

Supply Chain Operations Reference Model: An analytical study

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Abstract: This study aimed to investigate the theoretical literature related to supply chain operation reference (SCOR) in a critical method. To achieve this, papers, research articles, literature, research discussions, and review of published research related to the topic have been studied. Several analytical studies of authors published on this topic also studied and compared with other studies published after updating the reference model (SCOR.12.0) which is considered the base for this study. The importance of the model on corporate performance and competitiveness from the point view of these studies reviewed, challenges and difficulties facing its implementation efficiently also reviewed. Mai results of the research are there is a need to change thinking and provide the right people to avoid a re-discussion and interpretation of processes when adopting the SCOR framework in any organization. Business analysis through the SCOR model has a positive impact on supply chain performance, it also provides the framework and terminology that used to evaluate, determine locations and implement the supply chain process. Researcher recommended developing the SCOR model further in the future to serve all operations and activities of supply chain operations, integrating SCOR model with information systems and technologies, to constantly checked and established within a good framework and studying SCOR in depth by organizations and academics.

Keywords: Supply Chain management, Supply Chain Operations Reference Model, SCOR.12.0

I. INTRODUCTION

In recent years, with many changes in technology and environment (Malkawi, 2016) (Malkawi, 2017) and the need for knowledge intensive processes (Al-Khasawneh, 2014), measurement of supply chain performance has received much attention from researchers and practitioners. Given the development of current business environments, traditional supply chain standards are less relevant to today's business environments, as they are within their scope, and cannot effectively cover broad ranges that involve activities. In other words, traditional measures do not fully explain the effectiveness of the performance of key business processes (AL Al-Khasawneh, Malkawi, Nazem NM, AA AlGarni, 2018), and do not provide compatibility about the effectiveness of the supply chain in achieving customer qualifications. In addition, the majority of the original metrics are single fixed metrics, rather than the multi-metric metric for multiple companies, which is necessary to measure the performance of the entire supply chain (Cetinkaya, et al, 2011).

The most frequently used metrics such as stock turnover and return on investment are insufficient to measure and direct performance across many companies in the supply chain, resulting in a lack of efficiency within the supply chain. New metrics needed for efficient supply chain management (Liang, et al., 2006). There are many performance measures that have been widely used in supply chain performance evaluation models, for example, sales maximization, profit maximization, buyer-supplier benefits maximization, etc. (Wisner, 2011), that enable large medium and small companies (Malkawi, 2016) to evaluate the performance of their supply chain partners (Mandal, 2012). There are many models applied to the supply chain business, but the SCOR model is one of the most famous that has been widely applied by researchers (Bidgoli, 2010).

Research problem:

The research problem is determined in the following questions:

- I. What is the reference for supply chain operations and what is its importance for organizations?
- II. What is the effect of applying SCOR in the supply chain organizations?

Research objectives:

This research aims to analyze the studies that addressed the reference of supply chain operations SCOR, examine and discuss its importance, application and its impact on the performance and competitiveness of supply chain organizations, through the following:

- I. Studies that dealt with the subject before the issuance of the new version (SCOR.12.0).
- II. Studies that dealt with the subject after the issuance of the new version (SCOR.12.0)
- III. Comparing previous studies and explaining the difference and research gaps that the researchers did not address.
- IV. Explain the difficulties and obstacles that prevent the application of the SCOR in supply chain organizations.

Research importance:

The importance of the research stems from the fact that it deals with an important model for evaluating the performance of supply chain operations, where the supply chain operations reference (SCOR) is a

unanimous view of supply chain management. It provides a unique framework, connecting business processes and metrics, with best practices and modern technology in a unified structure, to support communication between supply chain partners, and improve the effectiveness and related supply chain management activities. The strength of the SCOR model is greatly enhanced by its facilitation and customization as a tool for the organization's supply chain environment. The SCOR model makes the supply chain distinct by connecting business processes, performance, practices, and individuals in a unified structure. We can talk about the importance of this research through the following two dimensions:

Theoretical importance:

The importance of this research stems from the vitality of the topic it deals with and its novelty, which adds to the accumulation of knowledge in the management of supply chains, especially in the subject of performance measurement references and supply chain operations. Through the findings and recommendations that enrich theoretical literature about the SCOR model, this will support the excellence, which is very important for any organization (Malkawi, 2018).

Practical importance:

This research highlighted in the results, findings and the recommendations that supply chain management organizations can benefit from, as well as for students and researchers in the field of business management and supply chains.

Research Methodology

In light of the research subject, its questions, objectives and the nature of this research, descriptive analytical and theoretical approach adopted to achieve the goals that the research. This method depends on reviewing the relevant literature and studies, especially those who have made comparisons and critiques of previous studies. Benefiting in an in-depth analysis and making recommendations to enrich theoretical literature about the SCOR model. Finally answering the research questions as appropriate approach to the nature of this research, and this methodology is suitable for this type of studies (Al-Khasawneh Akif Lutfi Al-Jammal HR; Al-khasawneh, M 2015) (Malkawi, 2018).

II. THEORETICAL FRAMEWORK

Concept of SCOR model

The Supply Chain Operations Reference Model (SCOR) is the reference model for supply chain operations, developed and approved by the Supply Chain Council in 1996 as a cross-industry diagnostic tool for supply chain management. It is regularly updated to adapt changes in commercial supply chain practices. SCOR is the product of the American Production and Inventory Control Society (APICS), after it was integrated with the Supply Chain Management (SCMC) in 2014. It is a powerful tool for evaluating and comparing supply chain activities and performance (APICS, 2016).

The SCOR Supply Chain Operations Reference Model describes process activities related to meeting customer demand, which include plan, source, manufacture, delivery, return, and enable. Using the model includes analyzing the current state of operations and goals of organizations, determining operational performance, and comparing their performance with reference data (Douglas, 2008) (Peter, 2012). The Supply Chain Operations Reference (SCOR) includes a set of metrics for supply chain performance. Supply Chain Board members have formed industry groups to collect information on best practices that companies can use to build their own supply chain models (APICS Dictionary and Learn It App, 2016)). The supply chain operations reference model is constantly updated to keep pace with rapid developments, and the most recent version of SCOR 12.0 was released in 2017, available under APICS membership. The main difference in the recent release version (12.0) is within the framework of operations, compared to previous releases The Enable process was created and added as a separate component of the entire supply chain operations map (APICS, 2017).

Scope of SCOR

The SCOR model used to describe very simple or very complex supply chains, using a common set of definitions by different industries. Today, public and private institutions and companies around the world use this model as a basis for global supply chain and dedicated for improvement projects. (Apics. Org, 2019). This reference model enables users to address, improve, and communicate supply chain management applications within / between all stakeholders in the expanding enterprise (Poluha, 2007). It helps to assess and advance the supply chain management, to ensure reliability, consistency and efficiency, and the compatibility of the supply chain with the organization's goals. The updated version includes more "drivers for supply chain success", covering topics such as the Omni channel, metadata and block chain, according to APICS (APICS, 2019).

The framework has also been updated to bring its best practices into line with digital strategies, including new training information, and integrated sustainability standards, using the GRI Global Reporting Initiative. SCOR focuses as a framework on all customer interactions inside and outside the market, from the moment the order is placed until the invoice is paid. This includes all materials and services necessary to complete transactions, including supplies, spare parts, programs and equipment. (APICS, 2019). The SCOR model base on four main "columns" (APICS, 2019):

SCOR Process the Supply Chain Reference (SCOR) model describes business activities associated with all phases of meeting a customer's demand. The model itself is organized around the six basic management processes: plan, source, manufacture, delivery, and return, enable. Using these essential elements of operations, SCOR covers all customer transactions (from quotation to cash payment), all material transactions (from purchase to payment, including equipment, supplies, spare parts, bulk products, software, etc.) and all market transactions (Manufacturing, from understanding total demand to fulfilling each order) (Apics.org, 2019). SCOR model is based on six major management processes including (White, 2018):

- **Plan:** A plan that includes planning processes: identifying resources, requirements, and establishing a communication chain for the process, to ensure its consistency with business goals. This includes developing best practices for chain efficiency by analyzing information and market trends forecast for goods and services.
- **Source:** Source operations include the supply and acquisition of goods and services, to meet actual or planned demand in the market. This step describes the sources of infrastructure, to acquire materials and services. It describes how inventory management, supplier network, supplier agreements, and supplier performance.
- **C-Make:** Make and production the centerpiece of this step. Make includes processes that prepare finished products and make them ready for market, to meet planned or actual demand. Such as make-to-order custom-made, make-to-stock, or engineer-to-order, product engineering, this step involves creating production, packaging, progressive or interim product activities, and product launches. It also includes production network management, equipment, facilities, and transportation (Supply Chain Council, 2019).
- **D-Delivery:** Any operations involved in providing and delivering final and ready-made products and services to meet the planned or actual request fall under this heading. Delivery included order management, storage, transportation, and distribution. It also includes receiving and invoicing orders from customers. This step includes managing ready-made stocks, assets, transportation, product life cycles, and import and export requirements (Supply Chain Council, 2019).
- **E - Return:** The process of returning or receiving returned products, from either customers or suppliers. This includes post-handover customer service operations. Companies must be prepared to handle the return of defective containers, packages or products. Returns include managing business rules, revenue stock tacking, assets, transfers, and regulatory requirements.
- **F-Enable:** Enable encompasses operations associated with supply chain management such as business rules, facility performance, data resources, contracts, compliance, and risk management.

SCOR Practices: Application and Practice are a great way to create or conduct a process or a group of operations. Exclusivity or distinction can be associated with process automation, technology applied to the process, special skills applied to the process, a unique process performance sequence, or a unique way to distribute processes and link them between organizations. All practices have links to one or more operations, one or more metrics, and one or more skills. There are four types of Best SCOR (Supply Chain Council, 2019); (White, 2018):

- Emerging practices.
- Best practices.
- Standard practices.
- Declining practices.

SCOR Performance SCOR's Performance or Metrics section focuses on understanding the supply chain outcomes, and consists of two types of elements: 1- Performance features and metrics, 2- Providing the concept of process / practice verification. SCOR recognizes five performance features: (Supply Chain Council, 2019).

- Reliability.
- Responsiveness.
- Agility.
- Cost.
- Asset Management Efficiency.

SCOR Model Metrics and Performance Measurements (White, 2018): They designed and maintained the model to support supply chains of various complexities and across many industries. There are several levels used to measure the supply chain performance. These levels help standardize supply chain performance metrics so that companies can be evaluated against other companies and businesses, even if they operate differently.

A smaller organization compared to a larger one, or companies can judge the supply chain performance versus companies in other industries. There are more than 250 scales under the SCOR model, categorized according to the five performance characteristics: reliability, responsiveness, agility, costs, and asset management efficiency.

Companies use these elements to define supply chain requirements by specifying performance attributes that prioritize them, and areas the company can perform at a moderate pace (White, 2018). A measure is a standard for measuring the performance of a supply chain or process. SCOR measures are diagnostic measures. The Supply Chain Operations Reference Model (SCOR) integrates well-known concepts of business process reengineering, standard setting, process performance measurement, organizational design, and logistics management by integrating these technologies into a multi-functional framework across four levels (Supply Chain, 2019). (Delipinar & Kocaoglu, 2016):

- **First Level Metrics:** They are general health diagnoses for the supply chain. These metrics are also known as strategic metrics and Key Performance Indicators (KPI). The first level metrics help to set realistic goals, to support strategic directions. The Supply Chain Operations Reference Model (SCOR) integrates the well-known concepts of Business Process Reengineering (SupplyChain247, 2019). (Delipinar & Kocaoglu, 2016).
- **Second level measures:** they diagnosis the first level measures. The diagnostic relationship helps in identifying the root cause or causes of a performance gap to measure the first level. (Supply Chain, 2019). (Delipinar & Kocaoglu, 2016).
- **Third Level Metrics:** Third Level Metrics Acts as a diagnosis of the second level metrics.
- **Fourth level measures:** Are the implementation centers. Since supply chain management applications are specific to each corporate, specific parts from fourth level are not described in the SCOR model. (Wang et al. 2005).

People- Skills

The Persons section provides a means for managing talent in the supply chain, by creating a specific standard to describe the expertise needed, to perform tasks and manage operations. The management of SCOR skills complement specific process, metrics, and application of reference components by aligning people and their skills with required processes. The capabilities of people consist of the following:

- Skills.
- Experiences: Experience.
- Training.
- Benefits of using a SCOR model

The SCOR model integrates the business concepts of process re-engineering, setting standards and metrics within its framework (Huan, Sheoran, Wang, 2004). This framework focuses on six areas of the supply chain: plan, source, production, delivery, return, and enable. These areas are repeated throughout the supply chain several times. The supply chain council says that this process extends from the "supplier of the supplier to customer of the customer (Supply Chain Council, 2019) (Trkman et al, 2010). (Delipinar & Kocaoglu, 2016). The most popular supply chain framework that does things is the following (APICS, 2019):

- Increasing the speed of system applications.
- Improving commercial agility.
- Speeding up the effectiveness of the business process.
- Improving the stock turnover process.
- Supporting organizational learning goals.
- Improving overall operating performance.
- It provides access to the supply chain process.
- Supports communication between supply chain partners.
- Improves the activities effectiveness of supply chain management.

III. PREVIOUS STUDIES

First: Studies that dealt with the reference for SCOR operations before the recent release of SCOR (12.0):

The Supply Chain Operations Reference Model (SCOR) is not a new concept, there are many papers published around it, but its issue is updating constantly. For this reason, the focus of this literature review has been on the time between (2006-2016) in order to evaluate study and review the literature related to it, which addressed the impact analysis of the SCOR model before the release of the last version SCOR (12.0). For this reason, the focus of this literature review has been on the time between 2006-2016 in order to evaluate, study and review the literature related to it, which addressed the impact analysis of the SCOR model before the release of the last version SCOR (12.0).

The research reviewed the following studies: (Dilpinar and Kugaoglu 2016.), (Prakash, Sandeep, Sony, Rathore 2013) and (Camarjo et al., 2013) study as they examined and analyzed 118) studies that dealt with the SCOR model: These studies dealt with the topics of the Supply Chain Operations Reference Model (SCOR) and its application in companies. Multiple researchers studied the effect of SCOR competitiveness, performance and productivity on companies for the old version, before the release of the new version (SCOR.12.0) issued in 2017.

The first study: Delipinar and Kocaoglu, 2016) Using SCOR model to gain competitive advantage: A Literature review. In this study, two researchers (Delipinar and Kocaoglu, 2016) evaluated (27) published studies related to the Operations Reference Model (SCOR). The focus of this study was on reviewing the literature for different versions of the Supply Chain Operations Reference Model (SCOR) for the period (2006-2014). Because the model version is constantly updated. The purpose of the study was to develop and demonstrate the impact of applying the Supply Chain Operations Reference Model (SCOR) on companies, according to the following headings: successful uses of the SCOR model, strategic alignment between business and information technology strategies, performance measurement, constraints on the SCOR model, ERP, and modeling for supply chain management, theoretical frameworks.

The research used the analytical research methodology, when reviewing several papers and published research on the SCOR model reference. Aiming to find gaps in studies for the SCOR model that could guide readers for future research. The study showed that there are successful applications when using the SCOR model in the research companies through the 27 researches. Where studies presented different models of supply chain management. In addition, considering performance records, and measuring of balanced performance. It recommended implementing the strategic alignment between business and information technology strategies, applying the ERP program, and measuring performance. Finally, studies showed restrictions on the SCOR model, and recommended the application of the SCOR model in supply chain companies.

The Second study: Surya Prakash, Sandeep, Gunjan Soni, and A.P.S. Rathore. .2013 .Supply chain operation references (SCOR) model: an overview and a structured literature review of its application. This study conducted to advocate the widespread use of the SCOR model. This study provides a review of the literature on content and methodology, based on research in supply chain management for articles that have used the Supply Chain Operations Reference (SCOR). The classification methodology in the study based on sorting the obtained papers based on the content, and based on the research with relevant modifications to accommodate the current research focus. The study reviewed (30) studies that found suitable for carrying out the organized review. The papers are categorized based on (level of analysis). Supply chain performance was measured by using SCOR.

The third study: (Camargo, et al, 2013) Supply Chain Management Operations Reference (SCOR): Study Bibliometric. This study aims to review the scientific literature on the topic of SCOR, published in the Emerald database using the word SCOR as a term, only 61 articles were analyzed that complied with selection criteria, which were included in the analysis. The elements investigated, through the year of publication, were Journal, Type of study, methodology, type of supply chain discussed and the main topics discussed. As a result of the survey, 2009 was the largest number of publications, with studies reaching 16% of the total;

The study concluded that the field of study of the SCOR reference model is still fragmented, which can be seen clearly through the presence of several groups of authors. The study emphasized that this is a critical point because it hinders the exchange of ideas. Lack of research planning may fragment the topic. Then the study concluded that, lack of related studies that use this model in the supply chain in Brazil. Thus, it becomes a fundamental investment in research to apply the reference model to serves future research subsidies. Which better illustrates the relationship between good chain performance and the use of these tools.

After analyzing and discussing the literature on the mentioned studies, the comments are listed below:

Publications on SCOR were audited according to the following categories:

- There are successful uses of the SCOR model in organizations that have applied the model.
- The strategy has been harmonized between business strategies and information technology.
- The Supply Chain Operations Reference Model (SCOR) has been widely adopted in supply chain operations in many organizations and supply chain companies.
- In previous research, the results were applied mostly in the operations of the first level; there are not many examples of the operations of the second, third and fourth level.
- There are restrictions on the SCOR model. One of these limitations is that the SCOR model are mostly used in manufacturing companies, and is not easily adaptable to construction companies.
- There are few studies on the implementation of the SCOR model, most of them are case studies.
- Modeling processes and measuring performance are important topics in the SCOR model.
- After reviewing the literature, important gaps in the model were revealed and they need to be studied and revised.
- It is quite clear from the study that the maximum use of SCOR is in the area of measuring SCM supply chain management performance and improving supply chain management.
- Research has shown that information technology and strategic management are an important area to consider when an organization is ready to apply the SCOR model to its own supply chain.
- Research has shown that manufacturing is the most used model for SCOR and that SCOR is a widely applied tool in a number of areas.
- Research has shown that the SCOR model can be applied at all levels of supply chains.
- The topic still needs more research to unify concepts that focus on these topics.

Second: Other studies that dealt with the same topic after the release of the new version SCOR (12.0), which was issued in 2017.

The main focus of this literature review was on the period between (2016-2019) in order to evaluate, study and review the related literature, which dealt with the analysis of the impact of the SCOR model after the release of the last version (12.0) SCOR.

The following studies dealt with the topic of related to SCOR in organizations, and its effects on the competitiveness, performance and productivity of companies after the release of the new version (12.0) of SCOR issued in 2017. It was compared with previous studies and the result was as follows:

The first study: Girjatovičs, Pesoa, and Kuzņecova, 2018. Implementation of SCOR Based Business Process Framework for Logistics and Supply Chain in Retail Company. The study describes the implementation of the SCOR methodology in a retail company. The Supply Chain Operations Reference Model (SCOR) provides process management methodology, including processes and standards, reference measurement tools and diagnostic tools to assist the organization in strengthening supply chain operations. The model contains multiple actions and consists of management processes, such as plan, source, configuration, delivery, return, and enable. The model can be used to describe simple or very complex supply chain operations using a common set of definitions.

As a result, company operations from different industries can be measured against their industry counterparts using the same measures. The paper outlines important milestones and lessons learned during the implementation of SCOR at the retail company. It illustrates SCOR benefits, as well as challenges in implementing the new process-modeling framework. (Girjatovičs, Pesoa, and Kuzņecova, 2018)

The second study: Hasibuan et al, 2018, Analysis of Supply Chain Management with Supply Chain Operation reference model. This study was conducted at (Shamrock Manufacturing Corpora). The company is required to think creatively in implementing the competition strategy by producing more qualified and cheaper goods / services.

Therefore, it is necessary to measure supply chain management performance in order to improve competitiveness. Therefore, the company needs to improve its production to meet export quality standards. This research begins with creating preliminary dimensions based on the supply chain management process (i.e. (plan, source, production, delivery, and return) with hierarchy. Based on performance components in the Supply Chain Operations Reference (SCOR) (Reliability, Response, Speed, Cost, and Assets). After measuring the performance of supply chain management at (Shamrock Manufacturing Corp, which uses SC supply chain). It was found that the rapid response process had a higher (priority) weight over other alternatives. As a result of performance analysis, using the supply chain operations reference model to perform a firm's supply chain management. Shamrock Manufacturing Corpora looked good because the monitoring system was in good shape. The results of performance measurement can be inferred by the weighting of the Analytical Hierarchy Process (AHP) that the (response process) in the supply chain has a higher (priority) weight than other alternatives. As a result of the weighting of the AHP analysis hierarchy, the results of the questionnaires that were filled in by respondents, prioritizing the speed of the supply chain in providing products to consumers (supply chain response).

The third study: Hammed, Cursi, Barbu, Ouahman, and, and Ibourk, 2019. A SCOR model for customs supply chain process design. This study proposes a model for process design to map the customs supply chain network. This planning aims to describe the processes and management practices that produce the best integration in its class, and to standardize the processing features and functions. Moreover, this model provides a general framework to promote a better understanding of a particular customs supply chain, by setting it in terms of business operations, and provides adaptable formalities to manage effectively any context of the customs environment.

The study aims to identify the main elements of the customs supply chain, and the realistic state of process design, in the customs context. The results came to provide an important and timely contribution to managing and improving operational management in the context of the customs supply chain. Which has not been sufficiently discussed in the current and previous literature. A SCOR model for process design proposed, with the aim of identifying processes, and analyzing the structure of the customs supply chain, based on a broader dimension, which consists of a comprehensive set of activities and operations.

The study approach is flexible to accommodate different numbers of partners, and can be implemented in any customs situation. It helps managers not only prioritize their resources to formulate supply chain designs according to the target sectors, but also to align and integrate operations. Decision makers can also use this approach as an assessment tool to measure the integration of their operations, from a bilateral, regional and international perspective. This helps to identify performance gaps and make improvements accordingly.

IV. DISCUSSION AND ANALYSIS

Analyzes and comparisons of studies that addressed the reference of Supply Chain Operations (SCOR) before and after the recent release of SCOR (12.0):

1. There are still many difficulties facing any organization when inventing a new framework for action. When adopting the SCOR framework in any organization there is a need to change thinking, and it is important to provide the right people to avoid a re-discussion and interpretation of processes.
2. The Supply Chain Operations Reference Model (SCOR) consists of six components used for business analysis in the supply chain: plan analysis, source analysis, manufacture analysis, delivery analysis, return analysis, and empowerment analysis. Each of these components is an important task within the organization and process Critical between organizations.
3. -The element (Enable) was not addressed as one of the processes of the SCOR model in previous research before the release of the latest version of the Supply Chain Operations Reference (SCOR.12.0).
4. -Where all of them were limited to the five elements (plan, source, making, delivery, return). Not even in the design of most plans and operations before, as it was added in the new version of (SCOR.12.0) issued in 2017. It became six topics by adding (Enable) to it.
5. Empowerment: It includes all processes associated with supply chain management, such as business rules and facility performance, data resources, contracts, compliance, and risk management. However, through discussions and process definitions through SCOR, the empowerment process was clearly shown to be an automatic mechanism, and the individual were not involved in it.
6. Research has shown that the SCOR is a strategic tool, describing, communicating, implementing, and controlling complex supply chain processes to achieve good performance.
7. Studies have shown that business analysis through the SCOR model has a positive impact on supply chain performance, but there is still a need to more accurately understand and clarify these potential impacts.
8. The Supply Chain Operations Reference (SCOR) has been used in past years to understand the supply chain, while in these studies it has been used as a framework. It dealt with it as a systematic approach to identifying, evaluating and controlling supply chain performance at various levels, covering supply chain operations (plan, source, manufacture, delivery, returns and empowerment).
9. Studies have shown that the SCOR model is very useful for making decisions regarding the strategic nature of the supply chain. It also provides the framework and terminology that can be used to evaluate, determine locations and implement the supply chain process.
10. Studies used analyzes in various SCOR fields: analysis was used in planning: to analyze data to predict market trends for products and services that are mostly in the form of monthly or annual reports provided by marketing or financial departments.
11. -Source analysis has also been used: as a model for evaluation, research and negotiation, to improve supplier selection, price negotiation, and the process of selecting and evaluating suppliers.
12. -While the analysis was used in manufacturing: to indicate the correctness of materials and products, and the production of each batch was correct and timely as well.
13. -Analysis has been used in delivery to bring timely products to the market. Many organizations have outsourced the delivery process, and the impact of business analysis on delivery decisions has been limited.
14. The results of these studies provide additional support to the results that indicate that planning and analysis have a greater impact on supply chain performance, compared to other elements of the SCOR model, and studies inspired by the SCOR model have applied a comprehensive, sound, and integrated construction as prior to supply chain performance.
15. Most of the studies' results confirmed that the components of the business analysis derived from the SCOR model have a positive and important impact on the supply chain performance and on the competitive advantage.
16. -The Supply Chain Operations Reference (SCOR) and its application as an academic study have enormous potential. Although the literature review of supply chain management with a focus on the SCOR model is very few in number.
17. Some previous studies have shown that the SCOR model does not evaluate the entire organization, such as the project selection process, or implementation procedures. Therefore, the participation of the entire organization has not taken place.
18. SCOR practices are recently categorized for simplifying conformity of practices by area of interest. This can achieve the potential for full continuous improvement of the organization.
19. The SCOR model has proven useful to companies that use it to identify supply chain problems. It also allows full use of capital investment, the supply chain roadmap, job alignment, and return on investment (Bauhof, 2004).

20. The application of the SCOR model in the organization ensures the alignment of operational standards, programs and priorities within the organization, through the publication of multi-level internal and external standards; and it unifies the language of the improvement process and the evaluation methodology throughout the company.

Recommendations

1. During the past years, significant investment has been made in supply chain systems, but these systems have been struggling to obtain a competitive advantage. Several methods have been used in supply chains, in order to improve the performance and increase the competitiveness of companies. As the current business environment requires organizations to quickly respond to the needs demanded by clients, the researcher recommends conducting and publishing studies on performance measurement in the supply chain, in particular the scale of supply chain operations reference (SCOR), thus increasing understanding of the topic and broadening the research base in it.
2. Measuring the performance of supply chain operations, through the SCOR model, shows all deficiencies or gaps that can be found in the organization. Accordingly, it must always be developed, organized, applicable, and repetitive as systems and procedures evolve. Whereas, it has been proven to be successful in multiple environments and frequently. It should serve both strategic and tactical needs related to development and improvement projects, as well as process automation initiatives.
3. The researcher recommends developing the SCOR model further in the future to serve the operations, to know what the differences between manufacturing and service operations, and the impact of the relationships between supply chain operations.
4. In order to make research applicable, it is also recommended that the SCOR model be integrated with information systems and technologies, so that this integration is constantly checked and established within a good framework.
5. Move as one unit, without stopping other areas with focusing on the SCOR model.
6. Research submitted later must be subject to experimental verification and formal mathematical modeling to illuminate the measurement of overall performance of supply chains, not just processes.
7. The SCOR model is mainly associated with measuring performance of supply chain management and improving performance. With the impact of continuous changes due to globalization, the use of a modern and advanced supply chain operations reference from top to bottom of the organizational hierarchy, with an indication of the entire supply chain business and overall operations, will definitely increase the response and efficiency of supply chains.
8. The organization can easily integrate the model into the strategic planning process, if a principled alignment is made and link the organization's strategic goals with the goals of the SCOR.
9. The model can be used in the process of analyzing the organization's competitiveness with its market peers, using external measurement, where positive or negative practices appear with the financial performance of competitors, and evaluation results can be linked to the new organization's strategy, through available work and client performance metrics.
10. SCOR builds sustainable operational competitive advantage with long-term continuous use of the evaluation process.
11. SCOR must be studied in depth by organizations and academics, so that it can be effective as a fundamental component of strategic planning, and work to achieve this seriously.

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