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Influence of Supply Chain Integration Practices on the Performance of Manufacturing Firms in Kenya a Case of Kenya Breweries Limited

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ABSTRACT

The implementation of Supply Chain Integration is low in the Kenyan economy, especially the manufacturing, health and banking sectors. This study focused on determining the influence of supply chain integration practices on the performance of manufacturing firms in Kenya. The mixed research design was used for the study thus both qualitative and quantitative data were collected. The study population consisted of the professional employees working at the top, middle and lower level of the management i.e heads of sections, technologists, technicians and clerks of Kenya Breweries Limited in Nairobi. The target population included 528 employees and the sample size of the study was 85 respondents. A stratified sampling technique was used to determine the specific sample size of each strata of the study. Data was obtained through a questionnaire. Data analysis was done through SPSS Version 24 and the analyzed data was presented in the form of tables. The study found that technology integration, internal operations integration and customer integration significantly influence the performance of manufacturing firms in Kenya. However, the results revealed that supplier integration had a negative influence on the performance of KBL. The management should consider freezing the financial, and other resources they use to invest into supplier integration and make alternative use of them.

Keywords: Talent management, talent management strategy, competitive advantages.

1. Introduction

Ideally, with an integrated supply chain, firms become more customer-oriented. They ensure waste reduction, high levels of efficiency and effectiveness and the maintenance of good of quality of standards (Flynn, Huo, & Zhao, 2010). On the contrary, (Özdemir & Aslan,2011) in their study established that the developing countries still face challenges in ensuring the optimum output of the production sectors like the manufacturing industry.

(Nzioka,2010) in his study ascertained that adoption of the integration of Supply Chain management was low in the Kenyan economy especially the manufacturing, health and banking sectors thus organizations experience inefficient and incomplete documentation process, duplication of

responsibilities, unpredictable delivery schedules and none ICT compliance. (Muthoni, 2018) did a research on Lean Supply Chain Management Practices and Supply Chain Performance of Pharmaceutical Manufacturing Companies in Kenya. Her findings established that the firms have embraced SCI and there was an improvement in operations performance.

On the contrary, (Shields, et. al., 2015) in their study on SCI and performance in the service industry established that significant improvement on SCI are yet to be seen since. On average, the government of Kenya loses more than 12 billion annually through unsystematic and non-strategic supply chains (Nzioki, 2010). In view of the above-highlighted backdrop, this study aims at determining the extent to which supply chain integration practices influence the performance of the manufacturing firms in Kenya.

2. Literature review

2.1 Information theory

The basis of information theory was established by Shannon entitled "A Mathematical Theory of Communication." Shannon was interested in the amount of information that a particular channel of communication could transmit. This equation was published in the 1949 book The Mathematical Theory of Communication, jointly written by Claude Shannon and Warren Weaver.

As part of business optimization optimization, ERP systems are designed for flexible flow of information and enable fast delivery with shorter scheduling cycles, availability of information believed to reduce transmission time, removal of duplicate data management, and improved communication within the organization and visibility of Dell data ('Orco & Schmidt,2008) and increase the productivity of work processes (Gupta & Kohli, 2014). The AIDC's techniques used to reduce barcode, the distortion of information within a supply chain Hull and Schultz, (2001), improving the quality of the information and supply performance of the chain. This theory was related to this study because it provides an explanation of the influence of Technology Integration on the performance of manufacturing firms in Kenya.

2.1.1 Network theory

Proponents of network theory include (Powell, 1990); Podolny, 1993; & Zuckerman, 1999). The presence of central companies in systems in the supply chain is significant. It is said that these companies, which are analogous to the leading channel companies, monitor performance and provide a coordinating system-wide supply chain (Gadde & Haakansson, 2001). Despite the complexity of modern supply chains, centralized by qualified structures prevents the control from remaining a leading channel company can influence and provide opportunities and motivation for other companies to adapt their own specific goals (Halldórsson, Hsuan & Kotzab,2015). This theory was related to this study since it provided a possible explanation of the influence of Supplier Integration on the performance of manufacturing firms in Kenya.

2.1.2 Resource-based view theory

Resource-based vision (RBV) strives to explain the internal sources of the company's long-term competitive advantages (Kraaijenbrink, Spender & Groen, 2010). The theory of RBV claims that one must pay attention to the company's internal environment in order to find sources of competitive advantage. According to the theory, a company must have resources and capabilities that exceed its competitors' resources and priorities to help companies achieve greater organizational performance and compete in the environment. The theory was linked to the study because it explained the influence of Internal Operations Integration on the performance of manufacturing firms in Kenya.

2.1.3 Organizational learning theory

Organizational learning (OL), according to (Alvarez & Busenitz, 2001) is a product of organizational investigation. With the principle that knowledge is created by the information flow (Nonaka & Toyama, 2015), learning is thus the accumulation of knowledge and understanding of its potential advantage.

Customer integration in supply chains is an issue that is increasingly attracting interest from academics and professionals (Stevens & Johnson, 2016). Today, when supply chains operate in a commercial context where the exchange rate continues to rise and where high levels of turbulence and volatility, globalization, new competition and more demanding customers defy the placement of a company (Merigó et al., 2016), supply chains must be restructured to more flexible structures and networks (Anderson, 2012). This theory is relevant as it shows the influence of Customer integration on the performance of manufacturing firms in Kenya.

2.1.4 Porter's Value Chain Theory

Porter, (1985) contended the value chain theory. Porter's theory of the value chain states that there is a chain of events occurring in a business, from raw material procurement to product distribution to after-sales service. If a business wants to create savings in all the activities it does for consumers, it has to be about the value chain (Porter, 1985). Organizational performance is, therefore, firm-specific since the strategic choices a firm makes dictates which performance measures it will implement. This theory relates to this study as it gives an explanation on the performance of manufacturing firms in Kenya.

2.2 Empirical review

2.4.1 Technology integration and performance of manufacturing firms in Kenya

Du (2007) in his study reported positive relationships between the level of technology integration and performance. Thus, the increase of the integration and information exchange by Sezen (2008) among members of a supply chain has become a necessity to improve the efficiency of the supply chain. Skyrius (2001) emphasizes the decision-makers attitudes towards various factors that affect the quality of business decisions. These factors include information sources, analytical tools and the role of information technology.

Handzic (2001) also draws attention to the effect of the availability of information on people's ability to process and use information in short and long-term planning and in decision-making tasks. He revealed that the better the availability of information, the better the effect on both the efficiency and precision of business decisions. Liu and Young (2007) talks about important information models and their relationships to support decision-making in three different scenarios. The authors showed that global companies are expected due to the Enterprise Application System provided by modern IT tools such as Enterprise Resource Planning (ERP), Knowledge Management Systems (KMS) and Customer Relationship Management (CRM) to improve the efficiency and efficiency of decision-making.

2.4.2 Supplier integration and performance of manufacturing firms in Kenya

Frohlich and Westbrook (2001) in their study examined the performance differences between supply chain integration levels and classified them in five classes (periphery, supplier, and customer, outward-facing, inward). As a result, it is found that outward-facing companies which were defined as the most comprehensive integration level of supply chains have better performance in many criteria than the other companies in other classes (Frohlich & Westbrook, 2001).

Cousins and Menguc (2006) found that supplier integration can improve suppliers' communication performance directly. Stank et al.(2001b) found that Supplier integration affects logistics performance and Frohlich and Westbrook (2001) concluded that companies with the widest degree of arcs of integration achieve the highest level of operational performance improvement. Armistead and Mapes, (1993) also found that greater integration along the supply chain leads to operational performance.

Petersen, Handfield and Ragatz (2005) examine the fundamentals of supplier integration and found them; the suppliers of the project team gathered information and knowledge about new ideas and technologies that improve the quality of the final product and guarantee that it meets or exceeds the expectations of the final customer. By integrating suppliers, outsourcing offers opportunities and supply that reduces the internal complexity of the project and provides additional personnel to shorten the critical path of NPD projects. This helps coordinate better communication and information exchange,

reduces further delays and ensures the project is completed on time. The strategy extends the scope of tasks and problems, since the availability of parts can be considered at an early stage, eliminates rework and reduces costs. This creates a better relationship with the offer and forces suppliers to internalize the project's themes and allow a more coherent collaboration with future projects.

Eisenhardt and Tabrizi (1995) found that, supplier engagement actually slowed the pace of product development, rather than predictable patterns and mature and stable markets. Lau Yam and Tang, (2010) used data from a global automotive industry to study time differences between Japanese and American manufacturers. The survey found that layoff providers (and close relationships with suppliers) brought significant benefits of four to five months (from Japanese manufacturers).

Ellis, Henke and Kull (2012) presents the following advantages of the early introduction of suppliers: reduction of development costs, standardization of components, consistent supplier of the project, reduction of technical changes, higher quality and fewer defects, improving the manufacturing process of the supplier, Access to the detailed process of data reduction at the time of commercialization.

2.4.3 Internal operations integration and performance of manufacturing firms in Kenya

Chen et al., (2007) in their research, they found that cooperative marketing-logistics practices contribute to firm wide integration leading to better results. Ellinger (2000) examined the partnership between advertising and logistics and concluded that the process of assessment and reward, cross-functional cooperation, active inter-departmental relationships and the quality of distribution services are related in a number of ways. This relation was reinforced by an analysis of survey and regression. Throughout their research Gimenez and Ventura (2003), they tested the impact of internal integration and external integration on performance using modeling and survey of structural equations and found that both had a positive effect on performance.

Kahn and Mentzer (1998) sought to separately identify the benefits of communication and collaboration on performance in the context of marketing's integration with other departments. They found significant benefits from collaboration, but not from communication. O'Leary-Kelly and Flores (2002) studied the effect of mediating variables on the relationship between integration and performance using survey and regression analysis. They found that the benefit of production – marketing integration is not always worth the cost of such integration. The costs of integration could only be justified by examining the internal and external environment surrounding a firm.

Calantone et al. (2002) used a survey and structural equations modelling to find that marketing's knowledge of manufacturing and manufacturing's evaluation of marketing communication both had positive relationships with marketing-manufacturing integration. Hausman et al. (2002) proposed a model linking antecedents to manufacturing-marketing integration, and integration to profits. They found through a survey that the strategic importance of both departments positively related to integration, and integration related to profits. This suggested that top management should strive to view both marketing and manufacturing as key contributors to a firm's competitive strategy in order to boost integration (and profits).

Pagell (2004) conducted case studies to determine the factors that foster or inhibit internal (supply chain) integration in firms. His focus was on the integration of production, logistics, and purchasing functions. He identified the constructs influencing integration as structure, culture, facility layout, job rotation, and cross-functional teams. Mollenkopf et al. (2000) carried out a survey in New Zealand to verify their model that linked antecedents to inter-functional integration. Regression analysis showed that including integration in strategic plans helps in fostering integration. Cross-training helps too, but rewards did not prove significant in this research.

2.4.4 Customer integration and performance of manufacturing firms in Kenya

Lau et al., (2010b) found that product co-development with customers improves product performance. Frohlich and Westbrook (2001) found that companies with the widest degree of arcs of integration achieve the highest level of market share and profitability. Rosenzweig, Roth, and Dean

(2003) found that the intensity of SCI has a significant influence on financial performance. Narasimhan and Kim (2002) also reported that customer and Supplier integration improves financial performance.

Droge et al. (2004) found that customer integration and Supplier integration can directly improve time-to-market, time-to-product, and responsiveness. Flynn et al. (2010) found that customer integration enhances operational performance and Koufteros et al. (2005) found that customer integration is positively related to quality and innovation performance. Lau et al.(2010b) found that product co-development with customers improves product performance.

The studies cite several case studies of companies that have successfully integrated the voice of the customer into the new product development process (NDP). For example, he noted at the Ames Rubber Corporation that customers worked directly with NPD equipment designers. At Whirlpool, he found that customers who rated a competitor's product in customer satisfaction surveys distinguished him from the reason. There are hundreds of consumer groups that offer computer-controlled products and engineers that record user feedback on video tapes. When consumers said they wanted clean refrigerators, Whirlpool designed models with stucco-style facades and sides.

3. Research methodology

3.1 Research design

This study adopted a mixed research design. A mixed methods design combines at least one component of qualitative and one component of quantitative research.

3.2 Target population

The target population, therefore, was 528 employees (KBL HR, 2019) across all the levels of management, although the majority of the respondents were from the middle and lower levels of management since they are the ones who are greatly involved in the implementation of supply chain integration.

3.3 Sampling frame

The sampling frame of the study consisted of 528 professional employees (KBL HR, 2019) respondents randomly selected from the top level management, the middle level of management and the operational level of management.

3.4 Sample and sampling technique

3.4.1 Sample size

The sample size of the study was determined using Yamane's Formula (Yamane, 1997):

$$n = \frac{N}{1 + N(e^2)}$$

85 questionnaires were used to collect data for the study as had been determined by Yamane 1997 formulae with a confidence interval of 90% and a 0.05 margin of error as shown below;

Sample size formulae;

$$n = \frac{N}{1 + N(e^2)} = \frac{528}{1 + 528(0.1^2)} = \frac{528}{6.28} = 85 \text{ Respondents}$$

Where;

n= Optimum Sample size

N= Target population

e= margin of error

Therefore, a sample size of 85 respondents will be used for the study.

Stratified random sampling aims to achieve the desired representation from various sub-groups in the population with the subjects being selected in such a way that the existing sub-groups in the population are more or less represented in the sample. This was calculated as shown below;

$$N_h = \frac{N_h}{} \times n_f$$

N

Where; n_h = sample size for strata h (where h = 1, 2, 3)

N_h = population size for strata h

N = Total Population

n_f = Final sample size under Yamane's formula

Therefore,

= 3 x 85 = 1 (Sample size for Top Management Level)

528

= 175 x 85 = 28 (Sample size for Middle Management Level)

528

= 350 x 85 = 56 (Sample size for the Operational level of Management)

528

Table 3.1
Sample Size

Population Category	Target population	Sample size
Top Management Level	3	1
Middle Management Level	175	28
Operational Management Level	350	56
Total	528	85

3.5.2 Sampling technique

A stratified random sampling technique was used in this study. Stratified random sampling was used because it is an unbiased sampling method that involves grouping heterogeneous population into homogenous subsets and thereafter making a selection within the individual subset to ensure representativeness (Mugenda & Mugenda, 2008). Stratified random sampling aims to achieve the desired representation from various sub-groups in the population with the subjects being selected in such a way that the existing sub-groups in the population are more or less represented in the sample.

3.5 Research instruments

Primary data was collected by using questionnaires. The questionnaires comprised both open and closed-ended questions. Open-ended questions allow the respondents to express themselves and give more information to the researcher while closed-ended questions offer choices from which the respondents choose from. Samson (2017) states the use of a structured questionnaire ensures consistency of questions and answers from the respondents.

3.6 Data collection procedure

According to Bryman, (2012), data collection is the process of gathering data from a sample so that the research questions can be answered. The questionnaire was administered through the drop and pick method. The respondents were given a period of two (2) weeks to fill in the questionnaire after which they were collected. An extension of 3 days was made for some respondents who had not dully filled the questionnaires.

3.7 Pilot testing

Saunders et al. (2011) stressed the importance of undertaking a pilot test study to pre-test the questionnaire. Pilot testing establishes the validity and reliability of the research instruments. It allows

the researcher to establish the accuracy and appropriateness of the research design and instruments (Bryman, 2012) as well as detect weaknesses in design and implementation (Cooper & Scindler, 2011). According to Cooper and Schindler (2005), as a rule of thumb, 10% of the sample should constitute the pilot test. The pilot testing was conducted using the questionnaire on 9 respondents. The employees who participated in the pilot were selected through random sampling. Pilot testing is necessary to find out whether the respondents find the items on the questionnaire to be clear, precise and comprehensive enough thus enhancing reliability.

3.7.1 Reliability of instruments

The reliability of a measure is an indication of the stability and consistency with which the instruments measure the concept and help to assess the goodness of a measure (Sekeran, 2009). Reliability checks whether the results of an instrument are stable and consistent (Creswell, 2005) as well as the extent to which a given instrument produces the same result each time it is used (Abbott & McKinney, 2013). Mugenda and Mugenda (2008), a reliable measurement is one that if repeated a second time gives the same results as it did the first time and if the results are different, then the measurement is unreliable. To find out the reliability of the instruments, the instruments will go through pilot testing and be reviewed to find out if they will yield the same results after the pre-testing. (Hair, 2006) Cronbach's alpha refers to an internal consistency measure which shows how closely related a set of items are as a group. Cronbach's Alpha Coefficient value of 0.70 indicates reliability.

3.7.2 Regression model

Multiple linear regression analysis was conducted to determine the influence of supply chain integration practices on the performance of manufacturing firms in Kenya. Regression analysis was conducted to determine the influence of the Independent variable on the change of the Dependent Variable. The performance of the manufacturing firms was regressed against the independent variables which were technology integration, supplier integration, internal operation integration and customer integration. The equation was as expressed below;

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where:

Y = Performance of manufacturing firms in Kenya.

β_0 =constant (coefficient of intercept)

X_1= Technology integration

X_2= Supplier integration

X_3 = Internal operations integration

X_4 =Customer integration

β_1 to β_4 = Regression coefficient of four (4) variables

ε= error term

4. Research findings and discussion

4.1 Pilot study findings

The pilot testing established the validity and reliability of the questionnaire. The reliability statistics are presented in the table 4.1

Table 4.1

Reliability statistics.

Variable	No of Items	Cronbach's Alpha
Technology Integration	5	.735
Supplier Integration	5	.765
Internal Operations Integration	5	.709
Customer Integration	5	.793
Performance	4	.770

N=9

In Table 4.6 the scale reliability measure, Cronbach's Alpha for was determined to check on the reliability of the instruments used by determining the internal consistency of the scale used. Cronbach's Alpha for each value was established by the SPSS application and gauged against each other at a cut off value of 0.7 that is acceptable according to (Cooper & Schindler, 2008). Cronbach's Alpha is a reliable coefficient that indicates how well items are positively related to one another. Therefore, for this study, it was established that the variables met the minimum acceptable cut-off of 0.7.

4.5 Descriptive statistics

Descriptive statistics are a set of brief descriptive coefficients that summarizes a given data set, which can either be a representation of the entire population or a sample. The measures used to describe the data set are measures of central tendency and measures of variability or dispersion (Mugenda & Mugenda, 2003). Mean were used and then converted to a 5 point Likert scale where a mean of 1-1.8= Strongly Disagree (SD), 1.8-2.6= Disagree (D), 2.6-3.4= Neutral (N), 3.4-4.2= Agree (A) and 4.2-5= Strongly Disagree (SA).

4.5.1 Technology integration

Respondents were asked to give their responses in regard to technology integration in 5 points Likert scale where SA=strongly Agree, A=Agree, N= Neutral, D=Disagree, and SD= Strongly Disagree Their responses are presented in Table 4.2

Table 4.2

Technology integration

Statement	Mean	Std. Dev.
Automatic system generated updates enhance the response ability of the management	4.209	0.84454
Technology integration enhances material resource planning	4.2836	0.73456
Intra business integration improves profit margin	4.2836	0.73456
To adopt new technology in your business operations mean to improve your level of business operational efficiency.	4.2687	0.77032
Kenya breweries limited invests heavily in ICT facilities and resources every year in efforts to improve its level of technology integration	4.3881	0.75789

N=67

Respondents were asked to give their opinion on the variable Technology Integration. From table 4.7. Majority of the respondents strongly agreed to the fact that technology integration has influence on organization's performance. From the findings, respondents strongly agreed that the automatic system generated updates enhance response ability of the management, therefore fast decision-making process in the company. This is shown by a mean of 4.209 and a Std. Dev. of 0.8445 (Berente et al., 2009) who argued that regardless of the level of integration, the senior management in small and medium-sized manufacturing enterprises should take the lead in using internet technologies and related software within their companies to enhance the decision making processes. They should closely monitor changes in information technology, invest now in basic capabilities, plan for future investments to support their competitive position, and study how and when to integrate their systems with those of other supply chain participants. Therefore, the senior management should define data requirements and closely manage the updates and implementation of appropriate data management and electronic communication capabilities (Berente et al., 2009).

Further, the respondents strongly agreed that technology integration enhances material resource planning, with a mean of 4.2836 and a standard deviation of 0.73456. According to (Rai et al., 2006), the objectives of adopting these technologies should include more than enterprise-wide inter-operability and consistency. As technology has advanced, materials resource planning has become a much more simple and strategic process in proper resource management. (Miragliotta, 2006) emphasize advancements in technology have enabled project managers to manage resources through visual and automatic production scheduling. Resource planning is vital to manufacturing operations that want to

take their production to the next level and create a much more efficient production and resource flow. Without MRP, facilities are unable to effectively assign resource tasks, jobs, or projects to labor (Rai et al., 2006).

More so, respondents strongly agreed that intra business integration improves profit margin, with a mean of 4.2836 and a Std. Dev. of 0.79403. Internet-based technologies deliver ubiquity (universal and high-speed access), economy (cheap, paperless information and transactions), and utility (platform-independent software and services). The growth in Internet usage and business-to-business e-commerce has increased stock turnover in manufacturing firms which in turn increases a firm's market share and profitability (White & Pearson, 2001).

Also, the respondents strongly agreed that to adopt a new technology into your business operations could mean to improve the level of your business operational efficiency with a mean of 4.2687 and a Std. Dev. of 0.77032. This view is in agreement with (Lee et al., 2007) who holds that a firm's ability to adopt new technologies is paramount, affecting everything from the cost of producing capital goods to per capita income. Their findings suggest that new technologies have been adopted more quickly over the last three decades, and that variations in the rate of adoption account for at least a quarter of the differences in per capita income among nations. If this trend of acceleration continues, it could facilitate a further reduction of the prosperity gap between developed and developing countries.

Additionally, the respondents strongly agreed that Kenya breweries limited invests heavily in ICT facilities and resources every year in efforts to improve its level of technology integration with a mean of 4.3881 and a Std. Dev. of 0.75789. The findings are in agreement with (Miragliotta,2006) who points out that as supply chain integration requirements and the need for new technologies increase a manufacturing firm should consider putting up modern infrastructure with user-friendly platforms which will ensure integrated supply chains in order to reduce redundant inventories and excess manufacturing capacities, thereby freeing cash for other investments.

4.5.2 Supplier integration

Respondents were asked to give their responses in regard to technology integration in 5 points Likert scale where SA=Strongly Agree, A=Agree, N= Neutral, D=Disagree, and SD= Strongly Disagree Their responses are presented in Table 4.3

Table 4.3

Supplier integration

Statement	Mean	Std. Dev.
Vendor managed inventory can enhance the quality of finished goods.	4.2537	0.84105
Joint product development distributes the cost of production between the buyer and the seller	4.194	0.89169
Vertical integration promotes agile SCM	4.2537	0.84105
Buyer supplier relationship has effect on quality of goods and services received by the end-users.	4.3134	0.70084
Buyer supplier relationship has significance on a firm's competitive advantage.	4.1642	1.06738

N=67

From table 4.3, respondents strongly agreed to the fact that vendor managed inventory can enhance the quality of finished goods. This is shown by a mean of 4.2537 and a Std. Dev. of 0.84105. According to (Autry et al., 2008), the burden of inventory management is shifted to the seller in vender managed inventory, who pushes inventory down to buyers, based on real-time demand. Therefore, the findings of the study are in agreement with Germain and Iyer (2006) who argue that the vendor-managed inventory program gives the vendor full access and management of the inventory portfolio of her client. This ensures that the retailer the organization selling to the end customer always has right quality of the required materials, just the right amount of stock and the right delivery time always. Besides just the financial advantage enjoyed by the client, there is production of high quality of finished goods. Reductions in supplier redundancy can reduce product costs by increasing production levels at remaining suppliers and reducing the costs of managing the supply chain. Although this can also increase

investment and management burdens on suppliers, the delegation of responsibility and authority to entities closer to the action can result in improved decision making, as long as good communications are maintained throughout the chain (Autry et al., 2008).

Also, respondents agreed that joint product development distributes the cost of production between the buyer and the seller, with a mean of 4.194 and a Std. Dev. of 0.89169. The design world is adapting to greatly reduced product cycle times and intensifying time-to-market pressures. Ragatz et al. (2002) argue that using joint product development techniques to modify a product design before a commitment is made to manufacture has significantly reduced the time and costs of retooling manufacturing equipment and significantly enhanced product innovation. Virtual manufacturing pulls all relevant technologies, which can enhance joint product development together into an agile manufacturing enterprise, a virtual factory on a computer that can analyze and pinpoint flaws in the manufacturing process before they occur on the factory floor. OEMs in integrated supply chains are increasingly asking suppliers to become more involved in all phases of the product realization process since this increases product production innovation, supplier contribution and trust (Cousins & Menguc, 2006).

Respondents strongly agreed that vertical integration promotes agile supply chain management, with a mean of 4.2537 and a Std. Dev. of 0.82284. Cousins and Menguc (2006) view vertical integration as when a company controls more than one stage of the supply chain. That's the process businesses use to turn raw material into a product and get it to the consumer. It owns the manufacturing, controls the distribution, and is the retailer. Because it cuts out the middleman, it can offer a product like the brand name product at a much lower price. Therefore, the results of the study are viewed to be in agreement with Ragatz et al. (2002) who found out that vertical integration gives the company a competitive advantage over non-integrated companies. According to them, consumers are more likely to choose its goods or services since comparatively, either the costs are lower, the quality is better, or the product is tailored directly to them.

Respondents strongly agreed to the fact that buyer supplier relationship has effect on quality of goods and services received by the end users with a mean of 4.3134 and Std. Dev. of 0.70084. Frohlich and Westbrook (2001) refer to buyer-supplier relationships to be commercial transactions between organizations for the purchase and supply of goods or services. The findings of the study are in agreement with Germain and Iyer (2006) who argue that there are many advantages that come as a result of building strong buyer and supplier relations over a period of time some of which include a greater commitment from both groups, more scope for discounts, and trust between the buyer and supplier is developed over time and this may allow for the sharing of information, forecasts, knowledge and customers between the buyer and supplier. Supply chain partnerships can be formed between organizations to provide a level of stability and encourage long term commitment from different parties towards achieving results. Three critical aspects of supply chain partnerships are: recognizing opportunities that would benefit from a partnership, selecting the right partners and meeting your requirements as a partner. Generally, most organizations will have a balance of both long term and short term relationships with their buyers and suppliers. This balance can provide some of the benefits of both, while also reducing the amount of associated risks potential problems (Frohlich & Westbrook, 2001). Respondents agreed that buyer supplier relationship has significance on a firm's competitive advantage with a mean of 4.1642 an a Std. Dev. of 1.06738

4.5.3 Internal operation integration

Respondents were asked to give their responses in regard to technology integration in 5 points Likert scale where SA=Strongly Agree, A=Agree, N= Neutral, D=Disagree, and SD= Strongly Disagree Their responses are presented in Table 4.9

Table 4.9

Internal operation integration

Statement	Mean	Std. Dev.
Precision oriented organization culture encourage interdependence	4.194	0.94129

Enterprise resource planning enhances sharing resources, teams' cohesiveness while reducing the general administrative costs.	4.2239	0.81317
A team that has good communication remains cohesive and ensures that both individual, group, organization and society goals and objectives are attained.	4.209	0.92993
Timely attainment of goals ensures consistent profitability.	4.3284	0.72589
Kenya breweries limited has a well-developed and integrated internal operation system.	4.2985	0.88788

N=67

From table 4.9, respondents agreed to the fact that Precision oriented organization culture encourages interdependence with a mean of 4.194 and a Std. Dev. of 0.94129. For a manufacturing company to achieve organizational integration, it must align its company strategy, culture, staff skills, technology, and structure and management style with its goal of producing finished goods in an ecologically sustainable manner. Alignment involves making sure each department and employee understands the strategic direction of the company. It also involves educating the stakeholders why the company is spending money on certain projects and why costs for its products or services are rising. This involves training employees, using public relations to educate stakeholders and maintaining communication and verification systems.

Respondents strongly agreed that enterprise resource planning enhances sharing resources, teams' cohesiveness with a mean of 4.2239 and a Std. Dev. of 0.81317. (Spillan, et. al., 2013) state ERP system ensures process integration and should include more than enterprise-wide interoperability and consistency. They should also include standardization of functional modules, enhanced reliability, and less need for customization. Many implementations of ERP require a high degree of customization and extensive changes in business processes. Integration is most beneficial when it occurs across multiple processes that have significant effects on supply chain performance, such as information technology, marketing, and finance. Integration across multiple processes can enable customization of the supply chain according to delivery channels, manufacturing requirements, or market segments.

Also, respondents strongly agreed that a team that has good communication remains cohesive and ensures that both individual, group, organization and society goals and objectives are attained with a mean of 4.209 and a Std. Dev. of 0.92993. The flow of information and intensity of communication as well as horizontal and vertical integration depends on the level of centralization, flatness, and horizontal integration, among other organizational structure variables. An organization structure can stimulate or inhibit the flow of communication by developing mechanisms to encourage participation and information sharing. Aiken and Hage (1971) found that, in less complex, less formal, and decentralized organizations, communication is greater than in complex, formal, and centralized ones. Locus of decision-making tends to increase communication because a participatory work environment facilitates the involvement and communication among employees, whereas centralization reduces participation of employees, decreasing communication. Participative decision making stimulates communication and information flow in the entire organization (Won Lee, Kwon & Severance, 2007).

More so, respondents strongly agreed with the statement that the attainment of goals ensures consistent profitability, with a mean of 4.3284 and a Std. Dev. of 0.72589. Organizational goals are strategic objectives that a company's management establishes to outline expected outcomes and guide employees' efforts. There are many advantages to establishing organizational goals: They guide employee efforts, justify a company's activities and existence, define performance standards, provide constraints for pursuing unnecessary goals and function as behavioral incentives. For the goals to have business merit, organizations must craft a strategic plan for choosing and meeting them. Organizations should clearly communicate organizational goals to engage employees in their work and achieve the organization's desired ends. These goals have to be delivered within the specified timelines. Having a clear idea of organizational goals helps employees determine their course of action to help the business achieve those goals. Employees should also be equipped with the proper tools and resources needed as they do their work to help meet the overall organizational goals.

Respondents also strongly agreed to the fact that Kenya breweries limited has a well-developed and integrated internal operation system with a mean of 4.2985 and a Std. Dev. of 0.88788. Internal integration reduces uncertainty by improving communication between departments. Cross-functional teams composed of specialized employees with different background and knowledge can share information and improve the decision making process. Because of the early involvement of participants, this enriched decision making process helps to clarify product requirements before money has been invested on a new product (Gupta & Wi-lemon, 1990).

4.5.4 Customer integration

Respondents were asked to give their responses in regard to technology integration in 5 point likert scale where SA=Strongly Agree, A=Agree, N= Neutral, D=Disagree, and SD= Strongly Disagree Their responses are presented in table 4.4

Table 4.4

Customer integration

Statement	Mean	Std. Dev.
Setting up an online portal for collecting customer feedback ensures improvement in making business decisions.	4.1642	0.80898
Customer satisfaction through agile manufacturing ensures improved sales margin and profitability.	4.1493	0.94153
Satisfied customers through customer satisfaction score can help in building the image and reputation of your business.	4.0597	0.90253
Integrating customers to your business ensures efficient flow of information.	4.2836	0.84935
Kenya breweries limited has an improved way of communicating with its customers.	4.2388	0.88915

Respondents were asked to establish the influence of customer integration on the performance of KBL. From the Table 4.4. Respondents strongly agreed that setting up an online portal for collecting customer feedback ensures improvement in making business decisions, with a mean of 4.1642 and a Std. Dev. of 0.80898. The area of Business Process Integration addresses the extent to which the organization embeds elements of the customer feedback program into other business operations and processes. Integration of the customer feedback program is intended to support the governance structure. Integration of Voice of the Customer (VOC) and Customer Relationship Management (CRM) provides a comprehensive picture of the customer relationship. Customer feedback programs can impact all areas of a company, from marketing and sales to service and support. A customer-centric company will integrate the program across all levels of the organization, from top management to front-line employees. Executives review customer feedback metrics in their quarterly meetings. Account managers use customer feedback as a regular part of their account planning. Call center agents draw upon the caller's customer experience history to better manage the transaction. The advent of technological advancements (CRM systems, Internet) has greatly impacted the extent to which customer feedback programs can be integrated into business processes. Loyalty leading companies incorporate the customer feedback program into their CRM system and are able to use both objective data (sales/service history) and attitudinal data (satisfaction) to get a comprehensive picture of the quality of the customer relationship. For the customer-centric company, customer feedback programs play an important role in the management of the business. The integration of customer feedback into the business operations keeps the customers' needs in the fore of the management and front-line employees' mind.

The majority of the respondents agreed that Customer satisfaction through agile manufacturing ensures improved sales margin and profitability with a mean of 4.1493 and a Std. Dev. of 0.94153. The customer satisfaction score, is a time-tested metric. It is a customer satisfaction survey that targets the customer with variations of a very basic question on "how would you rate your experience interacting with our sales/customer service/support department?" The scale typically ranges from: very unsatisfactory / unsatisfactory / neutral / satisfactory / very satisfactory. The more respondents give a

positive answer, the higher your score. Organizations need to retain existing customers while targeting non-customers. Measuring customer satisfaction provides an indication of how successful the organization is at providing products and/or services to the marketplace. "Customer satisfaction is measured at the individual level, but it is almost always reported at an aggregate level. It can be, and often is, measured along various dimensions.

When asked whether satisfied customers through customer satisfaction score can help in building the image and reputation of your business, all the respondents were in agreement with a mean of 4.0597 and a Std. Dev. of 0.90253. According to Frohlich & Westbrook (2001) 81% of satisfied customers are more likely to do business with you again if they have a positive experience while approximately 95% of customers will "take action" after a negative experience like sharing concerns with friends and family, or churning. Ongoing satisfaction leads to loyalty. Once customers have placed trust in a company and are assured that the company will continue to deliver they will continue to do business with them.

Respondents were in strong agreement with the statement that integrating customers to your business ensures efficient flow of information with a mean of 4.2836 and a Std. Dev. of 0.84935. On the other hand, respondents strongly agreed to the opinion statement that Kenya breweries limited has an improved way of communicating with its customers with a mean of 4.2388 and a Std. Dev. of 0.88915. Customer integration is the component of customer relationship management which puts technology in place that allows customers to process their own transactions and to have direct contact with the organization. This means that the need for middlemen is reduced. It is a way for the organization to do business with substantial savings on human resources. Customer integration benefits the company through cost savings and customer retention and it benefits the customer by making it convenient to do business with the organization.

4.6 Inferential statistics

4.1.1 Pearson product moment correlation

Table 4.5

Pearson moment correlation

Variables		Technology integration	Supplier integration	Internal operation integration	Customer integration	Organization performance
Technology integration	Pearson Correlation	1	.883**	.810**	.860**	.017
	Sig. (2-tailed)		.000	.000	.000	.890
	N	67	67	67	67	67
Supplier integration	Pearson Correlation	.883**	1	.797**	.821**	-.072
	Sig. (2-tailed)	.000		.000	.000	.561
	N	67	67	67	67	67
Internal operation integration	Pearson Correlation	.810**	.797**	1	.838**	.037
	Sig. (2-tailed)	.000	.000		.000	.765
	N	67	67	67	67	67
Customer integration	Pearson Correlation	.860**	.821**	.838**	1	.069
	Sig. (2-tailed)	.000	.000	.000		.581
	N	67	67	67	67	67
Organization performance	Pearson Correlation	.017	-.072	.037	.069	1
	Sig. (2-tailed)	.890	.561	.765	.581	
	N	67	67	67	67	67

*. Correlation is significant at the 0.05 level (2-tailed)

Table 4.5 illustrates the correlation matrix among the independent variables and the dependent variable. Correlation is often used to explore the relationship among a group of variables (Pallant, 2010), in turn helping in testing for Multicollinearity. If the correlation values are not close to 1 or -1, this is an indication that the factors are sufficiently different measures of separate variables (Farndale, Hope-Hailey & Kelliher, 2010). It is also an indication that the variables are not multicollinear. The absence of Multicollinearity allows the study to utilize all the independent variables.

There was a weak positive correlation between the dependent and the set of independent variables ($r>0.3$, $p<.001$ in all cases). The strength of the relationship between the independent variables and the dependent variable (organizational performance) was weak. For Internal Operation Integration ($r=.037$, Weak), Customer Integration ($r=.069$, Weak), Supplier Integration ($r=-.072$, Weak Negative) and Technology Integration ($r=.017$, Weak). For internal operation integration the findings found to concur with Njagi & Ogutu, 2014, who in their study found out that, there was a positive correlation between internal operation integration and organizational performance. However, the strength of the relationship between internal operation integration and organizational performance in their study was strong compared to weak as obtained from this study findings.

For customer integration, the findings obtained concur with the findings of Cheruiyot (2013) who found out that, there was a weak positive relationship between customer integration and organizational performance in the public sector entities. For supplier integration, the findings obtained were inconsistent with Kitheka (2015) who found out that supplier integration had a positive strong correlation with organizational performance. For technology integration, the results obtained concur with Zu'bi, Tarawneh, Abdallah and Fidawi (2015) who found out that there was weak relationship between technology integration and organizational performance.

Table 4.6

Coefficients of determination

b. Dependent Variable: Performance of manufacturing Firms in Kenya

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	3.996	0.681		5.869	0	2.635	5.357		
	Tech_ Integration	0.196	0.378	0.159	0.518	0.607	-0.559	0.951	0.201	4.975
	Sup_ Integration	-0.54	0.297	-0.505	-1.819	0.074	-1.134	0.053	0.200	5.000
	Int_ Operations _ Integration	0.08	0.278	0.07	0.288	0.774	-0.475	0.635	0.234	4.274
	Cust_ Integration	0.297	0.284	0.288	1.045	0.3	-0.271	0.865	0.299	3.344

a. Dependent Variable: Performance of manufacturing Firms in Kenya

Table 4.6 gives information about the contribution of each of our predictor variables to the predictive ability of the model. In this case only three variables contribute significantly to the model (Internal Operation Integration=.07, Customer Integration=.288, Technology Integration=.159) $p<.05$. Considering the B values which indicate the contribution of each independent variable, three of the four variables (Internal Operations Integration, Customer Integration, and Technology Integration) positively affect organizational performance. Supplier integration= -0.505 $p<.05$ negatively affects organizational performance.

Tolerance is used in regression analysis as a tool for diagnosing multicollinearity. Tolerance is associated with each independent variable and ranges from 0 to 1. (Allison, 1999) notes that there isn't a strict cutoff for tolerance, but suggests a tolerance of below .40 is cause for concern. Further, Weisburd & Britt, (2002) state that, anything under .20 suggests serious multicollinearity in a model. From table 4.6 the tolerance level was found to be 0.201, 0.200, 0.234 and 0.299 for the IVs technology integration, supplier integration, internal operations integration and customer integration respectively suggesting presence of some correlation, but not enough to be overly concern about.

A variance inflation factor (VIF) detects multicollinearity in regression analysis. It assesses how much the variance of an estimated regression coefficient increases if your predictors are correlated. Variance inflation factors range from 1 upwards. The numerical value for VIF tells you what percentage the variance (i.e. the standard error squared) is inflated for each coefficient. (Hair, 2006), the rule of thumb for interpreting the variance inflation factor is 1 = not correlated, between 1 and 5 = moderately correlated and anything greater than 5 = highly correlated.

However, (Hair et. al., 1995) argue that a VIF<10 is still acceptable. For the study the VIF predictor variable was (4.975, 5.000, 4.274, and 3.344) for the I.Vs technology integration, supplier integration, internal operations integration and customer integration respectively. The VIF shown in table 4.6 indicates absence of severe correlation in the study.

4.6.1 Regression analysis results

Both simple and multiple linear regression analysis were done to examine the relationship of the independent variables with the dependent variable. The regression results are presented in tables below:

Table 4.7

Model summary (Technology integration)

Summary Model	R	R Square	Adjusted RSquare	Std. Error of the Estimate
1	.017[a]	.000	-.015	.67554

a. Predictors: (Constant), Technology Integration
b. Dependent Variable: Performance of manufacturing Firms in Kenya

Table 4.7 shows that technology integration explained 0% of the variation in performance.

Table 4.8

Model summary (Supplier integration)

Summary Model	R	R Square	Adjusted RSquare	Std. Error of the Estimate
1	.072[a]	.005	-.010	.67387

a. Predictors: (Constant), Supplier Integration
b. Dependent Variable: Performance of manufacturing Firms in Kenya

Table 4.8 showed that supplier integration explained 0.5% of the variation in performance. This, therefore, indicate that 0.5% of the corresponding change in performance can be explained by a unit change in supplier integration.

Table 4.9

Model summary internal operations integration

Summary Model	R	R Square	Adjusted RSquare	Std. Error of the Estimate
1	.037[a]	.001	-.014	.67517

a. Predictors: (Constant), Internal Operations Integration

b. Dependent Variable: Performance of manufacturing Firms in Kenya

In Table 4.9 internal operations integration explained 1.1 % of the variation in performance. This, therefore, indicate that 1.1 % of the corresponding change in performance can be explained by a unit change in internal operation integration.

Table 4.10
Model summary (customer integration)

Summary Model	R	R Square	Adjusted RSquare	Std. Error of the Estimate
1	.069[a]	.005	-.011	.67404

Table 4.10 explained 0.5% of the variation in performance as a result of a unit change in customer integration.

Table 4.11
Model Summary

Summary Model	R	R Square	Adjusted RSquare	Std. Error of the Estimate
1	.248[a]	0.062	0.001	0.67013

a. Predictors: (Constant), technology integration, supplier integration, internal operation integration and customer integration.

From table 4.11, with the predictor variables (IV's) which included technology integration, supplier integration, internal operation integration and customer integration, the model explains .062 =6.2% of the variation of performance due to the changes of technology integration, supplier integration, internal operation integration and customer integration. The remaining 93.8% imply that there are other factors that lead performance which were not discussed in the study.

5. Summary, conclusion and recommendations

5.1 Conclusions

5.1.1 Technology integration

The study establishes that there is a positive relationship between technology integration. Automated updates, Material Resource Planning and Intra business integration are among the technology integration factors that significantly influenced the performance level of KBL. The study further established that by adopting new technology as it was observed at KBL, the level of operational efficiency increases. Therefore, the study concludes that KBL experiences significant increase in the volume of sales, through embracing technology integration.

5.1.2 Supplier integration

Following the results of the study, it is worthwhile to conclude that organization performance is not dependent on supplier integration; there is a negative cause and effect relationship between supply chain integration and the performance of an organization. To enhance the integration relationship, there is need for flexibility among the partners, a broader regulatory and social environment that is characterized by both formal structures of mediation and informal networks of trust and collaboration (Panayides & Lun, 2009). Organizations have been forced to collaborate with other firms through joint supply chains that focus on joint planning, coordination, and process integration between the organization, its suppliers, its customers, and other partners such as the logistic providers. In addition to the factors captured in this study, collaboration offers the advantages of cost reduction, business expansion to other areas, increased return on assets, improved customer service, reduced lead times, increased reliability and responsiveness to market trends, and a shorter time to market.

5.1.3 Internal operations integration

Internal operation integration influences the performance of a company. The study further concludes that organization structure, Enterprise resource planning and organizational communication are among other internal integration factors influenced the performance of KBL. A well-integrated internal supply chain should provide excellence in customer service and business practice. KBL, through embracing internal operation integration has benefited from facilitated teamwork, resource allocation and fulfillment of set goals between complementary functions. This has made it easy for the company to ensure increased sales volume. Also, widest degree of arcs of integration achieve the highest level of market share and profitability.

5.1.4 Customer integration

Further, the study concludes that customer integration ensures that the customer's voice plays an important role in the innovation process within the organization. Ideally, company that prefers closer relationships with its customers moves from a customer-centric approach to customer-centric collaboration. By embracing policies that ensure timely and constant customer feedback, satisfaction and customer satisfaction score, KBL has improved its image and brand in the market. This has enable the company have more customers thus increasing the market share. Product co-development with customers improves product performance.

Customer integration increases a company's potential for innovation. Among its many advantages are: early customer integration leads to a stronger relationship with the partner, a better understanding of market needs, fewer errors in the early development process, and a better product quality. These advantages do not only apply to the innovation process's macro level but also to the micro level. Customers can provide first-hand information regarding their needs, can help create innovative ideas for new products, and provide feedback regarding concepts and prototypes.

The level of competition in the current century has greatly intensified and markets have become more global, so do the challenges associated with getting a product and service to the right place, at the right time, at the lowest cost have continue to be on the increase. Consequently, the whole process of understanding and practicing supply chain management (SCM) has become an essential prerequisite for staying competitive in the global race and for enhancing profitably (Christopher, 2004). One of the strategies that has lately been embraced by firms in their procurement practice is information sharing among the supply chain partners. Green & Inman, 2005 point that the key ingredient for any SCM system is the need to develop a seamless supply chain in which information that is undistorted and up-to-date is made available at every node within the supply chain. This will require development of an effective integration between the players in the supply chain (Green & Inman, 2005). It is therefore necessary for the company to fully implement all the components of supply chain integration while continually embracing advancements in technology in order to remain the ultimate leading brewer in the market. This is because strategic partnering has become key in the current global market.

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