATURE REVIEW

2.1 Theoretical Framework
2.1.1 Theory of Partnerships

The formal theory of partnerships was developed by McQuaid (2000) and advanced by Levin and Tadelis (2002). Modern economies exhibit a wide diversity of organizational forms: from closely held private firms to employee-owned partnerships and co-operatives to investor-owned corporations. A fundamental economic problem is to understand the forces that lead to these different forms of organization and hence determine the structure of productive enterprise in the economy. One striking puzzle in this regard is the distribution of partnerships relative to corporations across industries. While the corporate form dominates across manufacturing, technology and many service industries, partnerships have been prominent in human-capital intensive professional services such as law, medicine, investment banking, management consulting, advertising, and accounting (Levin & Tadelis, 2002).

The purpose of entering into a partnership may be to gain extra resources for an area, project or organization, to release synergy through collaboration and joining various types of resources, or to transform one or more of the partner organizations. This may include letting them act more entrepreneurially through loosening some constraints and introducing new ways of doing things which are more effective or efficient (see for instance: Mackintosh, 1992; Hastings, 1996). The implicit purposes of the partnership are also important. These may be to improve effectiveness or efficiency, to attract additional resources into the area, to manipulate one of the partners to supporting one’s activities, or to overcome local opposition. Profit-sharing leads individuals to be particularly selective as to whom they take on as partners. This feature of partnerships assures clients of quality service. Levin and Tadelis (2002) showed that as a result, if clients are concerned about quality and are in a relatively poor position to assess quality, then partnerships tend to be a preferable mode of organization relative to a profit-maximizing corporation.

Clearly issues such as how and by whom the components making up the overall remit are set are important. Differences in focus between partners are not necessarily mutually exclusive, although conflicts between aims are common and it is crucial for each partnership to be clear where its priorities lie (Huxham & Vangen, 2013). The focus of a partnership may hence range from being exogenous to being endogenous. In broad terms then a purely exogenously focused partnership may seek solely to attract extra resources from outside the partnership, while a purely endogenously focused partnership would seek only to maximize the efficient use of existing resources and the synergy between these resources. Of course, most partnerships will have a combination of these purposes, but the relative importance of each will vary (Pinz, Roudyani & Thaler, 2021).

Partnerships may also be strategic, covering the broad aims of the organizations and dealing with major long-term issues or project/programme driven, involving only specific programmes or projects (Pinz et al., 2021). For example, a partnership may seek to create and agree a broad development strategy for an area or it may be set up to develop and/or implement a particular project (such as the development of a business park). Linked to the strategic or project focus is...
the range of activities or programmes the partnership is involved in (Matthews et al., 2019). Partnerships will emerge under some market conditions but not others. In particular, the theory predicts that partnerships will emerge when human capital plays a central role in determining product quality and when clients are at a disadvantage relative to firms in assessing the ability of employees (Mofokeng & Chinomona, 2019). In general, partnerships can be argued to be an effective way of overcoming market imperfections that are caused by externalities. Although if the market imperfections are overwhelming and permanent, the product indivisible, economies of scale are large, externalities are enormous, information is bad or impossible, and the market becomes monopolistic then Lyons and Hamlin (1991, p.61) argue that the government should provide the good or service directly. The main advantages of partnerships can be grouped as: resource availability; effectiveness and efficiency; and legitimacy.

Bennett and Payne (2019), however, argue that the partnerships between agents may be unequal as it may be more important for one partner than the other(s) or one partner can coerce or mandate the others (for example through providing or witholding finance). This however, may cause considerable tensions as one body seeks to alter another’s priority. However, the presence of unequal power should not imply that all partners should necessarily have equal power (Clarke & MacDonald, 2019). Some may have greater legitimate claim, due for instance to their greater involvement in the area, or have greater political legitimacy in the case of elected bodies. Also, who should have equal power may be difficult to determine. Although there are different types of power, greatest power generally rests with those controlling resources.

The theory of partnerships was thus used in the study to provide insight into the aspects of distribution partnerships. Particularly, it sought to provide understanding on the balance of power in the partnerships and the leverage some partners could be enjoying relative to others as a result of their proximity to or control of resources in the agrochemical production network.

2.2 Conceptual Framework

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<td>Distribution Partnerships</td>
<td>Supply Chain Performance of Agrochemicals production firms in Kenya</td>
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<td>• Contract oriented</td>
<td>• Product Quality</td>
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<td>• Vertical collaboration</td>
<td>• Supply Chain Response Time</td>
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2.3 Empirical Review of Distribution Partnerships

Ogunlela and Lekhanya’s (2016) study on the use of integrated supply chain management model for promoting competitiveness in the fast-moving consumer goods (FMCG) manufacturing industry in Nigeria found that a positive factor contributing to implementation of an integrated SCM were; ICT implementation and use, business process, quality management process, production processes, procurement and sourcing process and stakeholder’s needs alignment. Negative factors contributing to implementation of an integrated SCM were; Staff training, Stakeholder’s collaboration, Forecasting, Operational issues and constraints. The study did not find evidence of augmented networks in the integration of the supply chains. The study also examined the manufacturing sector alone and other studies should be conducted in other areas.
Maloney et al., (2019) examined integration of the UNICEF nutrition supply chain using a cost analysis in Kenya. It found as a result of integration, within the two counties involved in the 10-week pilot period, 14% cost savings were obtained on transport, warehousing and staff costs, when compared with the pre-integration total cost structure, and 37% when extrapolated out to a year as initial capacity development (training) costs were spread over a longer period. When looking only at recurrent costs and not one-time investments in capacity development, cost savings increased to 42%. More of the costs post-integration were invested in capacity building activities to strengthen the Kenyan health system, as opposed to pre-integration when more costs went towards higher transportation costs. Besides the positive impact on costs and savings generation, integration increased the reliability of forecasting and reporting, improved communication and coordination across stakeholders, decreased stock-outs and strengthened the capacity of the health system.

The study conducted by Didia and Nwokah (2015) investigated the relationship between supply chain integration and business performance in the telecommunication industry in Nigeria. The findings of the study revealed that telecommunication companies in Nigeria recognize and value the importance of implementing effective and efficient supply chain strategies. However, further research is needed to explore other variables that may influence supply chain integration in different contexts, as well as to examine the impact of supply chain integration on various aspects of business performance. The telecommunication companies in Nigeria have a strong understanding of the significance of applying effective and efficient supply chain integration strategies to serve customers according to their preferences, resulting in increased market share. The study examined the perspectives of organizational actors regarding integrated supply chain and its impact on sales growth and customer satisfaction. However, the study lacked theoretical linkages to support its findings. Therefore, conducting similar research in different industries and cultural contexts would help determine whether similar or different outcomes can be achieved.

Mohamed-Udin and Zairi (2016) investigated the collaborative supply chain management framework from the planning stage. The study was premised on the observation that the planning stage of a CSCM framework incorporates issues of organization profile, internal functional strategy and supplier-customer strategy. The study revealed that the planning stage framework provides information specifically for designing a CSCM by focusing on the organization capability and business processes and discussed the important issues in planning a CSCM for business organizations, specifically for a manufacturing environment.

In their study, Matopoulos et al. (2017) conducted a conceptual framework analysis on supply chain collaboration within the agri-food industry. Through a case study approach and in-depth interviews with two Greek companies, the study highlighted the considerable importance of supply chain collaboration in the agri-food industry. However, the researchers also identified certain constraints that arise from the unique characteristics of the industry's products and the specific structure of the sector, collaboration in the supply chain is often limited to operational issues and to logistics-related activities. The study was, however, limited to a single case study and further qualitative testing of the conceptual model is needed in order to adjust the model before large scale testing.

In their study, Doganay and Ergun (2017) conducted research on the impact of supply chain collaboration on supply chain performance. They developed a conceptual model based on relevant theory, which served as a causal model and could be implemented using statistical analysis software such as the Statistical Package for the Social Sciences (SPSS). The researchers
put forth hypotheses suggesting positive relationships between supply chain collaboration (SCC) and supply chain performance (SCP), and these hypotheses were tested using regression analyses. SCC has significant and positive relation with SCP, which means SCC may help to increase organization’s SCP related with ultimate customer. The appetite for meeting and exceeding customers’ demands, achieving high customer satisfaction drives organizations from competition to collaboration. SCC is becoming more important than ever to achieve better performance in supply chain between partners. According to study results, SCC has positive effect on SCP. Organizations may increase the SCP by having SCC between supply chain partners.

Pradabwong et al. (2017) conducted a study on the effects of business process management and supply chain collaboration on performance and competitiveness. The researchers collected data from 204 manufacturing firms in Thailand and tested the proposed interrelationships within the framework using structural equation modeling. This study highlights the role of intra- and inter-organisational practices and clearly demonstrates the joint role and impact of BPM and SCC, respectively. The results provide empirical evidence that BPM improves both organisational performance and collaborative activities. Also, SCC and collaborative advantage can have indirect positive impacts on organisational performance.

Uma and Kim (2017) conducted a study to examine the effects of supply chain collaboration on performance and transaction cost advantage, specifically exploring the moderation and nonlinear effects of governance mechanisms. Data for the study were collected through a web survey administered to Korean manufacturing firms operating in various industry sectors. Confirmatory factor analysis was used to evaluate the unidimensionality, reliability, and validity of the survey, while hierarchical regression analysis was employed to test the hypotheses. The findings of the study revealed that supply chain collaboration has a positive impact on both firm performance and transaction cost advantage. It was further observed that firm performance is associated with transaction cost advantage. The results suggest that fostering supply chain collaboration can contribute to improved performance outcomes and cost advantages within the supply chain.

Al-Doori (2019) conducted a study to investigate the impact of supply chain collaboration on performance in the automotive industry, using empirical evidence gathered from the supply chain departments of automotive companies in Pakistan. The study collected data from 232 participants, including suppliers, manufacturers, and distributors. Data analysis was performed using factor analysis and multiple regressions conducted through SPSS. The findings of the study indicated that two supply chain management approaches, namely information sharing (IS) and joint decision making (JDM), had a significant positive effect on operational performance. However, the impact of Electronic Data Interchange (EDI) on operational performance was not found to be statistically significant. These results highlight the importance of information sharing and collaborative decision making in achieving improved operational performance within the supply chain. The study contributes to the existing literature by providing a theoretical perspective on the potential application of supply chain management practices to enhance operational performance.

Agyei-Owusu et al., (2016) carried out a study on the impact of supply chain collaboration on logistics performance using evidence from a Sub-Sahara Africa Nation’s petroleum downstream. The results showed relatively higher levels of external collaboration than internal collaboration among surveyed firms, even though internal collaboration had a stronger impact on a firm’s logistics performance. The study also revealed a positive impact of internal
collaboration on external collaboration. The study identified internal collaboration as an important variable deserving great attention by firms in the petroleum downstream. Barasa, Namusonge, and Iravo (2015) conducted a study to assess the impact of supply chain collaboration practices on the performance of steel manufacturing companies in Kenya. The findings of the study revealed that supply chain collaboration practices have a significant positive contribution to the performance of steel manufacturing companies in Kenya. The analysis, including correlation analysis and descriptive analysis, indicated a moderate positive correlation between supply chain collaboration practices and the performance of these companies. Therefore, it is recommended that steel manufacturing companies in Kenya prioritize and foster high levels of supply chain collaboration between suppliers and customers to enhance their competitive advantage and improve overall performance.

Berut (2020) examined the influence of supply chain collaboration on performance of dairy processing firms in Kenya. The study targeted 10,488 fresh milk suppliers and 13,906 customers of processed milk products who supply fresh milk to Kenya Cooperative Creameries Limited and customers of processed milk products buying at Nakumatt retail supermarket. The study adopted a mixed research design which covered qualitative and quantitative research. The study findings indicated that supply chain teamwork and mediating influence had the most significant impact on the performance of dairy processing firms. This was followed by the effect of supply chain incentive alignment, while supply chain information sharing had the least effect on the performance of dairy processing firms.

Mbaisi (2016) conducted a study on the factors influencing supply chain integration in large manufacturing firms in Kenya. The study's findings indicated the presence of strategic partnerships between these firms and their suppliers, with suppliers being involved in the development of firm values. Furthermore, the study found that manufacturing firms actively shared information with their suppliers to enhance quality and responsiveness, maintained long-term relationships with their suppliers, and sought quality assurance from them. Additionally, the study emphasized the importance of cross-functional integration in all supply chain initiatives. The study also concluded that supplier integration reduces the materials total costs, SCM integration has provided the organization ability to quickly and easily relate with suppliers. Further, SCM integration has assisted in improving the quality of goods, works and services offered to the beneficiary. The study recommended that further research on the impact and extent of integrated supply chain should be carried out on other manufacturing firms and services sector in Kenya and a cross sectional survey design used to compare and make generalizations.

3.0 RESEARCH METHODOLOGY

In the context of examining the influence of distribution partnerships on the supply chain performance of agrochemical production firms in Kenya, the research adopts a positivist philosophy, focusing on empirical verification and hypothesis testing. Grounded in Auguste Comte’s positivism, the study embraces the scientific method, statistical analysis, and generalizable findings to explore supply chain optimization strategies. Employing a descriptive cross-sectional survey design, the research targets the entire population of 32 registered agrochemical production firms in Kenya, with 96 individuals comprising management, procurement, and supply chain staff as the unit of observation. Convenience sampling is used due to the small, geographically dispersed population. Primary data is collected through structured questionnaires and interviews, with reliability and validity tests ensuring the
robustness of the instruments. The study adopts quantitative research methods, utilizing statistical analyses such as Pearson’s correlation and multiple regressions to examine the relationships between variables and the overall firm centrality of agrochemical firms.

4.0 DATA ANALYSIS AND INTERPRETATION

4.1 Response Rate
The high questionnaire response rate (87.5%) shown in Table 4.1 resulted from the method of administration of the instrument, which was in this case self-administered. This was acceptable according to Denzin (2017). This method also ensured that the respondents’ queries concerning clarity were addressed at the point of data collection; however, caution was exercised so as not to introduce researcher bias in the process. The other questionnaires were either not returned or were found to be unusable for the study; hence, their results were not included in the findings.

Table 4.1: Response Rate

<table>
<thead>
<tr>
<th>Target No. of respondents</th>
<th>No. of questionnaires Returned</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>96</td>
<td>84</td>
<td>87.5</td>
</tr>
</tbody>
</table>

4.2 Descriptive Statistical Analysis
The study carried out descriptive statistical analysis in order to establish the basic trends of the data and, consequently, form the basis for which other inferential statistical analyses could be carried out. This subsection describes the results arising from the descriptive statistical analysis.

4.2.1 Distribution partnerships on supply chain performance of agrochemicals production firms in Kenya
The second objective of the study was to determine the influence of distribution partnerships on supply chain performance of agrochemicals production firms in Kenya. The distribution partnerships variable was measured using three constructs, Contract oriented, Vertical collaboration and Horizontal collaboration. A five-point Likert scale was used to establish the levels of agreement of the respondents with the regards to the distribution partnerships of their agrochemicals production firm along these contracts and its influence on its supply chain performance and this formed the basis of quantitative data. The results are presented in Table 4.3.

Table 4.3: Distribution Partnerships of Agrochemical Production Firms

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
<th>Mean</th>
<th>Std.</th>
</tr>
</thead>
<tbody>
<tr>
<td>We have mutual commitment with our distributors on our supplies</td>
<td>5(6)</td>
<td>19(23)</td>
<td>17(20)</td>
<td>36(43)</td>
<td>7(8)</td>
<td>2.73</td>
<td>1.131</td>
</tr>
<tr>
<td>We have built mutual trust among our distributors</td>
<td>14(17)</td>
<td>47(56)</td>
<td>19(23)</td>
<td>2(2)</td>
<td>2(2)</td>
<td>3.84</td>
<td>0.824</td>
</tr>
<tr>
<td>We have created balance of power between cooperating</td>
<td>5(6)</td>
<td>23(27)</td>
<td>38(45)</td>
<td>13(15)</td>
<td>6(7)</td>
<td>3.28</td>
<td>0.934</td>
</tr>
</tbody>
</table>
firms

We do not have pecking orders between us and our distributors

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (%)</td>
<td>9(11)</td>
<td>46(55)</td>
<td>18(21)</td>
<td>9(11)</td>
<td>2(2)</td>
</tr>
<tr>
<td>Mean Rating</td>
<td>3.62</td>
<td></td>
<td></td>
<td></td>
<td>0.859</td>
</tr>
</tbody>
</table>

We have legally recognized arbitrators for conflict management with our distributors

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (%)</td>
<td>16(19)</td>
<td>16(19)</td>
<td>1(1)</td>
<td>41(49)</td>
<td>10(12)</td>
</tr>
<tr>
<td>Mean Rating</td>
<td>2.66</td>
<td></td>
<td></td>
<td></td>
<td>1.098</td>
</tr>
</tbody>
</table>

We often try to anticipate conflict between us and our distributors and mitigate it in good time

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (%)</td>
<td>13(16)</td>
<td>18(21)</td>
<td>35(42)</td>
<td>4(5)</td>
<td>14(17)</td>
</tr>
<tr>
<td>Mean Rating</td>
<td>2.51</td>
<td></td>
<td></td>
<td></td>
<td>1.052</td>
</tr>
</tbody>
</table>

**Aggregate Score**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (%)</td>
<td>3.107</td>
</tr>
<tr>
<td>Mean Rating</td>
<td>0.983</td>
</tr>
</tbody>
</table>

Table 4.3 shows that the aggregate mean = 3.107; SD = 0.983 was low indicating that there was low agreement and high variation regarding the distribution partnerships among agrochemical production firms in Kenya. However, 43% of the respondents disagreed with a mean of 2.73 that their firms had mutual commitment with their distributors on supplies. There were indications, however, that most of the firms had built mutual trust among their distributors as indicated by 56% of respondents with a mean of 3.84. With 45% of the respondents and a mean of 3.28, there was a notable level of uncertainty regarding whether the agrochemical production firms had established a balance of power with the cooperating firms in their supply chain. A majority of the respondents (55%) indicated that there were no pecking orders between them and their distributors, with a mean rating of 3.62. This implies that the distribution priorities were not determined based on factors such as the leverage or influence held by certain firms within the supply chain. The findings suggested that within the agrochemicals production supply chain, a significant number of firms did not have legally recognized arbitrators for conflict management with their distributors. This was indicated by 49% of the respondents, with a mean rating of 2.66. Furthermore, there was uncertainty regarding whether the firms proactively anticipated conflicts with their distributors and took timely measures to mitigate them. This was indicated by 42% of the respondents, with a mean rating of 2.51.

### 4.2.2 Descriptive Statistics for Project Implementation

#### 4.2.6 Supply chain performance of agrochemicals production firms in Kenya

The study also aimed to determine the current status of supply chain performance among agrochemicals production firms in Kenya. This variable was measured using constructs such as Customer Satisfaction, Product Quality, Order-To-Delivery Lead Time, and Supply Chain Response Time. To assess the levels of agreement among the respondents regarding the supply chain performance status of their agrochemicals production firm across these constructs, a five-point Likert scale was utilized. The results of this analysis are presented in Table 4.7.

**Table 4.7: Performance Status of Agrochemical Production Firms in Kenya**

<table>
<thead>
<tr>
<th>Statement</th>
<th>SA Freq(%)</th>
<th>A Freq(%)</th>
<th>N Freq(%)</th>
<th>D Freq(%)</th>
<th>SD Freq(%)</th>
<th>Mean</th>
<th>Std.</th>
</tr>
</thead>
<tbody>
<tr>
<td>We do not have pecking orders between us and our distributors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We have legally recognized arbitrators for conflict management with our distributors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>We often try to anticipate conflict between us and our distributors and mitigate it in good time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The levels of customer satisfaction in our supply chain is high.

<table>
<thead>
<tr>
<th></th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>All customer concerns are always addressed in a timely manner in our supply chain</td>
<td>2.92</td>
</tr>
<tr>
<td>The product quality in our supply chain is high</td>
<td>3.39</td>
</tr>
<tr>
<td>Building efficiencies have helped reduce the levels of rejected or unusable products in our supply chain</td>
<td>3.38</td>
</tr>
<tr>
<td>The configuration of the supply chain has enabled us to obtain better lead times</td>
<td>2.71</td>
</tr>
<tr>
<td>The order to delivery times have been reduced considerably leading to higher performance outputs</td>
<td>2.87</td>
</tr>
<tr>
<td>The supply chain response time has improved in the last five years</td>
<td>3.22</td>
</tr>
<tr>
<td>We have been able to achieve most of our performance targets in good time</td>
<td>3.52</td>
</tr>
</tbody>
</table>

**Aggregate Score**

|            | 3.05 | 1.008 |

Table 4.7 shows that the aggregate mean is $M = 3.05$; $SD = 1.008$, the mean is low and the standard deviation is higher than 1. This implies that there were high variations in the performance of the agrochemical production firms in the country, the low means also suggest that few people agreed on whether the firms were performing well. The findings strongly suggest that the levels of customer satisfaction within the agrochemical supply chain were relatively low. This is supported by the fact that a significant percentage of respondents (30% strongly disagreed, 36% disagreed) expressed their dissatisfaction with a mean score of 2.41. The lack of high customer satisfaction could be attributed to the observation that many respondents disagreed with the notion that all customer concerns are promptly addressed in the supply chain (9% strongly disagreed, 38% disagreed) with a mean score of 2.92. However, the majority of respondents agreed that the product quality within the supply chain was high. This is evident from the fact that 11% strongly agreed and 51% agreed with a mean score of 3.39.
Additionally, it was indicated by a significant proportion of respondents (23% strongly agreed, 43% agreed with a mean score of 3.38) that there were positive perceptions regarding certain aspects of the supply chain performance. The findings clearly indicate that implementing efficiencies has been effective in reducing the quantity of rejected or unusable products within the supply chain. However, a majority of the respondents expressed disagreement regarding the configuration of the supply chain enabling their firms to achieve better lead times. This is evidenced by only 6% of the respondents strongly agreeing and 54% agreeing, with a mean score of 2.71. The majority of the respondents expressed disagreement regarding a considerable reduction in order-to-delivery times within the supply chain, which in turn would lead to higher performance outputs of the firms. This is evident from 11% strongly disagreeing and 44% disagreeing. However, there were indications that the supply chain response time had improved over the past five years, with 21% strongly agreeing and 30% agreeing. Additionally, most firms had been able to achieve their performance targets within the designated timeframes, as indicated by 19% strongly agreeing and 46% agreeing, with a mean score of 3.52.

4.3.6.1 Secondary Data

The study also sought to establish the Performance of Agrochemical Producing Firms in Kenya. The summary of performance is given in Table 4.8.

<table>
<thead>
<tr>
<th>Chemical Industry</th>
<th>Size (USD Billions)</th>
<th>CAGR</th>
<th>Demand Product Value Sales</th>
<th>Demand Product Volume Sales</th>
<th>Supply Domestic Production</th>
<th>Supply Exports</th>
<th>Supply Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Size</td>
<td>5.83</td>
<td>4.90%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand</td>
<td>0.232</td>
<td>5.10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Product Volume Sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply</td>
<td>6.00%</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.8 shows that the compound annual growth rate (CAGR) across all the parameters of performance of the agrochemical supply chain was less than 10%. The study reveals that the overall performance of the agrochemical production industry in Kenya is relatively low. Furthermore, it is evident that imports significantly outperformed exports by a factor of 8. These findings highlight the crucial role of positioning the agrochemical supply chain within the global supply chain to enhance its strength.

The results also indicate mixed perspectives on the supply chain performance of agrochemical production firms in Kenya. The current configuration of the supply chain was found to be suboptimal, resulting in challenges such as the inability to address customer concerns promptly. These factors contributed to a loss of lead times, increased order-to-delivery times, and lower performance outputs within the supply chain. The ineffective configuration of the supply chain has led to a decline in customer satisfaction. The agrochemicals production supply chain also exhibited poor product quality. However, efforts to improve efficiencies within the supply chain have resulted in an increase in the supply chain response time over the past five years, leading to a reduction in rejected or unusable products. Despite these improvements, the overall supply chain performance of agrochemical production firms in Kenya remains low. These findings are
consistent with AAK (2015) which reported that distributors in the agrochemical supply chain are at liberty to sell various suppliers products to any customer and thus were able to sometimes substitute products with substandard products or adulterated products. The report noted that in the course of business, distributors had been known to adulterate crop protection products so as to maximize profit. Besides sometimes tampering with the physical product, distributors and stockists add a markup on cost of 7% and 8%, respectively on top of the recommended prices (Agrochemicals Association of Kenya, 2015). This ideally adds to the prices of the products makes the products less competitive and results in reduced usage of pesticides, compromising yields (Achuora & Gatumbo, 2011). This ultimately affects customer satisfaction negatively.

4.4.2 Distribution partnerships on supply chain performance of agrochemicals production firms in Kenya

In relation to distributor partnerships, the study specifically sought to find out whether the firms have mutual commitment with your distributors in the agrochemical supply chain and also how they manage conflict with distributors in the agrochemical supply chain. The responses were then captured verbatim and presented as follows.

**Does your firm have mutual commitment with your distributors in the supply chain?**

**Absolutely, our firm has secured commitments with our distributors in the agrochemical supply chain**

**Yes, we have mutual commitments with our distributions but I cannot say they are 100% reliable**

**Our firm does not really prefer mutual commitments rather we prefer contractual agreements**

**The firm does have mutual commitments with its distributors, though sometimes we have to look for other options**

**I think the current arrangement with our distributors is working out well**

**The distributors have actually proposed we have a contractual working term rather than a simple mutual agreement**

**How do you manage conflict with distributors in the supply chain?**

**We have not had any serious issue with our distributors so far**

**We usually engage legally recognized arbitrators whenever we have conflict with our distributors**

**Our firm’s legal team handles any dispute arising with our distributors**

**We have been to courts a couple of times with our distributors but we seldom want to pursue that route again. We are instead exploring other options for managing conflict with our distributors**

**The agreements we have with our distributors are usually reviewed periodically and where possible we negotiate new terms. For example, we appreciate the rising costs of fuel and other logistics after the Covid-19 pandemic and it is important we factor that in our existing contracts**

**Our agreements with our distributors are usually done on mutually agreeable terms and our distributors can pull out only after consultations with our team**

**The arrangements we have with our distributors are mutually enforceable**

These reactions were then coded and analyzed to show the weighty issues regarding the Distribution partnerships on supply chain performance of agrochemicals firms and tabulated in Table 4.16.

**Table 4.16: Distribution partnerships on supply chain performance of agrochemicals firms**
Looking at Table 4.16, it is evident that most of the respondents stressed the need for mutual commitment \( (i=0.3) \) and agreement \( (i=0.18) \) as evidenced by their high relevance indexes compared to other constructs in the table. The high relevance scoring of conflict, options and terms also underscored the need for distribution partnerships among the agrochemical production firms. Other important issues raised were the need for the legally recognized arbitrators as well as working under agreeable terms.

### 4.4.6 Supply chain performance of agrochemicals production firms in Kenya

In this regard, the respondents were asked questions relating to the proximity of their firm to other firms in the agrochemical supply chain and also the visibility of their firms to other firms in the agrochemical supply chain. The responses were then captured verbatim and presented as follows.

**What are your views about the effect of Covid-19 on the effectiveness of integration and optimization on performance of your supply chain?**

Covid-19 has significantly affected our supply chain negatively. The pandemic affected air travel considerably and therefore most of the cargo was redirected to ships and trucks. This means there is less space now in ships and trucks than was the situation previously.

Well, I can say the pandemic reconfigured our supply chain levels of integration. The result is the supply chain has become more integrated and we are beginning to realize the fruits.

The pandemic fragmented the global supply chain and also affected our local suppliers and distributors. While as a counteractive measure we have tried to be integrated, the levels of optimization are still low.

The levels of supply chain integration actually increased with the Covid-19 pandemic due to the much emphasis on technology applications. I am beginning to see more optimized performance.

**What performance challenges do you face in your supply chain?**

Delays, some very unnecessary

Shipping delays

Costs of shipping

Poor cooperation with some supply chain members

A weakening currency against the dollar meaning more expenses on our side

Delays in shipment
Visibility of other supply chain members
Changes in contractual terms
I think the Covid-19 pandemic fragmented the global supply chains considerably and some members are still yet to recover. This means we have to source new member and ensure they are reliable
Counterfeiting and lack of traceability

Table 4.20: Supply chain performance of agrochemicals firms

<table>
<thead>
<tr>
<th>Word</th>
<th>Count</th>
<th>Relevance Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Supply Chain</td>
<td>2</td>
<td>0.82</td>
</tr>
<tr>
<td>Supply Chain Member</td>
<td>2</td>
<td>0.82</td>
</tr>
<tr>
<td>Covid-19 Pandemic</td>
<td>2</td>
<td>0.72</td>
</tr>
<tr>
<td>Supply Chain</td>
<td>2</td>
<td>0.72</td>
</tr>
<tr>
<td>Delay</td>
<td>2</td>
<td>0.57</td>
</tr>
<tr>
<td>Ship</td>
<td>2</td>
<td>0.57</td>
</tr>
<tr>
<td>Truck</td>
<td>2</td>
<td>0.57</td>
</tr>
<tr>
<td>Level Of Supply Chain Integration</td>
<td>1</td>
<td>0.32</td>
</tr>
<tr>
<td>Lack Of Traceability</td>
<td>1</td>
<td>0.27</td>
</tr>
<tr>
<td>Aggregate</td>
<td></td>
<td>0.598</td>
</tr>
</tbody>
</table>

Table 4.20 shows that most of the respondents were of the view that global supply chain had affected the performance of the agrochemical supply chain in Kenya ($i=0.82$). This was because of covid-19 pandemic ($i=0.72$), shipping delays ($i=0.57$) as evidenced by their high relevance indexes compared to other constructs in the table. Other important issues raised were that the level of level of supply chain integration would increase performance and improve traceability. These responses underscore that supply chain performance of the agrochemical supply chain was promising but faced significant challenges especially during and after the covid-19 pandemic.

4.6 Inferential Statistical Analysis
The study carried out inferential statistical analysis to establish the relationships between the independent variable and the dependent variable and also to test the hypothesis postulated for the study. The section, therefore, presents the diagnostic tests which were used to estimate and validate the regression models. The section also contains the bivariate regressions, multivariate regressions and test of hypothesis. These are discussed as follows. The study investigated the bivariate relations between the independent variable and dependent variable. Each independent variable was regressed against the dependent variable and the models assessed. Joint models based on the constructs of each independent variable were also assessed.

4.6.2 Distribution partnerships on supply chain performance of agrochemicals production firms in Kenya
The findings in Table 4.27 shows the three regression models based on the three constructs; Contract oriented ($X_{21}$), Vertical collaboration ($X_{22}$) and Horizontal collaboration($X_{23}$).

Table 4.27: Bivariate Regression Models for Distribution Partnerships $X_{21}$, $X_{22}$ & $X_{23}$

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Contract oriented</th>
<th>Vertical collaboration</th>
<th>Horizontal collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.672</td>
<td>9.4</td>
<td>18.063</td>
</tr>
</tbody>
</table>
The findings show that two of the models of distribution partnerships, that is, Contract oriented (X21) ($\beta = 0.276; p > .05$), Vertical collaboration (X22) did not exhibit a significant correlation with the supply chain performance of Agrochemical Production firms in Kenya ($\beta = 0.297; p > .05$). On the other hand, Horizontal collaboration (X23) showed a significant positive relationship with supply chain performance ($\beta = 0.322; p \leq .05; t = 3.28$). This suggests that among the three constructs of distribution partnerships, only Horizontal collaboration had an explanatory effect on supply chain performance. Therefore, it can be considered as a suitable predictor for supply chain performance within the context of distribution partnerships. The models for Contract oriented (X21) and Vertical collaboration (X22) were not found to be significant. As a result, only one linear model emerges as a predictor of supply chain performance for Agrochemical production firms.

Model 1: $Y = \beta_0 + \beta_1 + e$
Supply Chain Performance = $18.063 + 0.322 X_{23} + e$

Subsequently, a joint regression model for the relationship between firm centrality and supply chain performance was tested.

**Table 4.28: Joint Regression for Distribution Partnerships on Supply Chain Performance**

<table>
<thead>
<tr>
<th>Statistic/Variable</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>15.853</td>
<td>7.994</td>
<td>1.983</td>
<td>0.044</td>
</tr>
<tr>
<td>Distribution Partnerships</td>
<td>0.162</td>
<td>0.658</td>
<td>0.114</td>
<td>0.094</td>
</tr>
<tr>
<td>R²</td>
<td>0.013</td>
<td>F-statistic</td>
<td>3.053</td>
<td></td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.010</td>
<td>P-value</td>
<td>.079</td>
<td></td>
</tr>
<tr>
<td>Std. Error of the Estimate</td>
<td>3.39144</td>
<td>Df</td>
<td>1.82</td>
<td></td>
</tr>
</tbody>
</table>

The joint regression model in Table 4.16 shows that the model could not significantly explain the variations in the supply chain performance of Agrochemicals production firms in Kenya. The F-Statistic for the joint model was not statistically significant ($F_i = 3.053 > F_c = 3.92$; d.f = 1,82; $p = 0.079 > 0.05$) which implies that the joint model of distribution partnerships with (X21),
Vertical collaboration (X22) and Horizontal collaboration (X23) lacked fit and, therefore, did not have significant explanatory power for supply chain performance of Agrochemicals production firms in Kenya. Table 4.16 further shows that Distribution Partnerships beta was not significant as per the regression model (β = 0.114; p >.05), however, constant value is significant. This shows that there were other predictors which were not included in the model that could explain the Supply Chain Performance of the Agrochemicals production firms in Kenya based on the joint model.

The beta values from the regression analysis were utilized to examine the hypothesis H01: which states that Distribution Partnerships do not have a significant impact on the supply chain performance of Agrochemical production firms in Kenya. The results presented in Table 4.40 indicate that there is no significant relationship between the two variables, as evidenced by the beta value of -0.181 and a p-value greater than .05. Consequently, the null hypothesis is accepted, supporting the viewpoint that distribution partnerships does not have a significant relationship with supply chain performance of Agrochemical production firms in Kenya.

4.8 Discussions of Distribution partnerships on supply chain performance of agrochemicals production firms in Kenya

The findings indicated that there was uncertainty on the effect of distribution partnerships on supply chain performance of agrochemical production firms in Kenya. Therefore, there are indications that there was lack of collaboration on distribution between the agrochemical firms and their distributors. The findings fail to agree with other previous studies, for example, Mangano et al., (2021) and Guo et al., (2019) whose studies underscored the power of distribution partnerships on supply chain performance. According to Hand (2021) finding a distribution partner is the next step in the company’s growth journey. While this idea may be intimidating, the right distribution partner can increase your sales and revenue, free up more of company time, cut costs, and help the business enter new markets and channels as it grows. Albats, Podmetina and Vanhaverbeke (2021) also asserts that distribution partnerships help businesses achieve new markets entry and channels growth quickly, and within the required standards affordably.

The findings also indicate that most agrochemical production firms in Kenya did have mutual commitment with their distributors on supplies and had built mutual trust among their distributors. This was also evidenced by responses to the interviews, such as:

Yes, we have mutual commitments with our distributions but I cannot say they are 100% reliable
Our firm does not really prefer mutual commitments rather we prefer contractual agreements
The firm does have mutual commitments with its distributors, though sometimes we have to look for other options

This finding is consistent with a study conducted by Ikhwana (2018) in the context of supply chain management in the coffee industry. The study emphasized the importance of mutual commitment among supply chain actors, particularly in determining product quality standards and quantities, to ensure the long-term sustainability of business activities in the supply chain. Similarly, the findings of this study highlight the significance of building mutual trust within agrochemical supply chains in Kenya, the observation that the firms were actively building trust with their distributors concurs with Ryu, So and Koo (2009) whose study found that mutual trust is crucial to reassuring firms that information shared with a partner will not be used against
Long-term commitment to the partnerships encourages firms to invest in further improvement of the joint supply chain to mutual advantage.

However, the study revealed that there was no evident balance of power among the cooperating firms in the supply chain, indicating the absence of clear pecking order relationships. Consequently, the distribution priorities were not influenced by factors such as the leverage exerted by certain firms within the supply chain. These findings align with the research conducted by Ibishukcu and Datar (2016), who explored the dynamics of power relations in supply chains and found that there is a widespread recognition of the consequences associated with enforcing power in supply chain relationships. However, their findings based on the qualitative study showed that, as long as supply chain members are aware of this situation, usage of power can be averted to a certain extent. Therefore, this could inform the neutered power relations in the agrochemical supply chain in Kenya.

Contrarily, these findings are in contrast to the research conducted by Kähkönen (2014) on the impact of power position on collaboration depth in supply chains. Kähkönen's study revealed that power relations among network actors do indeed influence the nature of their relationships. According to Kähkönen (2014), it seems that power influences the depth of collaboration, which is minimal if the actors do not have balanced power positions. The results also indicated that the role and position in the network may crucially determine the character of the power relations if the actors are otherwise in balanced positions. According to Ibishukcu and Datar (2016) power can serve as a factor that influences one member of the supply chain to engage in activities that they may not otherwise agree to voluntarily. These power relations between the supply chain members need to be sustained under circumstances of whether the power is balanced or not balanced between the two actors.

There were indications that most firms in the agrochemicals production supply chain did not have legally recognized arbitrators for conflict management with their distributors. There was also uncertainty on whether the firms often try to anticipate conflict with their distributors and mitigate it in good time. There were indications from the interview that arbitration was not the only dispute resolution option used by the supply chain members as evidenced by the statements:

- We have been to courts a couple of times with our distributors but we seldom want to pursue that route again. We are instead exploring other options for managing conflict with our distributors
- Our agreements with our distributors are usually done on mutually agreeable terms and our distributors can pull out only after consultations with our team
- The arrangements we have with our distributors are mutually enforceable
- Our firm’s legal team handles any dispute arising with our distributors

However, there was one firm in the interviews that indicated it used arbitration in dispute resolution:

- We usually engage legally recognized arbitrators whenever we have conflict with our distributors

Baker, Dowling and Proudfoot (2021) observe that international arbitration is a tried and tested method for resolving supply chain disputes efficiently and effectively. It offers a neutral forum that can be adapted to the needs of the parties and results in a binding award enforceable in most jurisdictions. Arbitration also works well as part of a tailored mechanism that incorporates other alternative dispute resolution procedures (ADR). Such bespoke options can be especially
important where time is of the essence or the supply chains are essential. It can be very important that the supply chain continues to operate during the dispute to minimise loss. Athanasakis (2014), however, found that the parties will be more inclined to embark upon arbitration at the end of the project phase, and that arbitration as a “cyclical” or “counter-cyclical” dispute resolution regime

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Study
There were indications that distribution partnerships among agrochemical production firms in Kenya was low and were characterized by low mutual commitment with their distributors on supplies. There were indications, however, that most of the firms had built mutual trust among their distributors. Also, there was uncertainty on whether there was balance of power with cooperating firms in the supply chain. Majority of firms did not establish pecking orders with their distributors, indicating that distribution priorities were not influenced by factors such as the leverage held by certain firms within the supply chain. There were indications that the firms in the agrochemicals production supply chain did not have legally recognized arbitrators for conflict management with their distributors. There was also uncertainty on whether the firms often try to anticipate conflict with their distributors and mitigate it in good time. Contract oriented (X₂₁) and Vertical collaboration (X₂₂) did not show significant correlations with supply chain performance of the firms of Agrochemical Production firms in Kenya. Horizontal collaboration (X₂₃) had a positive linear relationship with supply chain performance of the Agrochemical production firms as shown by its beta– value suggesting that it was the only predictor among the three constructs of distribution partnerships with explanatory effect on supply chain performance of the Agrochemical production firms. Therefore, it was the only predictor with a good fit and could be used as predictors of supply chain performance as per distribution partnerships. However, a joint regression model for the relationship between firm centrality and supply chain performance of Agrochemicals production firms in Kenya was not statistically significant which implies that the joint model of distribution partnerships with Contract oriented (X₂₁), Vertical collaboration (X₂₂) and Horizontal collaboration (X₂₃) lacked fit and, therefore, did not have significant explanatory power for supply chain performance of Agrochemicals production firms in Kenya.

5.2 Conclusions of the Study
Based on the findings, it can be concluded that the impact of distribution partnerships on the supply chain performance of Agrochemicals production firms in Kenya was not significant. This conclusion is supported by the results of the univariate analysis, which indicated that distribution partnerships did not have a significant influence on the supply chain performance of the agrochemicals production firms. There were indications that distribution partnerships among agrochemical production firms in Kenya was low and were characterized by low mutual commitment with their distributors on supplies. There were indications, however, that most of the firms had built mutual trust among their distributors. Also, there was uncertainty on whether there was balance of power with cooperating firms in the supply chain. Most did not have pecking orders between them and their distributors. This meant that the distribution priorities were not informed by the considerations such as the leverage some firms commanded in the supply chain. There were indications that the firms in the agrochemicals production supply chain did not have legally recognized arbitrators for conflict management with their distributors. There
was also uncertainty on whether the firms often try to anticipate conflict with their distributors and mitigate it in good time.

5.3 Recommendation of the Study
The study also recommends that there is need for the firms in the agrochemical supply chain in Kenya to strengthen their distribution partnerships. This the management can do by improving mutual commitment with their distributors and suppliers. Distributors provide an important supply chain linkage to other members in the lower consumer or retail chain of the supply chain. Moreover, it is crucial for the management of the agrochemical supply chain to proactively anticipate and address potential conflicts with their distributors. Taking proactive measures to identify and mitigate conflicts in a timely manner can help maintain smooth and harmonious relationships within the supply chain.

5.4 Areas for Further Research
To advance the understanding of the agrochemical sector, future research should focus on investigating the effect of distribution partnerships on organizational performance. Further research endeavors should also explore the mediating role of artificial intelligence in the relationship between distribution partnerships and firm performance specifically in the agrochemical sector in Kenya. Investigating this aspect will shed light on how artificial intelligence can act as a mediator, influencing the extent to which distribution partnerships strategies impact the overall performance of agrochemical firms. Such studies would provide valuable insights into the potential benefits and implications of integrating artificial intelligence technologies in distribution partnerships, thereby aiding in the formulation of informed strategies and decision-making processes within the industry.

REFERENCES


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