

# SUPPLY CHAIN ALERTNESS AND PERFORMANCE OF TEA PROCESSING COMPANIES IN MOUNT KENYA REGION

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## ABSTRACT

The aim of this paper is to assess the influence of supply chain alertness as one of the aspects of supply chain agility on the performance of tea processing companies in Mount Kenya Region, Kenya. The Kenya tea industry dropped from being the largest exporter of black tea products in the world to being the second largest exporter behind China. This is an indication that Kenya faces stiff competition from other exporters of black tea across the world, hence the subject of the study. This study was anchored on the Systems Theory. A cross-sectional research design was used to assess the influence of supply chain alertness on supply chain performance of tea processing firms in Mount Kenya Region. Since the concept of supply chain agility cuts across the main tenets of supply chain, the study targeted the managers in charge of; planning, information management, procurement, inventory management, warehousing, production, distribution, transportation and focus groups. In total, 128 respondents were targeted. A structured questionnaire was the main data collection tool for the study where quantitative data were collected and analyzed through Statistical Package for Social Sciences version 25. Descriptive and inferential statistics were adopted by the study. The findings revealed that supply chain alertness had a significant and positive influence on the supply chain performance of tea processing firms in Mount Kenya Region. The study concluded that as a result of supply chain alertness, lead time and waiting time reduction, quality enhancement and enhanced customer satisfaction were achieved. The study therefore recommended that there is need for the management of the tea processing firms to embrace supply chain alertness as a way of enhancing the effectiveness of the supply chain processes for enhanced performance.

**Key words:** Supply Chain agility, Supply Chain Alertness, Supply Chain Performance, Tea Processing Firms

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## 1.0 INTRODUCTION

Supply chain agility is just as important as organizational agility, which can take numerous forms such as operational adjustment agility and market capitalization agility (Dubey et al., 2021). Problems with delivery times, abrupt changes in supply and demand, and fluctuations in product life cycles have forced businesses to adapt and stay up with these drivers in order to fulfill the world's evolving, changing, and expanding client expectations with precise answers in a timely manner (Christopher, 2010). Companies attempt to acquire a competitive advantage by establishing presence in emerging and changing global marketplaces. Companies implementing this strategy plan place a high value on supply chain agility in order to reduce risks and prepare for unknowns such as customer demand, supplier availability and technology (Braunscheidel & Suresh, 2009).

The production network deftness emerges from the capacity of an organization to rapidly recognize changes, openings, and dangers (sharpness/cautiousness), rapidly access important information (availability), conclusively conclude acceptable behavior (conclusiveness), rapidly carry out those choices (quickness) and to alter the scope of strategies and tasks to the degree required (adaptability) (Gligor, 2016). The trademark, which a deft inventory network ought to have first, is shown as the market affectability. Noticing the requests in the market climate and seeing needs and discovering answers for them are communicated as the market affectability. The subsequent element, which is at the front line, is virtual organizations.

The ability to perceive changes, opportunities, and hazards quickly is defined as alertness (Sangari, Razmi & Zolfaghari, 2015). A company must first detect changes in its environment before it can respond to them. Companies that are truly agile have achieved a high level of attentiveness. Recognizing developing market trends, listening to clients, exchanging information with suppliers, tracking demand, and sensing imminent disturbances, whether natural or man-made disasters, are all part of the awareness dimension (Yang, 2014).

Many businesses are driven by forecasts rather than demand. Best-performing firms can rapidly adapt to demand by gathering data on demand right from the point-of-sale (Swafford, Ghosh & Murthy, 2008). For enterprises to coordinate delivery with customers, cooperative networks should be leveraged. Maintaining a positive supplier connection can help to eliminate delay and other issues that can arise at supply chain intersections.

The tea sector in the country has been an instrumental economic pillar and major contributor to socio-economic welfare of millions of Kenyans. The tea firms are managed by KTDA through contractual agreements intended to ensure efficient production, processing and marketing. KTDA manages 54 tea processing firms serving more than 500,000 small scale farmers in Kenya. KTDA members produce 60% of the tea in Kenya while large scale farmers produce the rest (KTDA, 2016). KTDA has grouped the processing firms into seven regions depending on geographical location. The regions are, Kisii Highlands, Kericho Highlands, Mt.Kenya and Nyambene Hills, Mt. Kenya, Aberdare Ranges, Nandi Hills and Western highlands (KTDA, 2016).

Tea Processing Firms in Mount Kenya Region are found deep within Meru, Embu and Kirinyaga counties. These tea gardens are located in the vicinity of Mount Kenya, the country's highest snowcapped mountain hence the name (KTDA, 2019). The Southern tea belt covers Kirinyaga and parts of Embu counties while the Northern wing is home to the southern and central Meru tea belts as well as the adjoining parts of Embu at an altitude of 1500-2200 meters above the sea level (KTDA, 2019). The tea processing companies in Mount Kenya region have been facing tremendous challenges over the years. Production costs has increased due to wages, costs of transport, power costs and 42 taxes imposed on tea between the production and the cup (Karanga & Bwisa, 2014).

Tea sector in Kenya contributes \$1.4 billion to the national economy, 17.7 % of the world exported tea and at least 0.5 million depend on it in Kenya (KTDA, 2017). Thus its supply chain agility capability is of great concern which should be alert to detect change in market trends, detect opportunities and threats (Cheruiyot, 2013). In addition, it should depict accessibility to enhance sharing of demand and inventory information. Agility capability should enhance manufacturing, distribution and procurement flexibility in the organizations' operation (Hasan, Murat & Mustafa, 2018). This would translate to low operational costs, high market share and high farmers' monthly pay and high annual bonuses.

In efforts to strengthen the tea sector, the government of Kenya through respective ministries has taken key measures such as provision of sources of power, improved road networks, subsidized fertilizer and conducive environment for auctions (Mwenda, 2019). Despite all these, the performance of the sector still remains meagre, with farmers still being underpaid and the competitiveness of Kenyan tea globally declining continuously (KTDA, 2019). Moreover, there has been immense decline in financial gains for the 69 factories in 21 counties over the years, where between 2017 and 2018, a decline of over 20% was recorded while between 2018 and 2019, the revenues declined from Kshs.85.74billion to Kshs.46.45billion. This is a 25.5% drop, a matter that puts into question the functionality of the supply chain agility in the sector. Previous evidence has portrayed supply chain agility as one of the most salient issues of contemporary supply chain management (Merschmann & Thonemann, 2011). Despite its importance, there has been limited empirical research on supply chain agility area and how it enhances firm performance (Gligor, 2016; Güner & Gündoğan, 2017; Blome, Schoenherr, & Rexhausen, 2013; Muricho & Muli, 2021). The studies however, focused on different contexts and locale, which may not be replicated in the current study. Others have been carried out in over a decade, thus the agility perspectives may not be applicable in the

current scenario where much has emerged in the supply chain world. This prompts for this research to fill these gaps by assessing the influence of supply chain alertness as one of the aspects of supply chain agility on the performance of tea processing companies in Mount Kenya region.

## 2.0 LITERATURE REVIEW

The paper was anchored on systems theory. The theory elaborates a system as an entity that is a coherent whole with a perceived border surrounding it that allows internal and exterior elements to be distinguished, as well as input and output pertaining to and emanating from the organization (Williamson, Spitzer & Bloomberg, 1990). System theory is a way of looking at a phenomenon as a whole, rather than just the sum of its parts. In order to comprehend an entity's organization, functioning, and outcomes, the emphasis is on interactions and relationships between pieces.

Open System theory (OST) examines the connections that exist between organizations and the environments in which they operate. This emphasis indicates an organization's ability to respond to changes in environmental conditions, whether or not information processing is required. This hypothesis proposes that organisms capable of processing information about their own environment are better at adapting to changes in their surroundings (Wong & Davison, 2018).

Viable System Model (VSM) describes a system as an adaptable entity that can adapt to its changing surroundings in order to survive. The viable system model, when applied to organizations, focuses on conceptual tools for understanding the organization of systems in order to redesign them through change management, understanding the organization as a whole, and evaluating the essential functions of implementation, coordination, control, intelligence, and policy (Wong & Davison, 2018). Supply chain alertness incorporates embracing affective processes and networks to ensure that the organizations are capable of getting appropriate information regarding supply chain trends and occurrences for effectiveness and efficiency.

Gligor (2016) investigated the importance of supply chain agility in determining supply chain fit. The findings demonstrated a negative relationship between environmental unpredictability and Supply Chain Fit, indicating that aligning a product's supply and demand parameters with its supply chain architecture becomes more difficult as environmental uncertainty increases. However, by introducing supply chain agility as a competency, the business is able to offset the unfavorable association between environmental unpredictability and Supply Chain Fit, allowing it to improve its performance. Li, Wu, Holsapple, and Goldsby (2017) conducted an empirical study of corporate financial performance along aspects of supply chain resilience and awareness. The study looked into supply chain alertness as a way to improve a company's financial results. This study creates measures for preparation, alertness, and agility based on survey data from 77 companies. The results reveal that alertness significantly impacts a firm's financial performance. It is also discovered that proactive resilience capabilities such as supply chain preparedness have a greater impact on a firm's financial performance than reactive resilience capabilities such as alertness and agility, implying that companies should focus more on proactive approaches to supply chain resilience.

In a study on supply chain agility as a method for securing performance for Chinese firms, Yang (2014) discovered significant correlations between supply chain agility and performance. Cost efficiency has a significant mediating effect on a manufacturer's supply chain agility and performance, according to the research.

## 3.0 RESEARCH METHODOLOGY

The study adopted a cross-sectional design in order to bring out the relationships between the variables. The design is good in explaining how different predictor variables (independent variables) relate with the predicted variable (dependent variable). The choice of the design is because of its suitability in answering the research questions used in this study (Kumar, 2019).

The target population for this study was the tea processing firms in Mount Kenya Region. According to KTDA (2020), there are 8 tea processing companies in Mount Kenya Region. The companies were the units of analysis. Each of the 8 companies has 8 departments which include the Marketing, Finance, Technical, Quality assurance, Administration, ICT, Transportation, and Supply chain and procurement departments. The departments are headed by directors and deputy directors. The study therefore, specifically targeted the director and the deputy director from

each of the eight departments in the eight tea processing companies in Mount Kenya Region. The target population for the study was therefore 128 respondents.

The sample for the study therefore comprised of the 128 respondents. Two respondents (the deputy and the deputy director) were drawn from each of the eight departments in each of the 8 tea processing firms in Mount Kenya Region.

The study used questionnaires, as a primary source of data from respondents. Questionnaires evoke spontaneous responses when arranged in a logical systematic manner. Primary data were collected through the administration of questionnaires to respondents. Before data collection, an introduction letter was obtained from the university. With the letter, introduction was made to the management of the eight tea processing firms where the purpose of the study was explained.

The obtained data was first cleaned, sorted, coded using numerical numbers, entered into SPSS software version 25 and analysis done in line with objectives of the study. Descriptive analysis was the first step; it shows percentages and means of different items in the study. The analyzed data were presented in frequency and percentage tables, graphs and charts to enhance easier interpretation and understanding of the research findings. A regression model was applied to determine the relative importance of each of supply chain alertness with respect to performance.

#### 4.0 RESEARCH FINDINGS

Questionnaires were distributed to the 128 respondents and 106 respondents returned the fully filled questionnaires for analysis. This represented a response rate of 82.8% which was considered adequate for analysis.

The study sought to establish the influence of supply chain alertness on supply chain performance of tea processing companies in Mount Kenya Region. The findings are as summarized Table 1. The findings compare with those by Guner and Gündogan (2018) who found out that the supply chain agility is defined by the ability of the organization to be alert in deriving better strategies to deal with competitors and bring their suppliers on board for enhanced supply chain processes.

*Table 1: Descriptive Results of Supply Chain Alertness*

Measurement Aspects	Mean	Std. Dev.
There is continuous market surveys to detect market opportunities	3.46	1.42
There is continuous market surveys to detect threats on new entry	3.56	1.26
There is continuous market surveys to detect changes in market trends	3.58	1.26
There are channels to listen to customers to understand their preferences and adjust accordingly	3.55	1.26
Our company has benefited from newly detected opportunities in the supply chain	3.69	1.31
The management involves the suppliers in developing strategies to deal with identified threats	3.66	1.18
The continued alertness in supply chain alertness has been instrumental in enhancing our company's effectiveness	3.73	0.94

The study sought to establish the supply chain performance of tea processing companies in Mount Kenya Region. The findings are as summarized in Table 2. The results revealed that there had been minimal improvement in turnaround time in the respective companies and that majority of the companies had recorded decreased revenues and customer orders. Lead time reduction had also not been achieved in most of the organizations, an indication that the supply chain performance among the tea processing companies was not effective. The findings are in line with

those by Gligor, Esmark, and Holcomb (2015) who established that performance outcome is driven by the ability of an organization to reduce lead time, save on costs and enhance the customer satisfaction.

Table 2: Descriptive Results of Supply Chain Performance

Measurement Aspects	Mean	Std. Dev.
Our company has been saving on operational costs for the past five years	3.56	1.26
There has been improvement in turnaround time in our company	2.58	1.76
There has been an increase in revenues in organization for the past five years	2.55	1.76
There has been an increase in customer order in our organization for the past five years	2.69	1.91
There has been an increase in customer satisfaction index in the organization in the recent past	2.66	1.88
There are fewer customer complaints in our company for the past five years	2.13	1.94
Our company has been increasingly reducing lead time for the past five years	2.26	1.86

The study carried out correlation analysis to establish the relationship between the supply chain alertness and the performance. The findings are as shown in Table 3. It was revealed that the correlation coefficient for supply chain alertness was 0.712 at level of significant of 0.000, implying that there was a strong correlation between supply chain alertness and supply chain performance.

Table 3: Correlation Analysis

		Supply Chain Performance	Supply Chain Alertness
Supply Chain Performance	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	106	
Supply Chain Alertness	Pearson Correlation	.712**	1
	Sig. (2-tailed)	.000	
	N	106	106

Regression analysis was carried out to establish the statistical relationship between the supply chain alertness and performance. The model summary results as shown in table 4 revealed that the R-square for the variable was 0.508. This implies that the variation of 50.8% of the supply chain performance could be as a result of supply chain alertness.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.712 <sup>a</sup>	.508	.503	.46319

a. Predictors: (Constant), Supply Chain Alertness

The ANOVA results on the other revealed that the F-statistic for the model was 107.195 at a significant level of 0.000<0.05. This implies that the model could significantly predict the relationship between supply chain alertness and the supply chain performance.

Table 5: ANOVA on Supply Chain Alertness

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.999	1	22.999	107.195	.000 <sup>b</sup>
	Residual	22.313	104	.215		

Total	45.312	105
a. Dependent Variable: Supply Chain Performance		
b. Predictors: (Constant), Supply Chain Alertness		

The regression coefficients for the relationship between supply chain alertness and supply chain performance are as shown in Table 6. As the results reveal, the Beta coefficient for the variable is 0.621 which implies that a unit change in supply chain alertness would influence supply chain performance by 0.62 units. The level of significance is at  $0.000 < 0.05$  implying that supply chain alertness significantly influences the supply chain performance of tea processing companies in Mount Kenya Region.

Table 6: Regression Coefficients

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients Beta		
1	(Constant)	1.496	.221		6.764	.000
	Supply Chain Alertness	.621	.060	.712	10.353	.000

a. Dependent Variable: Supply Chain Performance

## 5.0 CONCLUSION AND RECOMMENDATIONS

The study sought to establish the influence of supply chain alertness on supply chain performance of tea processing companies in Mount Kenya Region. The study results revealed that there was a significant and positive relationship between supply chain alertness and supply chain performance of the tea processing firms in Mount Kenya Region. The study concluded that the commitment by the supply chain management team to detect the changes in the market, establish any new opportunities and the possibility of threats in the market was essential in enhancing the effectiveness of the supply chain process in the tea processing firms.

The management of the tea processing firms ought to embrace supply chain alertness as one of the key supply chain agility aspects that could significantly enhance their firms' supply chain performance. The management should be at the forefront of embracing and steering detection of market changes and taking advantage of any emerging opportunities while being aware of the threats that may affect the efficiency and effectiveness of the supply chain process.

The study recommends that the policy makers especially the Kenya Tea Development Agency (KTDA) should be at the forefront of encouraging the tea processing companies to embrace supply chain agility as way of enhancing their performance. The Agency is mandated to promote the Kenyan tea which is a main economic backbone by strengthening the supply chain network of the processing companies and ensuring that the companies are agile enough to keep with the market trends. Thus, by embracing supply chain agility and showing the pathway to the tea processing firms, their performance will be enhanced.

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