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IMPORTANCE OF SUPPLY CHAIN QUALITY MANAGEMENT, INFORMATION SHARING FOR IMPROVEMENT OF OPERATIONAL PERFORMANCE AMONG ORGANIZATIONS: A CONCEPTUAL REVIEW

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Abstract

When supply chain management connects the supply end nodes , there is great need to move quality inflows and outflows of materials, information and also financial transactions flawlessly. The problems of poor quality could be attributed poor quality control, inexperienced expertise from the users and quality assurance programmes, and therefore supply chain quality management concept is important in supply chain management and operational performance of all organizations. Because quality management supports the supply chains to achieve required performance, supply chain quality management (SCQM), through a systems-based approach to performance improvement and information sharing , leverages opportunities created by upstream and downstream linkages with suppliers and customers and helps supply chain members to improve processes, services, products and work culture with focus on generating sources of productivity and competitive differentiation to achieve total customer satisfaction and operational performance too.

Key words: *Supply Chain Quality Management; Information Sharing; Operational Performance.*

Introduction

General Background

Generally, supply chain management connects the supply end nodes but needs to move quality inflows and outflows of materials, information and also financial transactions. The problems of poor quality could be attributed poor quality control, inexperienced expertise from the users and quality assurance programmes, and therefore supply chain quality management concept is important in supply chain management performance. Because quality management supports the supply chains to achieve required performance, supply chain quality management (SCQM) through a systems-based approach to performance improvement that leverages opportunities created by upstream and downstream linkages with suppliers and customers it helps supply chain members to improve processes, services, products and work culture with focus on generating sources of productivity and competitive differentiation to achieve total customer satisfaction.

Supply chain management has been found to facilitate traditional supply chains into responsible and competent networks but requires competence to manage internal and external environments of organizations that involve integrity and social responsibility and also basic principles ,infrastructures, and practices which should include system-wide quality information for both internal and external members of the supply chain network. The relevant theories that apply in this area are: Network Theory (NT),Agency Theory (AT),Information Sharing Theory (IST) and Theory of Operational Performance (TOP).

Supply Chain Quality Management

Ramos, et al.(2007), define supply chain quality management as, "the coordination and integration of supply chain business processes to measure, analyze, and continually improve products, services and processes with the purpose of creating value and ultimate customers in the business and market". Supply chain quality management is concerned with viability of supply chain networks, which are sets of organizations that work together to respond rapidly and correctly to customer needs. Supply chain quality management has key elements that include product characteristics, demand volumes and profiles, distribution centre lead times, supplier lead-times, cost data, strategic options, supply chain structures and scenarios, and performance indicators.

Measurement of supply chain quality management performance captures costs, conformance to specifications, process variance reliability, timeliness or responsiveness and customer expectation and that contributes to competitiveness of an organization.Supply chain quality management seeks to improve performance in order to increase customer satisfaction, competitiveness, and choice of suitable suppliers and therefore it must be properly measured using adequate performance measurement system. Supply chain quality management captures these measurements on assumption that customer orders are consolidated and follow normal distribution patterns, lead time between the distribution Centre and ordered supplier delivery are synchronized, the defective rate at distribution centre is constant, the defective items repairable and are assumed to be completely rejuvenated after repair, the repair time takes exponential distribution, and the repair cost is constant.

Robinson et al.(2005) mention that supply chain management have some challenges such as developing trust and collaboration among supply chain partners, identifying best practices that can facilitate supply process alignment and integration, and

successfully implementing latest collaborative information systems and internet technologies that drive efficiencies, performance and quality throughout the supply chains hence need for supply chain quality management to address such challenges.

Garvin (1984), suggested approaches to the concept of quality to include transcendent, product-based, manufacturing-based, user-based and value-based to compliment what Malhotra et al.(1994) had suggested that competitions are complete if quality is understood and translated from customer requirements to final products and services as realized in value chain management systems. This approach requires practice of total quality management suggested by Dean(2000), which should include: customer focus, strategic planning and leadership, continuous improvement and learning, and empowerment and teamwork.

Mehra et al.(2001) added that total quality management requires these five key areas: human resource management focus, management structure, quality tools, supplier support, and customer orientation. Supply chain quality management translates the traditional supply chain practices which are usually within the organization to inter-organizational supply chain perspective, and these require internal focused process integration and management, strategy, quality leadership and quality practices. It is concerned on how supply chain chains must integrate both service and production processes across the supply chain network and beyond boundaries of individual firms, although such firms must also recognize need for externally focused process integration and management strategy, communication and partnership, supply chain quality leadership and quality and supply chain practices.

Measurement of supply chain quality management performance which can capture costs, conformance to specifications, process variance reliability, timeliness or responsiveness and customer expectation can include , what Tan et al.(1999), suggested like :corporate indices such as ROA ,market share, and overall competitive position or balanced score card , according to Holmberg (2000) and financial measures. Lapide (2000), suggested measures of overall supply chain performance such as availability of products at the point of consumption and total landed costs to get the product to the point of consumption, while Gunasekaran et al.(2004) suggested performance measurement framework that can utilize a balance between financial and non-financial measures as they relate to the decision-making levels of strategic, tactical and operational nature. Some techniques are critical success factors(Van Veen-Dirks and Wijn, 2002) and SCOR configurations. Measures ensure that all components of the supply chain system are operating efficiently. They should include process quality improvement assessment and control and are effective if they can identify customer requirements, inventory placement and policies and procedures which coordinate supply chain activities.

Marcio et al.(2018) report that performance measurement for supply chain quality management depends on supply chain integration which should be cooperative approach between the different members of the supply chain leading to cumulative capabilities that prepare organizations for dynamic global competition because performance of the supply chain facilitates inter-organizational understanding and integration of supply chain quality management using quality-related tools and practices that compatible with supply chain activities by creating comprehensive supply

chain network. They also argue that a network is composed of nodes and links in which nodes are actors while the links are relationships between which cause how each organization relate to each other through exchange of products and services and that involves coordination and integration of members. They also state that in supply chain quality management, quality conformance is for both the product and customer satisfaction related to service provided.

Information sharing

Information sharing is the exchange of data between various organizations, people and technologies. The types of information that can be shared within a supply chain, including logistics, business, strategic, tactical. Information sharing improves coordination between supply chain processes to enable the material flow and reduces inventory costs. Information sharing leads to high levels of supply chain integration by enabling organizations to make dependable delivery and introduce products to the market quickly. It enables companies to make better decisions in their operation leading to better resource utilization and lower supply chain costs and allows companies to be more responsive to customers' demands. means to enhance supply chain performance and operational performance in general. It also allows companies to better coordinate their activities with their supply chain partners that lead to increased performance because connecting the industry boosts operational performance too.

Operational performance

Operational performance is the synergy between various company units and the ability to produce greater output together, it is ,therefore, the level where all business departments collaborate to accomplish specific business goals.

Operational measures are link building service entanglements which are defined by certain task that should be achieved optimally by means of local operations and information sharing.

Operational performance is necessary in order to evaluate the efficiency of an entire production process and also, to identify ways to improve an operation, from the development of a product or service to the end of its life.

Literature Review

Theoretical literature review

The theoretical literature review establishes what theories already exist, the relationships between them and to what extent the theories have been studied and the establishment of new hypotheses.

Practically, supply chain management connects the supply end nodes but needs to move quality inflows and outflows of materials, information and also financial transactions . This role is played by supply chain quality management concept for coordination and integration of supply chain business processes than can measure, analyze, and continually improve products, services and processes with the purpose of creating value and ultimate customers in the business and market. This systems-based approach to performance improvement leverages opportunities created by upstream and downstream linkages with suppliers and customers and helps supply chain members to improve processes, services, products and work culture with focus on generating sources of productivity and competitive differentiation to achieve total customer satisfaction if connected through firm-centric and product-based commitment to the inter-organizational supply chain

orientation involving customers, suppliers and other partners in order to optimize operational performance through quality information sharing across the supply chain. Based on above, the theories which would support the arguments are :Network Theory (NT),Agency Theory (AT),Information Sharing Theory (IST) and Theory of Operational Performance (TOP), which are discussed here below.

Network Theory

The network theory describes the relationships in which companies, suppliers, customers or buyer are engaged because the network is a specific type of relation which links a defined set of persons, objects or events. Network theory allows us to observe clusters of communication relationships created by the objects communicating within a network. These clusters link together to form organizational networks. This theory is very useful for corporate organization structures and the workplace. Companies that are struggling with information flow, especially across divisions, utilize this theory to reorganize their internal structure to promote the free-flowing of information between divisions

Agency Theory

Agency theory views the firm as a set of contracts among self-interested individuals whereby relationship is created when a person (the principal) authorizes another person (the agent) to act on his or her behalf and therefore important to create trust. Agency theory studies the problems and solutions linked to delegation of tasks from principals to agents in the context of conflicting interests between the parties and addresses rationality, contracting, and informational conditions, ex ante ('hidden characteristics') as well as ex post information asymmetry ('hidden action'), and examines conditions under which various kinds of incentive instruments and monitoring arrangements can be deployed to minimize the welfare loss. Agency theory is important in supply chain quality management that influences how firms design and manage their quality management systems for supply chains. It identifies behavioural change by supply chain actors and sheds light on activities involving principal and agent, self-interest, risk aversion, lack of trust, goal conflict and imperfect policy implementation.

Information sharing Theory

Information sharing theory enables individuals to be driven by personal determinants since reciprocity and power and by the social and organizational determinants ensures quality levels of information sharing. Information sharing is basic to effective coordination in a supply chain and effective supply chain management is a pre-requisite to quality of service and profitability.

Theory of Operational Performance

Theory of operational performance analyzes an organization through an internal perspective so available assets can create a competitive advantage. Operational performance objectives define the areas of operational performance that a company tries to improve, in a bid to meet its corporate strategy contained in corporate strategy that identify how to measure and configure the environment that enables the objectives to be accomplished The operational performance objectives: speed, quality, costs, flexibility, and dependability.

Speed measures how fast a company can deliver its products and generates sales quotes and concerned with such issues as the time that it takes to manufacture and process one or more products of the company or the time that it takes to research a new product and develop it.

Quality is considered to measure how well a product conforms to certain specifications and concerned how desirable the features of the product are; how reliable the product is; how durable it is; how easily it can be serviced; how well it performs its intended function; and, how much the customers believe in its value which are all are relevant measures of quality.

Variation in Costs as an objective looks at how much variation there is in the unit cost of a product as measured by changes in a variety of factors, including the volume and the variety of the products. Products that feature a greater variety tend to sport lower volumes and higher unit costs and vice versa. Ultimately, this affects the price of the product, the costs of producing it, and the profits to be obtained from that product.

Flexible operations are operations that can configure the product lines to deal with various requirements and to also adjust these product lines quickly to new requirements. The latter is also closely related to the speed objective. A company should be able to produce different quality product varieties and also adapt its operations to suit different market conditions and delivery schedules.

Dependability of Operational Performance is another objective that measures how dependable the company is when it comes to timely delivery of products to its customers, in accordance with planned prices and costs. The product's ability to function in an intended way consistently over a reasonable period of time is also a measure of its dependability.

Empirical literature review

Empirical literature review explores past studies in view of attempting to answer specific research questions. Empirical research is based on observed and measured phenomena and derives knowledge from actual experience rather than from theory or belief. The review will deal will areas of supply chain quality management and operational performance, information sharing and operational performance, supply chain quality management, information sharing and operational performance and finally, the joint effect of supply chain quality management and information sharing on operational performance.

Supply chain quality management and operational performance

Gap analysis from literature covering supply chain quality management and operational performance has been summarized in Table 1 herein

Information sharing and operational performance

Information sharing is important business in general because it can facilitate knowledge exchange and networking for good coordination and collaboration that are necessary to improve operational performance and service delivery.

According to Baah et al. (2022), information sharing is necessary because it creates visibility and agility that have effect operational performance within an organization.

Joohwan et al.(2017), suggest that, even though information sharing can contribute to internal operational performance, it must have good governance to complement connectivity and efficient information flows.

Moxi et al.(2019), on the other hand, report that information sharing helps to improve performance by responding to market intelligence , which ensures that firms re-organize their operations, as Yue et al.(2020) mention that influence product performance which contributes to operational performance too.

Kankang et al.(2018) argue that external information results in both reactive and proactive flexibilities which improve operational performance, a case supported by Paulina et al.(2018), who confirm that information sharing improves operational performance through inter-organizational process support which create credibility and understanding which enhance operational performance. Caixia et al. (2019) also weigh in and suggest that information sharing enhance product information and operational performance, while Zhaojun et al.(2019), contend that information sharing creates good supplier responsiveness that improves operational performance.

Supply chain quality management, Information sharing and operational performance

Sanjay et al.(2020) opine that operational performance can be displayed through supply chain practices like strategic supplier partnership, procurement management and information sharing. Sanjay et al.(2015) report that supply chain quality management provides different configuration scenarios that can be applied to improve operational performance while Benjamin et al.(2022) mention that internal integration which impacts customer integration is necessary to achieve operational performance levels.Manhour et al.(2020) and Rajesh et al.(2019), also confirm that integration increases capabilities and trust that enhance operational performance, and these form key components of supply chain quality management.

According to Baah et al. (2022), information sharing is necessary in supply chain quality management because it creates supply chain visibility and supply chain agility that have effect on general supply chain performance within an organization. Joohwan et al.(2017), suggest that, even though information sharing can contribute to internal supply chain performance, it must have good governance to complement connectivity and efficient information flows. Moxi et al.(2019), on the other hand, report that information sharing helps to improve performance by responding to market intelligence , which ensures that firms re-organize their operations, as Yue et al.(2020) mention that influence product performance which contributes to operational performance too. Kankang et al.(2018) argue that external information results in both reactive and proactive flexibilities which improve operational performance, a case supported by Paulina et al.(2018), who confirm that information sharing improves operational performance through inter-organizational process support which create credibility and understanding which enhance operational performance. Caixia et al. (2019) also weigh in and suggest that information sharing enhance product information and operational performance, while Zhaojun et al.(2019), contend that information sharing creates good supplier responsiveness that improves operational performance.

Supply chain quality management information sharing on operational performance

Marcio et al.(2018) confirm that performance of supply chain quality management depends on supply chain integration creates comprehensive supply chain network with relationships between which cause how each organization relate to each other through exchange of products and services through good coordination among members and that improves operational performance. Baah et al. (2022), confirms that information sharing is necessary in supply chain quality management because it creates supply chain visibility and supply chain agility that have effect on general

supply chain performance within an organization. Joohwan et al.(2017), suggest that, even though information sharing can contribute to internal supply chain performance, it must have good governance to complement connectivity and efficient information flows. Manhour et al.(2020) and Rajesh et al.(2019), also confirm that integration increases capabilities and trust that enhance operational performance.

Moxi et al.(2019), on the other hand, report that information sharing improves performance by responding to market intelligence , which enables ensures firms to re-organize their operations. Kankang et al.(2018) argue that external information results in both reactive and proactive flexibilities which improve operational performance, a case supported by Paulina et al.(2018), who confirm that information sharing improves operational performance through inter-organizational process support which create credibility and understanding which enhance operational performance.

From above arguments we note that operational performance is important to understand so as to gauge the organizational effectiveness in terms of financial and other operational obligations ,in order to achieve the demand and supply of the market and customers in general, and therefore, supply chain quality management and information sharing can jointly contribute to improvement of operational performance within an organization.

Research and Knowledge gap

A knowledge gap is a discrepancy between what is known and what should be known. This can be achieved by tackling previous studies to identify what is missing in either methodology, theory and literature in general. On the other hand, a research gap is a topic or area for which missing or inadequate information limits the ability of reviewers to reach a conclusion for a given question. Research gaps types can relate to empirical, knowledge, evidence, theoretical, population , application or implementation , and methodology. The table below contains information research and knowledge gap analyses based on key areas in this this topic which are: Supply Chain Quality Management (SCQM),Information Sharing(IS) and Operational Performance (OP).The columns of the table are arranged in terms of Researcher, Focus, Findings and Research and Knowledge Gaps.

Table 1: Research and Knowledge gaps

Researcher	Focus	Findings	Research and Knowledge Gaps
Kushwaha et al.(2010)	Supply chain quality management	Good theoretical framework is necessary for Supply Chain Quality management be understood and applied for decision making	There is no empirical research used and the validity and theoretical soundness of the conceptual framework for SCQM) not tested. The testing is only

			limited to measurement of competitive advantage and organizational performance and does include operational performance.
Kue et al.(2005)	Supply Chain quality Management(SCQM)	SCQM initiates and links key critical success factors and dimensions to ensure supply chain competence	Only about 250 organizations in Hong Kong ,perceived to have general supply chain practices, were interviewed. The did not reflect required SCQM constructs. The sample size was small and the results cannot be generalized.
Carmignani,G.(2009)	Supply Chain Quality Management	SCQM is supported by ISO 9001:2000 standard that facilitates principles and techniques of modern supply chain management through main processes and drivers	The standard proposed is generic to supply chain but no sector based, and also since it is modification of ISO 9001:2000,and needs more research to make it applicable
Machado et al.(2020)	Supply Chain Quality Management	SCQM requires integration based on leadership, management and strategic planning, involvement in product development sustainability, stakeholders' involvement and	The methodology adopted was Systematic Literature Review of 32 articles, on Supply Chain Management and Quality Management, to develop key performance

		commitment, and information sharing	measures are not conclusive .the articles lack synthesis.
Sahoo (2021)	Operational performance	Operational practices impact firm's performance total quality management practices that lean towards supply chain practices	Only 124 plant managers and directors were sampled from vast Indian manufacturers , and the sample is small. Again, cross-sectional data used and this may require more approaches like longitudinal data
Agyei-Owusu et al.(2021)	Operational performance	Internal integration affects customer integration which has impact on operational performance	Survey from 120 manufacturing and service firms may not give representative results from the chosen parameters
Yu and Huo (2018)	Operational performance	Supplier, internal and customer quality integration improves operational performance	Data collected from 308 Chinese and analyzed against RBV and Capital interest parameters cannot give generalized conclusion for operational performance
Adem& Virdi(2019)	Operational performance	Total quality management of supplier quality management, continuous improvement and process management have	Cross-sectional survey from 73 ISO 9001:2008 certified manufacturing firms in Ethiopia used the usual TQM parameters, but more contextual

		significant impact on operational performance	variables are necessary to capture operational performance entirely.

Information Sharing In Supply Chain Quality Management

Defining information sharing:

Information is defined as the level information that is being communicated to the supply chain members(SCM) or supply chain partners (SCP), which may be critical and has proprietary value.

Some theories applicable in information sharing:

Two theories that can be applied in information sharing are :Agency Theory and Network Theory (supported by Goldratt, (1990) and Jensen et al.(1976).Organizations are usually apprehensive in sharing information because it may be divulged to competitors

Importance of information sharing in supply chain management:

Information sharing is important in supply chain management and business in general because it can facilitate knowledge exchange and networking for good coordination and collaboration that are necessary to improve performance and service delivery.

According to Baah et al. (2022), information sharing is necessary in supply chain quality management because it creates supply chain visibility and supply chain agility that have effect on general supply chain performance within an organization.

Joohwan et al.(2017), suggest that, even though information sharing can contribute to internal supply chain performance, it must have good governance to complement connectivity and efficient information flows.

Moxi et al.(2019), on the other hand, report that information sharing helps to improve performance by responding to market intelligence , which ensures that firms re-organize their operations, as Yue et al.(2020) mention that influence product performance which contributes to operational performance too.

Kankang et al.(2018) argue that external information results in both reactive and proactive flexibilities which improve operational performance, a case supported by Paulina et al.(2018), who confirm that information sharing improves operational performance through inter-organizational process support which create credibility and understanding which enhance operational performance. Caixia et al. (2019) also weigh in and suggest that information sharing enhance product information and operational performance, while Zhaojun et al.(2019), contend that information sharing creates good supplier responsiveness that improves operational performance.

Operational Performance

Defining operational performance:

Operational performance is the ability of enterprises to deliver products to customers using economic processes.

Some theories in operational performance

These two significant theories support operational performance are: Theory of Constraints, to address any constraints that can affect a firm's performance and

Resource-Based View whereby an organization must use its resources for competitive advantage (suggested by Goldratt (1990) and Liang et al.(1989)

Importance of operational performance in supply chain management:

Operational performance is important to understand so as to gauge the organizational effectiveness in terms of financial and other operational obligations ,in order to achieve the demand and supply of the market and customers in general.

Sanjay et al.(2020) opine that operational performance can be displayed through supply chain practices like strategic supplier partnership, procurement management, information sharing and inventory management. Sanjay et al.(2015) report that supply chain quality management provides different configuration scenarios that can be applied to improve operational performance while Benjamin et al.(2022) mention that internal integration which impacts customer integration is necessary to achieve operational performance levels.

Manhour et al.(2020) and Rajesh et al.(2019), also confirm that integration increases capabilities and trust that enhance operational performance while Anabela et al.(2017) and Hao et al.(2019) add that certain practices like quality management for upstream and downstream supply chains are important for improved operational performance.

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