Food Security Realization in Kenya: Strategic Supplier Partnership and Operational Efficiency in Engaging Agricultural Food Authority

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Abstract

The Kenyan Government launched Food security as one of the Big Four Agenda which, with the contribution of the food supply chain participants, mainly focuses on eradicating the perennial Food security that has been transmuting the Kenyan population for a long time. Thus, this study's development focuses on the replication of regime initiative through the adoption of the strategic supplier partnership resilience concept, with the position of postulating the best practices to drive operational efficiency along the food chain. The study-concrete target examines the direct contribution of supplier evaluation, supplier segmentation and supplier development which, via using literature review and development of resilience framework, can be Anchorage in the Food Supply Chain for operational efficiency. The 380 respondents who participated in the study were captivated by the directorates undertaking operations through the governance of the Agriculture Food Authority in Kenya. The structured questionnaires were developed and administered to employees for data collection. Inferential data was subjected to multiple regressions statistical approach to determine the study results. The cause-effect results affirmed that the three strategic supplier partnership constituents namely; supplier evaluation, supplier segmentation and supplier development were positive and significant predictors of the operational efficiency model derived in the study is congruous for fostering food security and

thus enhancing perpetual food chain improvement. This could elevate the operational efficiency of the Agriculture Food Authority in the realization of food stability. The paper is of scholarly value and engenders value integration to policymakers and extensively practitioners in the food supply chain industry.

Keywords: Operational Efficiency, Food Security, Supplier Partnership, and Supply Chain

Introduction

Sustenance of competitive advantage remains the focal point among organizations looking to withstand pressures experienced by the effect of globalization (Liao & Hu, 2007). Strategic Management decisions are often informed by a desire to remain competitive (King, 2007). Supply chain management is seen as a key agent in unlocking the competitive ability inherent in organizations (Jain et al., 2010). The supply chain concept is also identified as the value chain, as the primary activities that dwell on sales, operations, service, and marketing, in bounds and out bounds. Prior to Arora's definition of the value chain, Kaplinsky and Morris (2012), had earlier on defined the value chain as an organization of services focusing on service and product flow. In essence, the supply chain can be looked at as a conglomerate of actions overseeing the flow of services and products right from conception to disposal and which can impact operational efficiency.

Proper utilization of supply chain practices is envisaged as being crucial for operational efficiency and by extension, achievement of food security. Indeed, evidence in the extant literature shows a rising concern in supply chain management as a sure plan of harnessing customer satisfaction and remaining competitive (Blome et al., 2014). Supply chain practices like supplier evaluation, supplier segmentation and supplier development are featuring more and more in relation to value creation and improved buyer-supplier relationships (Dachyar & Maharani, 2019).

Strategic supplier partnership also features in the extant literature as a critical supply chain practice. According to Setia and Patel (2013), and supported by Jin et al (2014), the supplier-partner relationship significantly predicts the performance of the wood industry in Croatia. However, in the same study by Zekic and Samarziya (2017) on the wood industry, information technology appeared not to significantly influence wood cluster performances. The implication here is that there is no guarantee that supply chain practices will achieve similar successes in all contexts.

Interest in the central function of supply chain practices permeates the African continent. Sub-Saharan Africa's trade experiences have reportedly expanded rapidly as a result of openness and strategic partnerships (Regional Economic Outlook report, REO, 2015). It is argued that the forging of new trade partnerships with countries such as India, Brazil, and China has coincided with the rapid expansion of the continents' trade experiences (REO, 2015).

Interest in supply chain practices in the Kenyan context has been buoyed by the perceived upgrade in the performance of organizations as a consequence of integrated supply chain harmonization (Kimotho, 2014; Muma et al., 2014). Mulwa (2015) for instance, found out that the incorporation of information and communication technology (ICT) systems, information sharing, customer relations and human resources were important supply chain practices in organizational performance. Moreover, Omai (2013) identifies information sharing, supply chain integration and partner relationships possess the potential to effective supply chains in

the sugar industry. The list of practices connected with the sugar supply chain concurring with the same study by Bushuru, Namusonge et al (2014) adds technology adoption and supplier participation. The impact of supply chain practices has also been so featured in studies focusing on the performance of the public sector in Kenya.

The array of studies highlighted reinforces and highlights practices that are relevant for the successful implementation and use of supply chains in diverse sectors. Of concern however, is the fact that although attempts are made to examine slants of the agricultural supply chains sector for example the sugar supply chain industry, none of the studies focuses directly on the complex nature of this chain in its totality for supplier evaluation, supplier segmentation and supplier development which pose great danger to small scale farmers in Kenya. This paper therefore examines strategic supplier partnership practices that were once exploited to sustain operational efficiency and foster food security in Kenya.

Literature Review
Theoretical Framework

The study was based on Social Network Theory (SNT) and Transaction Cost Economics Theory (TCE).Emile Durkheim and Ferdinand Tonines were the proponents of the idea of social networks in their research on social groups in the late 1890s. In their view, social groups could prevail as personal and firsthand social ties connecting individuals with common values and beliefs. Scott (2000 as cited in Chung, & Crawford, 2016) defines a social network as a tie between one or more actors. Such actors whether groups of people, individuals or organizations often come together for the purpose of confronting common issues (Chung, 2011). Freeman (1979, as cited in Liu et al., 2017) argues that centrality, structural equivalence and cohesion are key facets emanating from networks. He views structural centrality composed of closeness, degree, and togetherness as a crucial element in the sustenance of networks.

The social networks theory has been used to show the existence of positive relationships between the formation of networks and organizational performance (Ylinenpaa, 2009). Besides, networking elements that include alliances and collaborations are rereported to be cost-effective (Stam & Elfring, 2008). Adomako et al (2017) have in the recent past demonstrated that networks amplify the potency of entrepreneurial alertness which raises chances of organizational success.

The study perceives strategic supplier partnerships as social structures bringing together individuals and organizations in dyadic ties, and involving social interaction among them. A comprehension of the function of strategic supply partnerships and their impact on organizational efficiency was enhanced by underpinning it in the social network theory. Indeed, Kiprotich et al (2015), conclude that social networks moderate the relationship between pro-activeness and performance. The implication here is that strategic partnerships are an important supply chain practice that can elevate performance to higher levels.

The Transaction Cost Economics (TCE) theory was used for the purpose of clarifying the relationship between supply chain practices and operational efficiency. Wever et al (2012) identify TCE as part of the most influential theories in inter-firm collaboration. They argue that the minimization of production costs and transaction costs should be the focus when undertaking organizational activities. Moreover, Kaufman et al., (as cited in Cao & Zhang, 20 pointing out that TCE ensures that the choice of market mechanisms or vertical integration should be informed by relative monitoring costs.

An understanding of the need for operational efficiency in the Agriculture and Food Authority could therefore be informed by endeavors that this institution undertakes to minimize production costs and which could best be understood from the TCE perspective. Dhillon et al (2012) picture operational efficiency as the profitable and prudent application of resources within reach of the organization. This is of course one way of optimizing resources and therefore falls in the realm of the TCE perspective.

Strategic Supplier Partnership
Strategic supplier partnership is viewed by scholars as the long-term coming together of firms involved in a supply chain for purposes of facilitating concerted efforts directed towards value creation activities like market sales, product development research, manufacturing, and distribution with a view to minimizing cost of acquiring, possessing, and disposing services and goods (Li et al., 2006; Maheshwari et al., 2006). According to Stuart (as cited in Arawati et al (2008), strategic supplier partnership aims at pooling operational capabilities among organizations in order for them to reap significant benefits.

Lee, Padmanabhan and Whang as cited in Banchuen et al (2017) point out that supplier possess capabilities that are essential to a firm's desire for competitive advantage and therefore advocate for firms to forge strategic alliances with suppliers in order to tap into those capabilities. Kanda and Deshmukh (2008), caution that the orientation of the collaborations between the two parties, must take cognizance of individual firm's strategic perspectives. Leuschner et al (2013) add that strategic supplier partnerships enable an assimilation of tasks that are required to oversee the flow and transformation of information, goods and funds. Moreover, such partnerships lead to improved relationship among the supply chain players.

The basic tenet behind strategic supplier partnerships is the recognition that in today's competitive business setting, it would be folly for a firm to go it alone owing to the increased demands of customers and intense competition (Leuschner et al., 2013). Trust is seen as a key facet of strategic suppler partnership. According to Lawson, Tyler and Cousins (2008), relational capital is a function of relational embeddedness. Trust is therefore perceived as an important element of relational capital given that it is the fixed glue that inter-firm relationships require. Consequently, trust is seen as the enabler of continued collaborations and relationships between suppliers and firms (Leuschner et al., 2013).

Power elicited among partners is also perceived as an important attribute that influences strategic partnerships. It is argued that irrespective of the intention, power informs the distribution of duty and how accruing benefits should flow between partners (Srinivasan et al., 2011). Srinivasan and colleagues further note that the level of synergy exhibited by supply chain partners ranks as a top pre-requisite for supply chain partnerships to be productive. They contend that synergy relates to the level of congruence that exists between partners in order to lead to smooth and operations.

On the basis of elaborate description of strategic supplier partnerships which is founded in trust can lead to competitiveness, the study postulates that strategic supplier partnerships through supplier evaluation, supplier segmentation and supplier development have the potential to spur operational efficiency of Agriculture Food Authority.

Operational Efficiency
Operational efficiency is recognized in the extant literature as the mainstay of commercial, industrial, financial, and institutional undertaking (Dhillon & Vachhrajani, 2012). According to

these scholars, operational efficiency is the judicious, efficient and profitable use of scarce resources that may be readily available to an organization. Taylor and Pettit as cited in Dhillon & Vachhrajani (2012) contend that profitability is the optimal test to efficient management. Operational efficiency is viewed as a novel concept relating to the quality of skill and prudent management and attainment of set goals of an enterprise (Ohene-Asare et al., 2017). According to Ohene-Asare and colleagues the essence of operational efficiency is to optimize quality of services and goods offered to customers by minimizing waste while at the same time maximizing resources. Consequently, operational efficiency as a concept aims at the design of work processes bent on improvement of productivity and quality. Weston and Brigham (as cited in Ohene–Asare et al., 2017) aver that an improvement in operational efficiency is tantamount to improvement in company profits.

Several approaches have been identified through which operational efficiency could be measured. According to Shodhganga which is the reservoir of Indian theses (Shodhganga, 2015), operational efficiency can be measured using the profit and loss account approach, the balance sheet approach, fiscal approach, employment approach, cost accounting approach, and the development and stability approach.

Efficiency of the supply chain is noted to be the core standard of performance of the chain (CIO Review, 2018). Efficiency in the supply chain is therefore a culmination of work performed by the use of best practices and optimization of resources. In Kenya, Agriculture remains the main driver of the economy, and is also the major source of livelihoods (Murioga et al., 2016). Operational efficiency of this important sector is therefore of primal importance. The agricultural sector in Kenya has been structured into four main sub-sectors that include; fisheries, horticulture, industrial crops and livestock. Assurance of operational efficiency in the Agricultural supply chain in Kenya is therefore hinged upon the Agriculture and Food Authority (AFA), act No. 13 of 2013.

In recognition of the need for operational efficiency, the authority operates through eight directorates of Agriculture and Food Authority (AFA) and which include the coffee directorate, tea directorate, sugar directorate, horticultural crops directorate, fiber crops directorate, nuts and oil crops directorate, pyrethrum and other industrial crops directorate, and food crops directorate (AFA, 2016). It is envisaged that through AFA, operational efficiency is gained by the reduction in regulatory bureaucracy, enhancement of synergies that culminate into faster decision making and greater efficiency in offering services; reduced cost; minimal overlap of functions; and more importantly increased food security (AFA, 2016).

Empirical Review and Hypothesis Formulation
Diverse studies in existing reviewed literature indicates the influence of strategic supplier partnership through the supply chain elements including supplier evaluation, supplier segmentation and supplier development on operational efficiency.

Supplier Evaluation and Operational Efficiency
The supplier evaluation is important task in any business society and contributes to the strategic importance of operating organizations thus creates enabling environment for competition and stable functioning supply chain (Pikousova et al., 2013). Zhu et al (2023) from China enterprises context used the probability dominance relation (PDR) to conduct investigation focusing the effectiveness of supply chain management supplier evaluation system. The study results established that some potential indicators of supplier evaluation such as economic, societal and environmental play a key role in determining the operational

efficiency of the competitive firm. Supplier evaluation is therefore a pillar constituent of sustainable food supply chain evaluation of suppliers Yubei et al (2020) However the choice of the indicators is not constant perhaps change with technological improvement and time variation.The findings were therefore indecisive with the influence of supplier evaluation on operational efficiency from Agricultural food supply chain.

From Uganda local Government entity, Anguandia (2018) established the effect of supplier evaluation on operational efficiency through quantitative and qualitative analysis. The study findings revealed that supplier evaluation practices had positive statistical significance influence on operational efficiency. However the results were not consistent with operational efficiency in the perspective of agriculture supply chain.

Moreover, the Kenyan perspective, (Waweru, 2015) examined the influence of supplier selection criteria on firm performance in the context of Non-Governmental Organizations. The study adopted the multiple regression analysis to indicate the positive significant influence of supplier selection on organizational performance. Based on the empirical review findings it is evident that there are scarce studies focusing on supplier evaluation and operational efficiency in the context of Agriculture supply chains in the Kenyan perspective. The study therefore, postulated that

$H_0^{1:}$ Supplier evaluation has no statistical significant effect on the operational efficiency of the Agricultural Food Authority

Supplier Segmentation and Operational Efficiency
Supplier segmentation is a resourceful tool used in the identification of supply chain strategies for a set of suppliers sharing identical attributes (Adam & Fazleena, 2017). In a couple of decades the function of the firm's sourcing departmental unit has evolved from clerical position into integrated strategic business responsibility with the capability of accruing the competitive advantage (Rezaei & Ortt, 2013).Therefore with the increase of the number of suppliers in business environment, the contribution of supplier segmentation too rises (Rezaei & Ortt, 2013). As a consequence of complexity nature of handling large volume of suppliers and for convenience the segments acquisition is notable (Wang & Tavasszy, 2015).

Supplier segmentation forms the pillar of supply chain practice. Despite that the popularity of segmentation approach has been consumed in market segmentation for long time less effort has been invested in supplier segmentation(Rezaei & Ortt, 2013).However not many studies have conducted investigations to examine the influence on operational efficiency in the context of Agricultural food supply chain context. Although the study of Dachyar and Maharani (2019) Indonesia cheese Company utilized Agricultural oriented firms, the focus was not based on operational efficiency. The study objective was integration of supplier evaluation segmentation on capabilities and willingness perspective. The Best Worst Method was suitable for the investigation. The study concluded that effective supplier segmentation require setting targets, improvement of quality, long-term commitments, relationship maintenance and improved communication.

A study from Mozambican context focused on supplier segmentation and productivity (Matshabaphala & Grobler, 2021).The study adopted cluster analysis of algorithms and from the findings information, observation, education and development intervention strategies were significant to the study. Building on unlimited studies engaging supplier segmentation and operational efficiency in enhancing food chain stability, this interrogation postulated that

H_0^2: Supplier segmentation has no statistical influence on the operational efficiency of the Agricultural Food Authority

Supplier Development and Operational Efficiency
The competition forces in business environment is becoming intense and for firms to survive they have to undertake cost reduction in the company of quality improvement and service delivery (Rajendra, 2012). Moreover, supplier development is perceived as involvement of long-term relationship establishment between buying organization and the potential suppliers with the aim of upgrading the suppliers capabilities such as lead time, quality and cost to promote the existing improvements (Laugen et al., 2005). Therefore supplier development is a supply chain concept correlated with partnering and supplier relationship management which accommodates the engagement of specific suppliers directly with the focus of improving the performance of buying organizations. Supplier development therefore recognizes organization's effort in creation and maintenance of competent supplier's network (Rajendra, 2012).

Ndanusa and Ogohi (2020) conducted investigation which targeted to determine the influence of supplier development and operational performance in the context of Dangote Sugar manufacturing in Nigeria. The exploration employed quantitative approach to indicate that despite of the supplier development challenges supplier audit, supplier involvement, supplier technical support and supplier certification were significant to organization performance though the study deviated from operational efficiency.
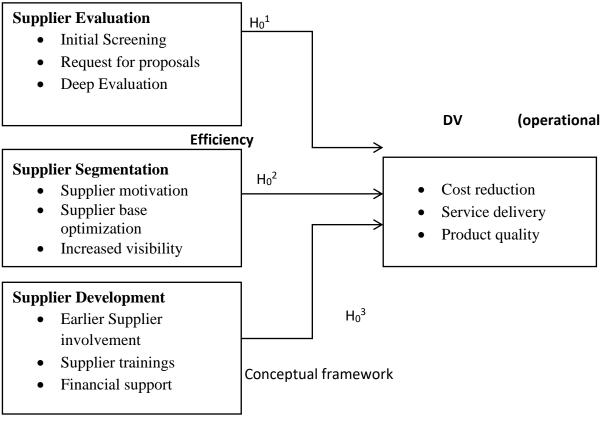
Supplier development and sustainability performance from economic, social and environmental perspective in the manufacturing firms in Malasyia.the study adopted systematic approach to gather data from stable data bases.The findings indicate that supplier development has positive significant influence on efficiency. The concept of supplier development has also appeared prominently in the empirical literature. Tugume (2016) used beverage industry Kyambogo to examine the effect of supplier development and operational efficiency. The cause effect interrogation discerned that frequent supplier visits, buyer supplier relationship, policies review and need evaluation pose positive significant effect on operational efficiency.

In Kenyan context Mwesigwa (2018) evaluated the study with the aim of establishing the effect of supplier development on procurement performance in the context of World Food Programme in Kenya. Regression analysis was used to determine the cause effect relationship of supplier development and procurement performance. The findings indicate that all the postulations tested; cost reduction, joint sourcing, financial support and supplier training possessed positive significant relationship on procurement performance. In view of sparse studies focusing operational efficiency in the context of agriculture supply chain, the concern is whether supplier development has direct effect on operational efficiency in Agricultural Food Authority (AFA) and postulates that

H_0^3: Supplier development has no statistical significant effect on operational efficiency of Agriculture Food Authority

The following conceptual framework was adopted from the above postulations constructed

IV.s (Strategic Supplier Partnership)

Supplier Evaluation
- Initial Screening
- Request for proposals
- Deep Evaluation

H_0^1

Efficiency

Supplier Segmentation
- Supplier motivation
- Supplier base optimization
- Increased visibility

H_0^2

Supplier Development
- Earlier Supplier involvement
- Supplier trainings
- Financial support

H_0^3

DV   (operational

- Cost reduction
- Service delivery
- Product quality

Conceptual framework

Methodology
Research Design
In order to decide on a suitable design for the study, a review of possible paradigms was made so as to select the ideal one to base the study on. Rossman and Rallis (2012) define a paradigm as a set of assumptions about how things work, they contend that paradigms are shared understanding of reality. Neuman (2012) defines a paradigm as that which links and classifies a wide range of research techniques using underlying philosophical premises surrounding proper research processes. The study adopted the explanatory research design binded in the post-positivist research model. Under this design, an attempt was conducted to determine cause-effect relationship between strategic supplier partnership practices and operational efficiency, using groups of individuals that already exist (Salkind, 2010).This investigation confined with cause effect category and adequate justification for utilization of explanatory design (Bentouhami et al., 2021).

Sample Size
The target population for the study composed of the entire eight directorates registered under the umbrella of AFA and distributed throughout the country regionally. Each directorate is headed by a director and has departments each headed by a departmental head. Consequently, the study employed an accessible population of 8 directors, 55 heads of departments and 317 middle level employees.The total accessible population was 380 individuals as shown in Table 4.1. According to Getu and Tegbar (2006), an accessible

population is that population from which the actual sample is picked and comes in very handy when target populations are very large or not quite explicit as in the present case.

Table 4.1
Target population

Directorate	Number of directors	Number of heads of departments	Number of staff members	Total study population
Coffee	1	8	29	38
Sugar	1	8	45	54
Tea	1	8	53	62
Horticultural crops	1	6	44	51
Fibre	1	8	27	36
Pyrethrum and other industrial crops	1	4	28	33
Food crops	1	8	57	66
Nuts and oil crops	1	5	34	40
Total	**8**	**55**	**317**	**380**

Source: human resource (March, 2019)

Data Collection Instrument and Procedure
The paramount tool which facilitated data collection was the questionnaire for the entire study units. The questionnaire was designed to contain various sections consistent with the variables under study. The first section was to collect information pertaining to background characteristics that warrant to be given close attention. This information was a necessary precaution to controlling for the likely influences of these characteristics on the dependent variable pertaining the dependent variable information; it was well articulated in section two of the employee's questionnaire. This section sought information regarding the prevailing status of operational efficiency in AFA. The remaining sections focused on the independent variables. A five-point Likert scale was viable to measure the respective items where (5-strongly agree, 4-agree, 3-moderately agree, 2-disagree, 1-strongly disagree).Responses elicited on the items for each construct was summated and averaged, and then used to measure the construct in question.

Quantitative Data Analysis
Data was first filtered and cleaned for missing values, normality and outliers. Missing values when they arise may affect the generalization of results. Data was analyzed using the standardized multiple regression approach. Foremost, data was tested for homoscedasticity, normality, linearity, multicollinearity and autocorrelation which are presumption for regression analysis in line with suggestions by (Hair et al., 2010). In order to test the three main hypotheses, one model was formulated in line with the conceptualized relationships. Direct effects were examined in relation to strategic supplier partnership and operational efficiency using Hayes' macro process output. Strategic supplier partnership was measured

using the three components namely; Supplier Evaluation (SE), Supplier Segmentation (SS) and Supplier development (SD.

The direct effects model was formulated as shown below

$$Y=\beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\mathcal{E}$$

Where   Y= Operational efficiency

X_1=Supplier   evaluation

X_2=Supplier   segmentation

X_3=Supplier development

β_0=Unknown intercept

β_1=Effect of   supplier evaluation on operational efficiency

β_2=Effect of supplier segmentation on operational efficiency

β_3=Effect of supplier development on operational efficiency

$\mathcal{E}$=Residuals

Results

Reliability Test Results

Cronbach's alpha coefficients were computed using the questionnaire responses across the 30 employees.The operational efficiency scale was measured using twelve items. Reliability analysis produced a Cronbach's reliability co-efficient of 0.831 (Table 4.2).The value of 0.831 was retained since it was above the recommended minimum threshold of 0.7(Sekaran, 2010).Using a similar approach, the reliability coefficients for the other variables were as follows: Supplier evaluation (α = 0.781); Supplier segmentation (α = 0.705); Supplier development (α = 0.812

Table 4.2
Reliability test results

Scale	No. Items	Reliability co-efficient
Operational efficiency	12	0.831
Supplier development	7	0.781
Supplier segmentation	9	0.705
Supplier development	9	0.812

Employee Background Characteristics

Results presented in Table 4.3 revealed the following: most of the employees (61.4%) were male, most of who had higher diploma (55.5%), but a sizeable proportion (31.5%) had a diploma level of education. Age wise, a majority of the respondents (54.5%) were aged above 50 years; and 30.5% were aged between 40 and 49 years. Most of them (35.1%) had an experience of 16-20 years working with the authority. The result indicates that the employees hired by AFA possess relevant academic qualifications experiences that guarantee effective organizational operations. This further reveals the possibility of other staff characteristics which contribute to operational efficiency of the authority.

Table 4.3
Respondents Background characteristics

		N	%
Gender	Male	189	61.4%
	Female	119	38.6%
	Total	308	100.0%
Education	Diploma	97	31.5%
	higher diploma	171	55.5%
	Bachelor's degree	35	11.4%
	Master's	5	1.6%
	Total	308	100.0%
Age	less than 20	1	0.3%
	21-29	11	3.6%
	30-39	34	11.0%
	40-49	94	30.5%
	50 and above	168	54.5%
	Total	308	100.0%
Experience	1-5	26	8.4%
	6-10	66	21.4%
	11-15	91	29.5%
	16-20	108	35.1%
	over 20	17	5.5%
	Total	308	100.0%

Source: Survey data (2021)

Descriptive Analysis of Study Variables
The (Table 4.5) indicates descriptive statistics which ascertains that the mean response scores across the three variables averaged 4.0 while the standard deviations fall below 1. This was a justification that respondents were in agreement that the AFA was recording increased levels of operations efficiency and strategic supplier partnership practices. Moreover from the results there is a clear indication that skewness and kurtosis produce normal distributions in all the data sets.

Table 4.5
Descriptive Statistics

Variables	Mean	Std. Deviation	Skewness Statistics	Std. Error	Kurtosis Statistics	Std. Error
Operations efficiency	4.18	.438	-.081	.139	-.362	.277
Supplier evaluation	4.07	.534	-.473	.139	.011	.277
Supplier segmentation	3.81	.626	-.591	.139	-.373	.277
Supplier development	3.90	.644	-.709	.139	.159	.277

Source: Survey data (2021)

Inferential Statistics
Diagnostic tests such as multicollinearity was within the acceptable range as demonstrated by variance inflation factors (VIFs) below 10 (1.04 – 1.149).In addition ,the normality test also

satisfied the condition as shown by Skewness values in the range -0.709 to -0.081 and Kurtosis statistics ranging from -0.383 to 0.149. Moreover, the independence of observations was justified by a Durbin-Watson value of 1.903.

The model regression output for operational efficiency on the strategic supplier partnership variables shown in Table 3 revealed the following: the overall model was significant, $F_{(3,208)}$ = 29.618, $p < 0.001$, R^2 = 0.227. The predictors were significant; with Supplier evaluation, b = 0.273, $t(304)$ = 6.041, $p < 0.001$ implying that for every 1 unit increase in supplier evaluation, there was a 0.273 increase in operational efficiency of the AFA; for supplier segmentation, b = 0.134, $t(304)$ = 3.399, $p < 0.05$ implying that for every 1 unit increase in supplier segmentation, there was a 0.134 units increase in operational efficiency, and for supplier development, b = 0.102, $t(304)$ = 2.886, $p < 0.05$ implying that for every 1 unit increase in supplier development, there was a 0.102 units increase in operational efficiency. The variance explained by supplier development in the variation of operational efficiency was however a mere 22.7% (R–sq = 0.227).

Table: 4.6
Regression Output

R	R-sq	SE	df	F	Sig	Durbin-Watson
.476	.227	.396	3,208	29.618	.000	1.903

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1 (Constant)	2.144	.225		9.537	.000		
Supplier evaluation	.273	.045	.332	6.041	.000	.870	1.149
Supplier segmentation	.134	.039	.186	3.399	.001	.902	1.108
Supplier development	.102	.036	.143	2.886	.006	.959	1.042

a. Dependent Variable: Operations efficiency
Source: Survey data (2021)

The study made a conclusion that operational efficiency in the AFA could therefore be modeled by the equation.

$$Y = 2.144 + 0.273X_1 + 0.134X_2 + 0.102X_3 + 0.396$$

Where X_1 – Supplier Evaluation

X_2 = Supplier segmentation

X_3 = Supplier development

Table 4.7
Summary of Hypothesis Tests

Hypothesis	Regression weight	Result
$H_0 1$: Supplier evaluation have no statistical influence on operational efficiency of AFA	b=0.273, p<0.001	**Not Supported**
$H_0 2$: Supplier segmentation has no statistical significant influence on operational efficiency of AFA	b= 0.134, p<0.001	**Not supported**
$H_0 3$: Supplier developments do not statistical influence on operational efficiency of AFA.	b=0.102, p<0.001	**Not supported**

Discussions

The investigation ascertained that supplier evaluation is key component in operational efficiency of Agricultural Food Authority which stands to be maximized to stabilize food security and sustainable food chain in Kenya. Supplier evaluation, supplier segmentation and supplier development components of strategic supplier partnership were established to have positive statistical significant influence on the operational efficiency of AFA.

The findings of the study have wider implications particularly for theory and practice in regard to operational efficiency in the context of strategic supplier partnership. Based on theoretical perspective the findings emphasize the contribution of social network theory in establishing strong and long-term existence of relationship to enhance organizational efficiency (Ylinenpaa, 2009). The activities focused under supplier evaluation have strong indication of enabling AFA to create environment that identifies potential suppliers performance with the objective of cost reduction, risk mitigation and improvement driven culture Through this approach the Authority stands better chance of dedicating effective and efficient service delivery.

The introduction of supplier segmentation activities such as collaborative measures, creation of value addition, prompt supplier payment, supplier performance tracking, supplier selection criteria, transition planning among other aspects the AFA has potential opportunity to arrange the suppliers in stratus with the aim of establishing appropriate and reasonable attention to them. This approach enables the superior service delivery and hence improvement of operational efficiency. Moreover supplier development focus is mentorship, trainings and reduces costs and wastage from business environment. This can be achieved through evaluation of supplier and feedbacks, supplier education and employee transfers.

From managerial context the findings play vital role in highlighting key strategic supplier partnership components that can be leveraged to magnify the operational efficiency of AFA.This apprehension is of great significance to the Government of Kenya through the Ministry of Agriculture, fisheries, livestock and cooperatives in the interest of attaining SDG goal of zeroing hunger. For instance from the study investigation it was concluded that supplier evaluation measured through supplier screening, proposal requests and extensive evaluation; Supplier segmentation measured via supplier motivation, supplier base optimization and visibility enhancement; supplier development by a way of earlier supplier involvement, supplier trainings and capital support measurements were positive and statistically significant predictors of operational efficiency of the Agriculture and Food Authority. This contribution is dominant to directorate managers and agricultural participants

aiming at productive service delivery with cost reduction focus. The study underscores the practices that can be observed in respective strategic supplier partnership components to revamp operational efficiency. Despite that majority of previous studies have indicated the positive impacts of strategic supplier partnership on performance, not at all relevant studies recognized activities to be exhausted in strategic supplier partnership and therefore the current study was a contribution to the existing literature.

Conclusion and Future Agenda

Strategic supplier partnership along supplier evaluation, supplier segmentation and supplier development is a key pillar in the consummation of operational efficiency of AFA. Through this important component the authority has the potential of reducing costs, increase service productivity, visibility gain, long term alliance building, create value addition and potential supplier identification. The three strategic supplier partnership constituents of supplier evaluation, supplier segmentation and supplier development possess positive and significance in influencing the operational efficiency of the Agency.

The AFA therefore should harness the enactment of applications which gave rise to farmers exceeding challenges fostering operational efficiency. Operational efficiency improvement in AFA set a base for food security stability and zero hunger realization in Kenya. However, the explanation accommodates lesser proportion of operational efficiency attributed to disparity in strategic supplier partnership constructs as an indication that other supply chain precursors in different settings need to be exhaustively examined. The stakeholders and Agricultural food authority need to position holistic approaches intended to elevate the evaluation, segmentation and development of suppliers with the objective of mantaining sustainable the food supply chain. Concurrently future agenda should focus on the discerning other strategic supplier partnership strategies that has aptitude impact on operational efficiency of AFA positively in boosting the Kenyan Government achieving the sustainable development goals (SDG 2).

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