

# FACTORS INFLUENCING INTEGRATION IN UPSTREAM AND DOWNSTREAM SUPPLY CHAIN IN MANUFACTURING COMPANIES IN KENYA (CASE STUDY OF THE PRIVATELY OWNED MANUFACTURING INDUSTRIES IN KIAMBU COUNTY)

**Benard Omondi Otieno**

*School of Business and Economics, Zetech University, Kenya*

**ABSTRACT:** *The study sought to examine the influence of collaboration in upstream and downstream supply chain integration, the impact of relationships management in downstream and upstream supply chain integration, the impact of management strategies on upward and downward integration, Questionnaires were used to collect primary data. The questioner approach was proposed because it is easy to analyze the data collected. This study targeted privately owned manufacturing firms in Kiambu County. Primary data will be used in this study. Data collection will be done through the use of closed-ended questionnaires. Closed-ended questions were conclusive in nature as they were designed to create data that will be easily quantifiable. The data was analyzed using descriptive statistics by using SPSS 24. Pearson's correlations coefficients were run to examine the relationship between both independent and dependent variables of the study. Findings from the study indicates that all the four variables: collaboration, relationships information tools or systems and management are very crucial for upstream and downstream supply chain integration hence the researcher recommends that these factors should be given attention in the organizations if upstream and downstream supply chain integration is to be realized in the organization.*

**Keywords:** *collaborations, relationships management, management strategies, information tools and downstream supply*

## INTRODUCTION

in the world of business today, many organizations are trying to be more competitive on their operation over their rivals through technology advancements as they are collaborating and integrating their processes, linkages of their network in downwards and upwards operation of the activities in many manufacturing industries, which focuses on ensuring high customer service levels, lowering the cost incurred and managed lead time as a long time competitive *advantage* which is achieved through integration (Hudnurkar *et al.*, 2014). Supply chain function is based on three fundamental pillars: integration, collaboration, and coordination (Mvundura *et al.*, 2015). Rodríguez-Enríquez *et al.*, (2016) indicated that better words to describe integration are cooperation and collaboration. Chen *et al.* (2009) stated that integration is often equal to coordination and collaboration. A supply chain consists of the series of activities and organizations that materials move through on their journey from initial suppliers to final customers.

It is 'a order of events intended to satisfy a customer. It is 'flow of materials, goods and information (together with money), that between organizations, linked by arrange off facilitators, including relations, procedures, activities, and integrated information systems'. Supply chain integration practices are value addition in a economical way (Sherwin *et al.*, 2016).

It is 'the network of organizations that are linked through upstream and downstream relationships in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer. emphasis is made on ensuring supply chain members are fully updated overall to enable diversified relationships (Liao *et al.*, 2017)

Supply chain extends beyond the final customer to add recycling, recovery of materials and reuse (Lourenço & Ravetti, 2018). Effective of operations of activities across the supply chain farms require relationships that are cross-factional and cross farm in nature to maximize achievement of information sharing, close partnering and coordination (Schniederjans *et al.*, 2020)

## STATEMENT OF THE PROBLEM

Manufacturing firms play a significant within the development of the county through production of products and became a sector in Kenya and really strong engine to market economic development. The concept of SCI has received increasing responsiveness from various fields; academicians, consultants and business managers alike (Schniederjans *et al.*, 2020). Many organizations have begun to acknowledge that SCI is the key to assembling sustainable competitive edge. However manufacturing firms has been experiencing a myriad of problems concerning collaboration and association Kim & Chai, (2017). Certainly some private manufacturing firms in Kenya have tried to collaborate with their suppliers to make ensure an elaborate integration with major objectives of customer satisfaction supplier retention, relationship loyalty, and failure to fulfill future expectations (Huo *et al.*, 2017). However relationship continuity has not significantly improved since these firms still experience low levels of supplier retention, low relationship loyalty, customer dissatisfaction and failure to fulfill future expectation (Chen *et al.*, 2017). This might results of low levels of data sharing, lack of joint decisions making process and incapacity to align processes, linkages and networks resulting into adversarial relationship rather than a collaborative one which may hinder smooth flow of materials, information and better performance within the supply chain (Samal, 2019).

However the lack of an integrated framework incorporating all the activities both upstream and downstream sides of the supply chain and linking such activities to both competitive advantage and organization performance does not help much in coming up with a

framework of implementing previous results on SCI(Liao *et al.*, 2017) .This study aims at coming up with a tested framework identifying the integration relationship factors in upward and downward among supply chain practices that attributes to competitive advantage and organization performance .

Locally studies have been carried out that have focused on specific aspects of SCI in management (Nyamasege & Evans Biraori, 2019) researched on the Impact of logistics outsourcing on lead time and customer service among supermarkets in Nairobi. He confirmed that outsourcing (networking) of logistics services in supermarkets has a one to one relational effect with the lead times of product delivery and that among those supermarkets that have outsourced procurement of products from the suppliers

## OBJECTIVES OF THE STUDY

### General Objectives

The study will be guided by general and specific objectives.

To examine factors influencing integration in upstream and downstream supply chain in manufacturing industries in Kenya.

### Specific Objectives of the study

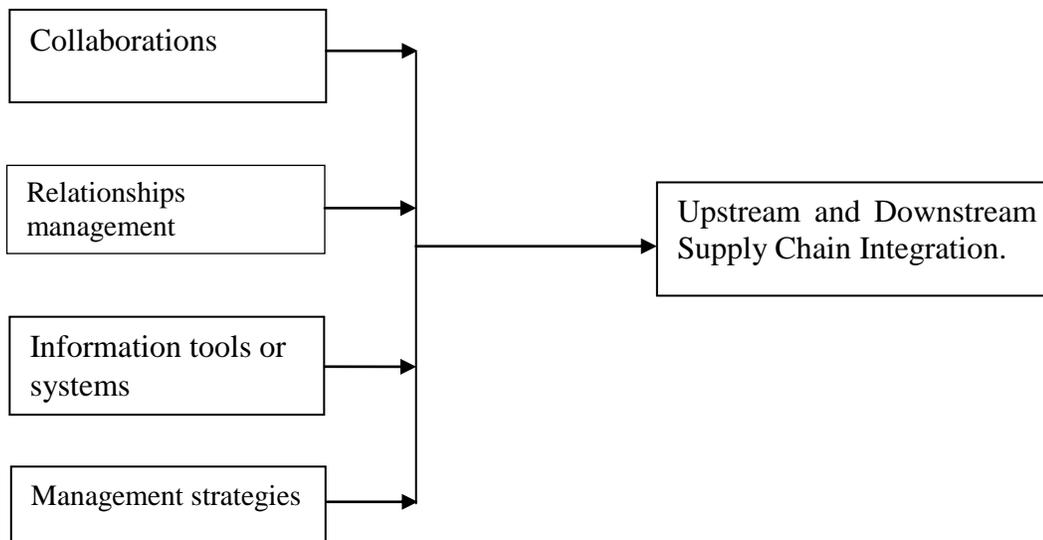
- 1) To examine the influence of collaboration in upstream and downstream supply chain integration.
- 2) The impact of relationships management in downstream and upstream supply chain integration.
- 3) The impact of management strategies on upward and downward integration.
- 4) Assessing the impact of information tools on the upstream and downstream supply chain integration.

### 1.1.6 The Research Questions

- 1) What factors influence collaborations in upstream and downstream integration in supply chain integration?
- 2) What is the impact of relationships management in upstream and downstream supply chain integration?
- 3) What is the impact of management strategies on upward and downstream supply chain integration?
- 4) What is the impact of the information tools on upstream and downstream supply chain integration?

## CONCEPTUAL FRAMEWORK

According to Magenta and Mugenda (2003), a conceptual framework refers to conceptualization of the relationship between variables in the study and it is shown diagrammatically. Apart from showing the direction of the study, through the conceptual framework, the researcher is able to show the relationships of the different constructs that researcher was to investigate



### Independent Variable

Source: author, 2021

### Collaboration

It means working together as partners with an aim of achieving the intended objective. Supply chain collaboration is more than just integrating information among business functions and partners but also an interactive process that results in joint decisions and activities, often in multi-company teams from various disciplines in each organization(Cao & Zhang, 2011).Supply chain collaboration is defined as two or more autonomous firms working jointly to plan, execute operations as well as distributing substantial information. It can deliver substantial benefits and advantages to its partners.it has been known as a cooperative strategy when one or more enterprises or corporate units work together to generate mutual benefits. In supply chain there are two main types of supply chain: vertical collaboration and horizontal collaboration. Vertical collaboration is the association between or among two or more organizations from diverse stages or levels in supply chain management that have a common responsibility, resources, and performance information to be of service to

relatively similar end customers; while horizontal collaboration is an inter-organizational association between two or more companies at the same level or stage in the supply chain in order to allow effectiveness of work and cooperation towards achieving a common set objectives. Collaboration in supply chain can be manifested in various way like communication in contact and message transmission processes, terms of direction, mode and influencing strategy, , executions of operations which the process of executing supply chain transactions in a collaborative manner ,information sharing resource sharing which the process of leveraging capabilities and assets and investments(González-Benito, 2007).ting in capabilities and assets, decision making and joint knowledge creation for competitive edgwhich enhancesstrengthening trust And commitment among the partners and optimize supply chain benefits

### **Relationships**

Relationship integration (i.e. relationship and information flows) across the supply chain (Zhao et al., 2011) suggest that relationship integration is an important enabler of key processes in an organization and its supply chain. Harland and Martínez-Martínez et al.,( 2015) emphasize this point further, defining supply chain management in terms of the importance of relationship integration. Relationship integration refers to being in the same mental framework as the customers and suppliers based on inter-enterprise dependency and principles of collaboration”(Sakarya et al., 2012). Added to this definition is the importance of relational behaviors for the growth and maintenance of inter-organizational association in terms of trust, commitment, information sharing, communication, risk/reward sharing and relationship-specific investment(Zhao et al., 2011) . A review of the literature shows that these factors have been predominantly identified as important contributors to the development/maintenance of relationship integration between trading partners (Wilson, 1995; Whipple et al., 2010). One of the most important aspects of effective supply chain management is the establishment and development of trust between cooperating parties (Wu et al., 2014). Trust facilitates collaboration in supply chains. Furthermore, trust increases reliance between supply chain partners and encourages risk, information and resource sharing Zhong et al., (2017).

Chen et al., (2017)Trust is a multi-faceted construct that, although emphasized in the relationship literature, has not been consistently defined or operationalized.

Davenport & Low,( 2013) name predictable behavior and fair dealing as the main premises of trusting relationships. Similarly, Fang et al.,( 2011) define trust as confidence in the reliability and integrity of a cooperating party. Within the literature, researchers have a tendency to discuss commitment in conjunction with trust, which arises directly from relationship commitment. Essentially, commitment ensures relational continuity of cooperating parties within an exchange

### **Information tools or technology**

Knowledge of the tools and method is often not the problem, according to (Ntuen et al., 2010), but rather difficulties of coordinating the work and making people believe in them. In his article, Philip Atkinson states that most organization fail to create a culture that will sustain integration and any other program of organization improvement. He states that failing to plan equates to planning to fail. Firms should equally attend to building the right culture, conditions and circumstances which can become the bases of implementing change. Implementing an integrated supply chain in upwards and downwards requires extra resources which most of the firms are not willing to spend. Financial resources are needed for employee training programs, external consultants, ICT Integration and coordination etc. Sometimes even production of firms may be faced with interruptions which are as a result of the employees training in the new techniques. The managers would rather refuse unnecessary loss of resources especially if they do not anticipate immediate returns (González-Benito, 2007).

### **Management strategies**

Modern management strategies are dynamic and interconnected networks that are gradually lengthening and globe-spanning (Chiang *et al.* 2011). Supply chain practices integrates various firm's operations and support functions, synchronizing production with new orders, purchasing with demand, scheduling and shipping with customer requirements (Buisness-to-you, 2018). According to Beske & Seuring,( 2014), when well-implemented supply chain practices in an organization, forms an efficient, quick and accurate management tool that reduces cycle time and builds reliability thereby impacting positively on the performance of organizations

Effective management strategies are ever-growing means of conducting business in many industries around the world and are projected to reach \$5 trillion in transactions by the year 2021, up from \$75 billion in 2011 according to (Spaargaren & Mol, 2013). In their discussion of competitive purchasing strategies required for the twenty-first century, (Tate & Ellram, 2012) stated that manufacturing firms must maximize the use of strategic based decisions, including cost management and management of supplier relationships in every aspect of the business, linking across all members of the supply chain, increasing the speed of information transfer, and reducing non-value adding tasks. Clearly, the use of strategic based procurement has the potential to significantly impact national economies as well as the competitive position of individual firms (González-Benito, 2007).

### **RESEARCH DESIGN AND METHODOLOGY**

The study will adopt a descriptive research design to investigate the problem. It is considered to be suitable because it provides the opportunity for establishing the credibility of the variable under study as it does not manipulate them (Novikov&Novikov 2013). According to Krishnaswami (2003), the research design is termed to as a framework used to explore new knowledge in a given area. Further, the study used qualitative and quantitative data.

The target population for the study was 216 and the sample size was 108 that were selected using stratified random sampling. The sampling frame were procurement officers of the selected firms. The questionnaires were dropped at the procurement departments. The collected data was coded, edited and entered into the SPSS for analysis. Pilot test of the questionnaires was done prior to data collection exercise and 10 questionnaires were used for this exercise.this was done to determine the validity and reliability of the questionnaire. The

data were analysed using SPSS version 22. The findings were presented in graphs, charts and tables. The relationship between the independent and dependent variables was determined by Pearson's correlation coefficient.

## DATA ANALYSIS AND PRESENTATION

### Descriptive analysis.

**Table 1: Response Rates**

Questionnaires Administered	Questionnaires filled and returned	Percentage (%)
108	<b>90</b>	<b>83.33%</b>

**Source: Author 2021**

From the table above out of the 108 questionnaires issued, 90 questionnaires were filled and returned. This indicates 83.33% response rate.

### Duration in the firm

The study sought to establish from the respondents, the duration they have served in their respective firm. Research observations were as shown in Table 2

**Table 2: working duration in the firm**

Characteristic	Frequency	Percent
Less than 5 years	15	18%
6-10 years	35	38%
11-15 years	23	26%
16-20 years	12	13%
Over 20 years	5	6%
<b>Total</b>	<b>90</b>	<b>100%</b>

**Source: Author (2021)**

According to the study, majority of the respondents (38%) had worked for a duration between 6-10 years, 18% have worked for a duration of less than 5 years, 26% between 11-15 years, 13% between 16-20 years, while 6% indicated that they have worked in their firms for over 20 years. This indicates that majority of the respondents had worked for duration of 6-10 years and thus an extensive working experience.

## STUDY VARIABLES

### Collaboration

The respondents were required to indicate their level of agreement with the statements related to the extent to which their firm has embraced supply chain integration by filling a 5-Likert scale where; 1= to very large extent 2= large extent 3= a moderate extent 4= small extent 5= very small extent. The variable used Mean and standard deviation to compute.

**Table 3: collaboration**

Statement	Mean	Standard deviation
We maintain long term relationships between our firm and our suppliers	2.264	0.0754
There exists strategic partnerships between our firm and our suppliers	1.123	0.2451
Cross-functional management is extensively used in our firm	1.472	0.2451
Supply chain initiatives are cross functionally integrative	1.012	0.7402
Information provision to improve their quality and responsiveness	1.412	0.2341
Strategic plans are communicated to production department	1.542	0.3241
Participation of suppliers in the design stage development of new products	2.364	0.2341

Establishment of Quick ordering systems with main suppliers	2.369	0.4451
Internal functions achieved through data integration through the use of Information Technology systems	2.019	0.3452
Internal functions were periodic	2.014	0.4133
There is participation of our suppliers in the processes of procurement and production	2.369	0.0542
Customers are required to give feedback	2.3957	0.2536
Improvement of customers relations, processes, products and services is through feedback received	2.3927	0.0547
<b>Mean Aggregate</b>	1.904	

Source: Author (2021)

The results in Table 3 indicate respondent's agreement to a very great extent that; we maintain long term relationships between our firm and our suppliers (mean=2.264), There exists strategic partnerships between our firm and our suppliers (mean=1.123) where the cross-functional management is extensively used in our firm (mean=1.472) and the supply chain initiatives are cross functionally integrative (mean=1.012). Information provision to improve their quality and responsiveness (mean=1.412) and the strategic plans are communicated to production department (mean=1.542). There is assurance of participation of suppliers in the design stage development of new products (mean=2.364) and it helps in establishment of quick ordering systems with main suppliers (mean=2.369) and internal functions achieved through data integration through the use of Information Technology systems (mean=2.019). Internal functions are periodic (mean=2.014) and there is participation of our suppliers in the processes of procurement and production (mean=2.369) and that the company is actively seeking feedback from customers (mean=2.3957) on other hand, respondents agreed to a great extent that customers are encouraged by customers to improve customer relations, processes, products, and services (mean=2.3927).

#### Management strategies

**Table 4: Management strategies**

Statement of Variable	Mean	Sd.
1. Screening of suppliers to meet evaluation set criteria	4.609	0.650
2. Collaborative work with suppliers on lead time reduction in integration design initiatives	4.609	0.650
3. The management provides training and update Suppliers to build integrated and sustainable capacity	4.391	0.706
4. The management appreciates the role played by the Purchasing function in activities such as inventory reduction Demand management and process standardization.	3.83	0.88
5. Top management sensitizes employees on integration practices.	3.667	0.943
<b>Mean Aggregate</b>	<b>4.2212</b>	

The study was sought by the researcher to certify whether the adoption of management strategies had an impact on upstream and downstream supply chain integration within the supply in the manufacturing setting in Kiambu County. A scale of 1-5 was adopted whose ranges were: Strongly Disagree=SD, Disagree=D Were represented by a mean score equivalent to 1 to 2.5 on the continuous Likert scale (1<Disagree<2.5) whereas the scores of the neutral were represented by a score equivalent to 2.6 to 3.5 on the Likert scale (2.6<Neutral=3.5).The score of Agree=A and Strongly Agree =SA were represented by a mean score equivalent to 3.6 to 5 on the Likert Scale( 3.6<Agree<5). The results were represented in terms of mean and standard deviation.

From the table 4 above, it is evident that majority of the respondents agree that the management adopts Screening of suppliers to meet evaluation set criteria which has been indicated by a mean of (4.609) , Collaborative work with suppliers on lead time reduction in integration design initiatives as indicated by a mean of (4.609) , The management provides training and update suppliers to build integrated and sustainable capacity as indicated by a mean of (4.391) , The management appreciates a crucial role played by the purchasing function in activities such as inventory control, demand management and process standardization as indicated by a mean of (3.830) , top management sensitizes employees on integration practices denoted by a mean of (3.667).

**Information tools****Table 5. Information tools in upstream and downstream supply chain integration.**

Statement of Variable	Mean.	Sd.
1. Employees were knowledgeable on information tools used in supply chain.	4.185	0.611
2. Organization uses information systems, EDI ERP systems and E-procurement systems.	4.148	0.590
3. Organization provides comprehensive information to Suppliers and procurement staffs on lean procurement Methodologies.	3.83	0.88
4. Organization sensitize staffs in the procurement department on the benefits of integration practices.	3.667	0.943
5. Use of the Electronic data interchange for procurement.	3.444	0.629
6. Criteria had been developed for selecting suppliers with integration capability.	4.609	0.570

From the findings on table 5, it is evident that the majority of the respondents were knowledgeable on skills on information tools used in supply chain related to outsourcing and downsizing practices. As shown by a mean of (4.185) Organization uses information tools such as EDI, ERP systems, IFMIS in the case of Public Entity (PE), E- Procurement markets as shown by a mean of (4.148): The organization offers to both the suppliers and the procurement staffs guidelines on achieving an integrated supply chain successfully. The organization has sensitized the procurement staffs on the benefits of integration practices as shown by a mean of (3.830) Use of the Electronic data interchange for procurement had been developed by the organization as shown by a mean of (3.444) Criteria had been developed to select suppliers with integration capability as shown by a mean of (4.609)

E-procurement practice is one of the key enablers of procurement success. Since it provides a higher supply chain transparency which enables companies to centralize strategic procurement and decentralize operational procurement process in both upstream and downstream.

**Relationship management.****Table 4.9 Relationship management in upstream and downstream supply chain integration**

Statement of variable	Mean	Sd.
1 There is good relationship with the customers due to quality goods and services	3.667	0.880
1. Complains and comments are received positively and measures taken accordingly	3.444	0.629
2. There are minimal cases of switching due to high loyalty levels with their customers.	4.609	0.570
3. Reliability of product during and after order is given priorities.	4.609	0.650
4. There is reliable capacity that lead in meeting unexpected demand in timely manner.	4.522	0.650
Mean Aggregate	4.1702	

The study was sought by the researcher to certify whether the adoption of management strategies had an impact on integration in lean procurement methodologies in the manufacturing setting in Kenya. A scale of 1-5 was adopted whose ranges were: Strongly Disagree=SD, disagree=D Were represented by a mean score equivalent to 1 to 2.5 on the continuous Likert scale ( $1 < \text{Disagree} < 2.5$ ) whereas the scores of the neutral were represented by a score equivalent to 2.6 to 3.5 on the Likert scale ( $2.6 < \text{Neutral} < 3.5$ ). The score of Agree=A and Strongly Agree =SA were represented by a mean score equivalent to 3.6 to 5 on the Likert Scale ( $3.6 < \text{Agree} < 5$ ). The results were represented in terms of mean and standard deviation.

From the Table 6 the respondents agreed that There is good relationship with the customers due to high quality goods and services as shown by a mean of (3.667), Complains and comments are received positively and measures taken accordingly as shown by a Mean of (3.444) There are minimal cases of switching due to high loyalty levels with their customers as shown by a mean of (4.609), Reliability of product during and after order is given priorities as shown by a mean of (4.609), There is reliable capacity that lead meeting unexpected demand in timely manner as shown by a mean of (4.522).

## **INFERENCE ANALYSIS**

### **Regression analysis**

The regression analysis is concerned with the distribution of the average value of one random variable as the other variables which need not be random are allowed to take different values. A multivariate regression model was applied. The regression model specifically connects the average values of y for various values of the x-variables. A regression equation is in no way a mathematical linking two variables but serves as a pointer to questions to be answered. Basically, the regression analysis is used in two distinct including being a means of considering data taking into account any other relevant variables by adjustment of the random variable and generating mathematical forms to be used to predict the random variable from the other (independent) variables.

The regression model was as follows:

The model specification is as follows

$$Y = a + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + e$$

Where;

a= constant

X1= Collaboration

X2= Relationship management

X3= Management Strategies

X4= Information sharing tools

e =Error term

**Collaboration**

The study sought to find out the factors influencing integration in upstream and downstream supply chain in manufacturing companies of Kenya. The findings were as follows.

Majority of the respondents agreed (mean=4.40) that Collaboration was adopted as a factors influencing integration in upstream and downstream supply chain. Further, the standard deviation of 0.586 showed that the opinions of the respondents were less varied and that responses were revolving closer to the mean. In addition, it was also agreed (mean=3.66) by majority of the respondents Collaboration was frequently applied. Consequently, the findings showed that collaboration helped to positively influenced integration of upstream and downstream supply chain as reported by majority of the respondents who agreed (mean=4.31) on the matter. The opinions of the respondents were quite dispersed as indicated by a standard deviation of .781. On the other hand, it was strongly agreed (mean=4.46) that collaboration was considered as a factor influencing integration in upstream and downstream supply chain in manufacturing companies.

**Relationship management**

The study sought to establish the role of relationship management on integration in upstream and downstream supply chain. Data was obtained and findings were as follows; established that relationship management helped to reduce cost as strongly agreed (4.79) upon by majority of the respondents. A smaller standard deviation of 0.419 showed that respondents tended to agree on the matter as their opinions seemed converging. In addition, majority of the respondents were uncertain (mean=3.47) whether relationship management was aimed at promoting upstream and downstream supply chain irrespective of their largely varied opinions ( $\delta=1.121$ ). Consequently, the results revealed that relationship management lead to better quality and relatively cost reduction as strongly agreed (4.62) upon by majority of the respondents. It was also reported by majority of the respondents that relationship management leads to integration in upstream and downstream supply chain.

**Management Strategies**

The study assessed the effect of management Strategies on integration in upstream and downstream supply chain in manufacturing companies; the findings were analyzed as follows; majority of the respondents agreed (mean=4.38) that integration in upstream and downstream supply chain depended on the management strategies. On this point, respondents tended to have converging opinions. It was also agreed (mean=4.28) that management Strategies provides high quality and innovative products and respondents. The study findings also showed that majority of the respondents strongly agreed (mean=4.52) that supplier performance rating provides was a basis for continues improvement. It was reported by majority of the respondents that management Strategies enhances integration in upstream and downstream supply chain as indicated by a mean of 4.59 and a standard deviation of 0.632. Majority of the respondents also agreed (mean=4.05) that management strategies helps reduce supplier base and overall cost which promotes integration in upstream and downstream supply chain

**Information sharing tools**

The study sought to analyze the effect of Information sharing tools on integration in upstream and downstream supply chain in manufacturing companies agreed (mean=3.86) that Information sharing tools affected integration in upstream and downstream supply chain in manufacturing companies. Further, the standard deviation of 0.446 showed that the opinions of the respondents were less varied and that responses were revolving closer to the mean. In addition, it was also agreed (mean=1.26) by majority of the respondents that Information sharing tools was rarely applied. However, the opinions of the respondents were more varied as evidenced by a standard deviation of 0.941. Consequently, the findings indicated that Information sharing tools helped to classify supplier based on their capability by majority of the respondents who agreed (mean=3.952) on the matter. The opinions of the respondents were quite dispersed as indicated by a standard deviation of .898. On the other hand, it was strongly agreed (mean=4.12) Information sharing tools was considered as a factor influencing integration in upstream and downstream supply chain in manufacturing companies.

**Inferential Results**

Inferential analysis was conducted to assess the relationship between the various variables under study. In this case, Karl Pearson Correlation Coefficient was used to study the relationship between variables affecting integration in upstream and downstream supply chain and the findings were as follows;

Accordingly, Collaboration had an r-value of .358 indicating a significant relationship between supplier competency and procurement performance. This was satisfactory to the first objective of the study. In addition, the relationship between Collaboration approach and upstream and downstream supply chain was positive. Therefore, Collaboration is positively correlated with improvement of upstream and downstream supply chain in manufacturing companies

**Relationship management.**

Relationship management had an r-value of .405 indicating a significant relationship between this relationship management and upstream and downstream supply chain. This was satisfactory to the second objective of the study. In addition, the relationship between relationship management and performance of upstream and downstream supply chain was positive. Therefore, relationship management and upstream and downstream supply chain are positively correlated.

Management Strategies had an r-value of .619 indicating a significant relationship between management Strategies and upstream and downstream supply chain. This was satisfactory to the third objective of the study. In addition, the relationship between management Strategies and upstream and downstream supply chain was positive. Therefore, management Strategies improvement is positively correlated with integration of upstream and downstream supply chain.

Finally, Information sharing tools had an r-value of .313 indicating a significant relationship between the Information sharing tools and upstream and downstream supply chain. Therefore, the three variables categories are positively correlated with upstream and downstream supply chain.

## LIMITATIONS OF THE STUDY

While the research study has been well done, a number of limitations were encountered including time constraints as well as the effect of corona virus pandemic constraints. Additionally, there was difficulty in accessing the respondents because majority of them were working from home due to corona virus pandemic

## REFERENCES

- Beske, P., & Seuring, S. (2014). *Putting sustainability into supply chain management*. *Supply Chain Management*. <https://doi.org/10.1108/SCM-12-2013-0432>
- Buisness-to-you. (2018). *Value Chain Analysis: An Internal Assessment of Competitive Advantage*. Buisness-to-You.
- Cao, M., & Zhang, Q. (2011). *Supply chain collaboration: Impact on collaborative advantage and firm performance*. *Journal of Operations Management*. <https://doi.org/10.1016/j.jom.2010.12.008>
- Chen, S., Shi, R., Ren, Z., Yan, J., Shi, Y., & Zhang, J. (2017). *A Blockchain-Based Supply Chain Quality Management Framework*. *Proceedings - 14th IEEE International Conference on E-Business Engineering, ICEBE 2017 - Including 13th Workshop on Service-Oriented Applications, Integration and Collaboration, SOAIC 207*. <https://doi.org/10.1109/ICEBE.2017.34>
- Davenport, E., & Low, W. (2013). *From trust to compliance: accountability in the fair trade movement*. *Social Enterprise Journal*. <https://doi.org/10.1108/17508611311330028>
- Fang, Y. H., Chiu, C. M., & Wang, E. T. G. (2011). *Understanding customers' satisfaction and repurchase intentions: An integration of IS success model, trust, and justice*. *Internet Research*. <https://doi.org/10.1108/10662241111158335>
- Hudnurkar, M., Jakhar, S., & Rathod, U. (2014). *Factors Affecting Collaboration in Supply Chain: A Literature Review*. *Procedia - Social and Behavioral Sciences*. <https://doi.org/10.1016/j.sbspro.2014.04.184>
- Huo, B., Flynn, B. B., & Zhao, X. (2017). *Supply Chain Power Configurations and Their Relationship with Performance*. *Journal of Supply Chain Management*. <https://doi.org/10.1111/jscm.12139>
- Kim, M., & Chai, S. (2017). *The impact of supplier innovativeness, information sharing and strategic sourcing on improving supply chain agility: Global supply chain perspective*. *International Journal of Production Economics*. <https://doi.org/10.1016/j.ijpe.2017.02.007>
- Liao, S. H., Hu, D. C., & Ding, L. W. (2017). *Assessing the influence of supply chain collaboration value innovation, supply chain capability and competitive advantage in Taiwan's networking communication industry*. *International Journal of Production Economics*, 191, 143–153. <https://doi.org/10.1016/j.ijpe.2017.06.001>
- Lourenço, H. R., & Ravetti, M. G. (2018). *Supply chain management*. In *Handbook of Heuristics*. [https://doi.org/10.1007/978-3-319-07124-4\\_54](https://doi.org/10.1007/978-3-319-07124-4_54)
- Martínez-Martínez, A., Cegarra-Navarro, J. G., & García-Pérez, A. (2015). *Environmental knowledge management: A long-term enabler of tourism development*. *Tourism Management*. <https://doi.org/10.1016/j.tourman.2015.03.006>
- Mvundura, M., Lorenson, K., Chweya, A., Kigadye, R., Bartholomew, K., Makame, M., Lennon, T. P., Mwangi, S., Kirika, L., Kamau, P., Otieno, A., Murunga, P., Omurwa, T., Dafrossa, L., & Kristensen, D. (2015). *Estimating the costs of the vaccine supply chain and service delivery for selected districts in Kenya and Tanzania*. *Vaccine*. <https://doi.org/10.1016/j.vaccine.2015.03.084>
- Ntuen, C. A., Park, E. H., & Gwang-Myung, K. (2010). *Designing an information visualization tool for sensemaking*. *International Journal of Human-Computer Interaction*. <https://doi.org/10.1080/10447310903498825>
- Nyamasege, O. J., & Evans Biraori, O. (2015). *Effect of Supplier Relationship Management on the Effectiveness of Supply Chain Management in the Kenya Public Sector*. *International Journal of Managing Value and Supply Chains*. <https://doi.org/10.5121/ijmvsc.2015.6103>
- Rodríguez-Enríquez, C. A., Alor-Hernández, G., Mejía-Miranda, J., Sánchez-Cervantes, J. L., Rodríguez-Mazahua, L., & Sánchez-Ramírez, C. (2016). *Supply chain knowledge management supported by a simple knowledge organization system*. *Electronic Commerce Research and Applications*, 19, 1–18. <https://doi.org/10.1016/j.elerap.2016.06.004>
- Sakarya, S., Bodur, M., Yildirim-Öktem, Ö., & Selekler-Göksen, N. (2012). *Social alliances: Business and social enterprise collaboration for social transformation*. *Journal of Business Research*. <https://doi.org/10.1016/j.jbusres.2012.02.012>
- Samal, S. K. (2019). *Logistics and supply chain management*. *International Journal of Psychosocial Rehabilitation*. <https://doi.org/10.37200/IJPR/V23I6/PR190779>
- Schneiderjans, D. G., Curado, C., & Khalajhedayati, M. (2020). *Supply chain digitisation trends: An integration of knowledge management*. *International Journal of Production Economics*. <https://doi.org/10.1016/j.ijpe.2019.07.012>
- Sherwin, M. D., Medal, H., & Lapp, S. A. (2016). *Proactive cost-effective identification and mitigation of supply delay risks in a low volume high value supply chain using fault-tree analysis*. *International Journal of Production Economics*, 175, 153–163. <https://doi.org/10.1016/j.ijpe.2016.02.001>
- Spaargaren, G., & Mol, A. P. J. (2013). *Carbon flows, carbon markets, and low-carbon lifestyles: Reflecting on the role of markets in climate governance*. *Environmental Politics*. <https://doi.org/10.1080/09644016.2013.755840>
- Tate, W. L., & Ellram, L. M. (2012). *Service Supply Management Structure in Offshore Outsourcing*. *Journal of Supply Chain Management*. <https://doi.org/10.1111/j.1745-493X.2012.03283.x>
- Wu, I. L., Chuang, C. H., & Hsu, C. H. (2014). *Information sharing and collaborative behaviors in enabling supply chain performance: A social exchange perspective*. *International Journal of Production Economics*. <https://doi.org/10.1016/j.ijpe.2013.09.016>
- Zhao, X., Huo, B., Selen, W., & Yeung, J. H. Y. (2011). *The impact of internal integration and relationship commitment on external integration*. *Journal of Operations Management*. <https://doi.org/10.1016/j.jom.2010.04.004>
- Zhong, W., Su, C., Peng, J., & Yang, Z. (2017). *Trust in Interorganizational Relationships: A Meta-Analytic Integration*. *Journal of Management*. <https://doi.org/10.1177/0149206314546373>