

**IMPACT OF INTEGRATED SUPPLY CHAIN ON PERFORMANCE
AT KENYA TEA DEVELOPMENT AGENCY**

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ABSTRACT

Studies of the integrated supply chain and impact on supply chain performance are still inconclusive. While the literature is stating that the most admired and feared competitors today are companies that link their customers and suppliers into tightly integration networks, previous studies showed a positive, but rather weak link, between supply chain integration and supply chain performance. An increasing number of organizations both in public and private sectors recognize the potential of integrated supply chain in enhance supply chain performance. The purpose of this study was to examine the impact of integrated supply chain on the supply chain performance in KTDA. Scale items were identified from the literature and the resulting survey instrument sent out to 132 respondents. A new construct of supply chain integration and performance as well as regression model were developed for this study. The findings indicated that the supply chain integration was positively associated with supply chain performance. Overall, this research provided significant contributions to the SCI, SCP literature and the SCI practices in KTDA. This research also contributed to theoretical and practical knowledge by providing a new model for enhancing SCI in an organization. The model can help researchers and managers to focus on important SCI and SCP factors. The results of the study provided further insights into the roles of internal, supplier and customer integration in enhancing supply chain performance and for managers to reflect on.

Key Words: *integrated supply chain, supply chain performance, Kenya Tea Development Agency*

Introduction

The concept of supply chain integration has been emerging in the general management literature and the supply management research over the last 20 years (Singh & Power, 2009). In today's global business environment corporations are increasingly under pressure to improve their supply chain performance in order to remain competitive (Slone, et al., 2007). One method of improving firm's supply chain performance is to focus on the effective integrated supply chain that streamlines all activities relating to the flow of materials, manufacturing, and distribution of products to consumers. The supply chain system extends beyond the boundaries of a firm, considering the costs of all material flow until products reach the final customer. According to Lee (2007) we are in the era of supply chain competition, that is, competition today is based on supply chain versus supply chain and not business versus business.

SCI span many organizations in delivering products to customers both upstream and downstream and many functional areas within the firm. A better understanding of the complex dynamics that determine performance of supply chains has become crucial for superior supply chain performance (Chen et al., 2009). Effective supply chain integration in the new competition suggests seeking close and long-term working relationships with fewer suppliers and customers but more capable ones, developing interactive relationships with each others, and working together to solve common problems and jointly plan for the future.

Statement of the Problem

Competition today is based on supply chain versus supply chain and not business versus business (Lee, 2007). World-class organizations now realize that non-integrated manufacturing or distribution processes and/or poor relationships with suppliers and customers are inadequate for their successive supply chain performance. Poorly integrated supply chain causes cycles of excessive inventory and severe backlogs, poor product forecasts, unbalanced capacities, poor customer service, uncertain production plans, and sometimes even lost sales (Swink *et al.*, 2007). Li (2007) claimed that an integrated supply chain is a must [and not an option] and is a fundamental incentive for an organization's enthusiasm which stems from the belief that partnering companies will be able to create a new capability that they would otherwise not be able to create separately. According to Roh (2009) only a few companies [sectors] have embarked on integrating their supply and demand chains.

Elias *et al.*, (2012) observed that the adoption of some supply chain management practices in small holder tea sector in Kenya will bring about competitiveness within the tea sector both locally and internationally. Further, KTDA should identify and partner with appropriate organizations which can add value to small holder tea and thus, provide an efficient supply chain network for delivering value (Elias *et al.*, 2012). The farmers and workers, who are at the bottom of the Supply Chain have been neglected and ignored to the point that their participation in decision making almost nonexistent and therefore not equitably sharing in accruing profits (CPDA, 2008). It is imperative for KTDA to address problems relating to the use of child labor, marginalization of women in tea industry, use of wood fuel, and working conditions of tea workers among other issues that have international dimensions. By addressing these challenges KTDA will ensure sustainability of the small holder tea sector in Kenya, (Nyaga, 2009).

Given the importance of integrated supply chain and its impact on supply chain performance , many studies conducted in KTDA have concentrated on tea production, marketing, ethical issues and have largely ignored the supply chain performance and integrated supply chain integration issues, thus need to be investigated. The study empirically assessed the effect of integrated supply chain on supply chain performance in KTDA. The research framework of the study outlined the determinants that affected supply chain performance, and provided supply chain managers/practitioners with insights for planning strategies for supplier, customer and internal activities. The purpose of the study was to explore the impact of integrated supply chain on the supply chain performance in KTDA.

General Objective of the Study

The general objective of this study was to determine the impact of integrated supply chain on supply chain performance in KTDA.

Specific Objectives

1. To determine the effect of internal integration on supply chain performance.
2. To establish the effect of supplier integration on supply chain performance.
3. To assess the extent to which customer integration affect supply chain performance.

Literature Review

This study was based on the theory of process-based management which claims that successful supply chain management needs cross-functional integration of key business processes within the firm and across the network of companies that consist of the supply chain (Lambert, 2008). Integrated supply chain is define as “the integration of key business processes from end user through original suppliers that provide products, services, and information that add value for customers and other stakeholders” (Lambert, 2008). The advent of the concept of supply chain management has put great emphasis on integrated supply chain.

Conceptual Framework

The conceptual framework of the study examined causal relationships between dependent and independent variables shown below:

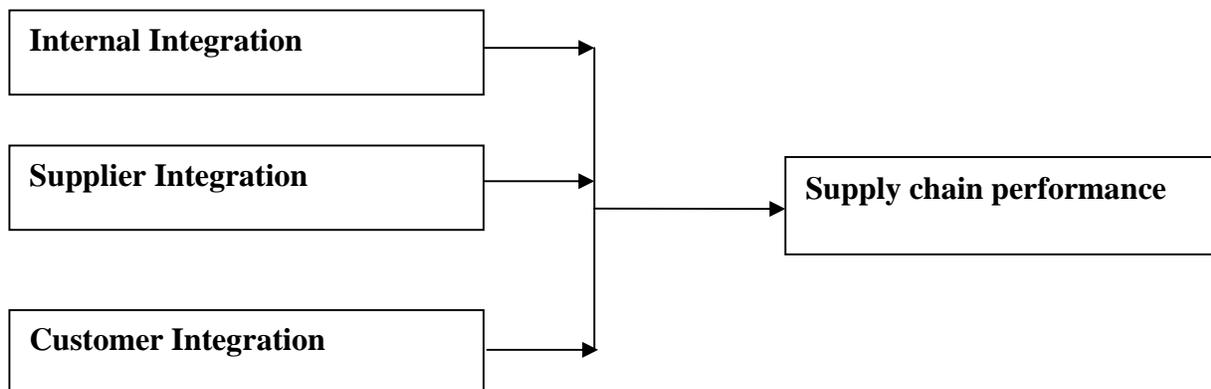


Figure 2.1: Conceptual Framework

Supply Chain Performance

The relevant literature shows that the efficiency and effectiveness of the supply chain system are crucial indicators in the measurement of supply chain performance (Lee *et al.*, 2007). Cost-containment and reliability of supply chain performance are two well-established indicators of performance constructs. This study used cost- containment as a measure of supply chain performance indicator. Cost-containment indicators include reducing costs for inbound and outbound activities, inventory-holding costs, and increasing asset turnovers. Since skills sets, management systems and technologies required for supply integration one could, for example,

expect that firms that would be strong on collaborating with suppliers will be also strong in customer and internal integration (Singh & Power, 2009).

Internal Integration

Internal activity is largely concerned with access to key operational data in a real time base from the integrated database, properly linking integrated information system to the variety of internal departments within an organization, readily accessing inventory information throughout the supply chain, retrieving inventory status in real time, conveniently utilizing a computer-based planning system between marketing and production, and significantly integrating SCM information systems for production processes (Chang, et al., 2007).

Supplier Integration

Supplier activities include activities such as placing strategic activities with suppliers, involving suppliers' capability to generate new products during the design stage, production planning, and inventory management, having a rapid response order processing system with suppliers, installing a supplier network that ensures reliable delivery, and exchanging information with suppliers. According to Yao *et al.* (2007), supplier integration has to do with data flow between two or more companies and constitutes a way towards achieving process integration, under which the supplier actually takes control over the inventory and purchasing functions of the buyer.

Customer integration

Customer activity concerns processes dealing with planning, implementing, and evaluating relationships between service providers and service recipients. Customer relationship management (CRM) focuses not only on inbound customer relationships but also on outbound customer relationships in SCM. Customer activity involves the ability to communicate the delivery of products and services to end-user customers, both locally and globally. Customer activity is principally about the sharing of product information with customers, accepting customer orders, interacting with customers to manage demand, having an order placing protocol in the system, sharing order status with customers during order scheduling, and providing information during the product delivery stage.

Research Gap

This research served to fill gaps in the supply chain management literature with respect to the areas of integrated supply chain and supply chain performance. This research is important to managers and scholars because it provides them with some understanding of the effect of Supply Chain Integration on the Supply Chain Performance. In summary, Supply Chain Integration plays an important role in the success of many organizations and can help increase the firm's ability to be competitive.

Research Methodology

This study utilized descriptive survey designs. Description design used summarized the data, examined the variability of the data, and /or presented the data in percentages. The research was aimed at collecting information from respondents on the opinion and experience on Supply Chain Integration in relation to its impact on the Supply Chain Performance of KTDA.

The target population constituted 199 employees from purchasing and supplies sections drawn from 65 KTDA managed factories in Kenya KTDA (2013). The main reason for selecting KTDA managed factories to conduct this research is that they exhibit an elaborate SCM philosophy and make use of best practices in SCM including supply chain integration.

The research instrument employed was semi-structured questionnaire derived from the Literature review. The instrument was reviewed by academics and practitioners in purchasing and supply area for content, clarity and ease of understanding. The academic review was conducted by the research supervisor. In addition, two senior purchasing and supply professionals carried out the review. A part from open ended questions , a five-point Likert scale was used to measure respondents' perception in relation to the impact of integrated supply chain on supply chain performance (with 1 = strongly agree and 5 = strongly disagree).

The procedure for data collection adopted for this study was to obtain primary data (drop and collect questionnaires).The respondents were purchasing and supplies officials in the organization. Each entity visited, the factory manager identified an audience to be asked for his/her collaboration in the research and to hand in the questionnaire. The time frame for questionnaire distribution was one week. The cover letter was sent to each respondent informing him /her of the general nature of the study and the intended use of data collected. A time limit of

2 weeks for completing the questionnaire was given .Before collection was done; a call was made to all respondents to find out whether the questionnaires had been completed.

Data Analysis

Editing of the data was undertaken in order to check the omission, completeness, and consistence of the data. Coding was used to allocate numbers to each answer and facilitates the transfer of data from the questionnaire to SPSS. Data screening was conducted to make sure that data have been correctly recorded and that the distributions of variables used in the analysis are normal. Inferential statistics and descriptive research designs were utilized in analysis of data.

The questionnaire was sent out to 132 respondents out of which 97 were duly filled and returned, this representing 73% respondent rate. This indicated that the respondents were very cooperative in this study. The data used for this study was collected from purchasing and supply (procurement) personnel from KTDA managed factories. The majority of informants didn't complete the personal information section A of the survey because of confidentiality.

Pilot testing was conducted by consulting the purchasing and supply personnel and academics which provided advice on the clarity of the instructions and validity of the survey instrument. None of the correlations were found very high (highest = 0.777), suggesting that there was no multi-collinearity, and evidence of validity of measurement items (table 4.3). This gave confidence that the items measure the same construct and all the correlations reported were statistically significant at $p = 0.001$.

Sample size is an important factor in the reliability of analysis. A ratio of 10-15 cases per variable is commonly suggested. With 4 variables in our questionnaire, the number of cases should be 40-60. This criterion is comfortably met by our sample size of 132. This confirmed that the data is highly suitable for analysis.

Conclusions

The purpose of this study was to examine the impact of integrated supply chain on the supply chain performance in KTDA. This objective has been achieved. A new construct of supply chain integration and performance as well as regression model were developed for this study. The results of this project supported three research questions proposed in the model. The major findings of this research are that supply chain integration in KTDA (i.e., for supplier, customer

and internal activities) have positive influence on supply chain performance (i.e., raw material purchasing cost, transport cost, distribution cost, asset turnover and inventory holding cost). Without appropriate integration between and among partners, maximum potential benefits may not be realized.

Recommendations

This study provides practitioners with key recommendations to enhance supply chain integration in an organization, as such recognizing internal, supplier and customer integration as a strategic tool for competitive advantage, since competition today is based on supply chain versus supply chain and not business versus business. Furthermore, researchers and practitioners can use a survey instrument and the model developed and tested in this study for understanding the nature of operational (internal, supplier and customer) integration factors and their impact on supply chain performance in the organizations.

In order to advance this research, future studies should address several different perspectives. The understanding of supply chain integration and supply chain performance in KTDA can be extended to other public corporations in the world can add value to the literature. In addition, private companies might provide further insights on the impact of supply chain integration operational issues on supply chain performance. An additional future area for research is to study supply chain integration and its impact on supply chain performance as perceived by operational, middle and senior management in public and private tea manufacturing companies or other organizations by sector.

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