Supply Chain Performance Measurement Using The Supply Chain Operation Reference Model (Scor Model) Approach In The Food Industry Study Literature Review

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Abstract

The supply chain in the food industry has an influence in supporting everyday life. The ups and downs of supply chain performance in the food industry can have a significant impact on the economy. As a result of the ups and downs of the supply chain, organizations or companies try to apply the SCOR model method. This study aims to conduct a literature review related to supply chain performance by using the SCOR model approach. The research method chosen is the systematic literature review method. The articles used in this study were 44 articles. Based on this research, the SCOR model approach can improve supply chain performance in the food industry.

Keywords
Supply Chain, SCOR Model, Food Industry

1. Introduction
In an era like today, which is marked by an all-digital life and automation that makes life easier. This convenience is inseparable from the role of industry in supporting daily life. The role of industry can be felt in everyday life, starting from the vehicles used to the basic necessities of life, one of which is Indonesia. Industrial enterprises in many countries suffer severe and prolonged economic damage following natural disasters. The same is true of supply chains, especially those spanning multiple regions of countries, and continents (Ludvigsen & Klaeboe, 2011). A company or a country can achieve a competitive advantage by forming a resilient supply chain that can adapt to changing business environments (Diabat & Al-Salem, 2015). A robust supply chain is needed to ensure continuity of operations. According to (Dias et al., 2019) 73% of companies have experienced supply disruptions due to several reasons. Generally, the breakdown of supply chain operations caused by bad weather, pandemics or natural disasters is dangerous for all parties working together. However, the magnitude of the damage depends on where in the supply chain structure the company is located, as well as, how the target supply chain is organized (Ludvigsen & Klaeboe, 2011). At the beginning of 2020, the Indonesian industry declined slightly due to the warning of the transmission of the Covid-19 virus. The phenomenon of this pandemic has a major impact on the supply chain in the food sector. Broken and disconnected supply chains (Supply Chain) can cause large financial losses and weaken the reputation of

the industry (de Oliveira et al., 2017). The tourism sector must be closed temporarily, the loss of livelihoods and income for workers, and the changing consumption patterns of the people, as well as transportation that is hampered due to restricted movement, affect the entry of basic raw materials into food companies in Indonesia. In 2018, 95% of Indonesia's garlic supply, 24% of beef supply, and 55% of sugar supply came from abroad, and the Ministry of Trade has started imports in 2020. In 2018, Indonesia was a net importer of food products worth USD 576,18 million. In 2020, supply chains experienced significant disruption due to reduced processing capacity, road and port closures, and transportation restrictions, which slowed agricultural production and food distribution from producers to consumers. This disruption has led to an increase in food prices in Indonesia. The average price of rice in the territory of Indonesia during the first week of April was IDR.11,900,- per kilogram, an increase of 1.28% from the price in December 2019. In 2020 there was an increase in food prices in certain areas, the price of rice is even higher, up to IDR. 13,500,- per kilogram in traditional markets, 2 because people hoard food. The increase in prices for food commodities that need to be imported is even more significant. From December to mid-April 2020, sugar prices increased by 32.97% to IDR 18,350 per kilogram, garlic increased by 35.64% to IDR.43,200 per kilogram, while beef prices remained high at IDR.117 .750,- per kilogram. Therefore ensuring an affordable food supply is very important throughout 2020 and the following year. With the background of the decline in the Indonesian economy, especially the food industry, this study discusses the measurement of Supply Chain Management performance by applying the SCOR Model.

1.1 Objectives

The supply chain in the food industry has an influence in supporting everyday life. The ups and downs of supply chain performance in the food industry have had a significant impact on the industry. As a result of the ups and downs of the supply chain, the company tries to apply the SCOR model method, this study aims to conduct a literature review related to supply chain performance by approaching the SCOR model using the Systematic Literature Review approach.

2. Methods

This research uses a systematic literature review (SLR) method which first collects studies and journals related to the SCOR model. Systematic literature review is a term used to refer to research and development carried out to collect relevant relevant research on a particular topic (Ho et al., 2015). The use of the SLR will facilitate the search for things that are important in discussing the topic under study. In this case it will be the basis for developing research. Therefore, this method serves as a reference for each research factor that uses SLR such as year of publication, institutional background, and country (Seuring & Gold, 2012). his approach is divided into several parts, namely defining research questions that are explained about introduction, determining research sources, completing the search process using keywords, extracting data, and analyzing findings to answer research questions (Meyliana et al., 2016).
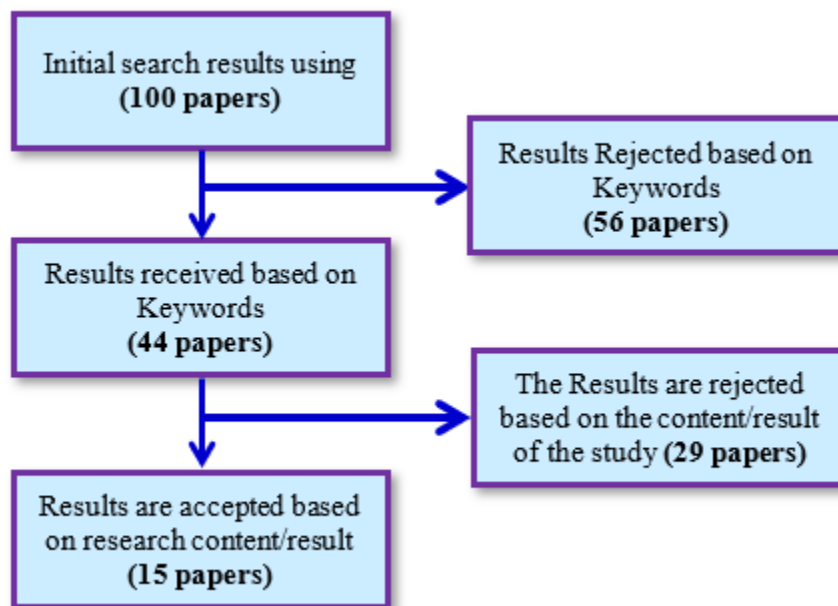
Picture 1. Data Collecting Procedure.

3. Results and Discussion

3.1 Descriptive Analysis Based on Literature Publication Year

Based on the search results of literature or journals on the Mendeley, Google Scholar, and Research Gate platforms, 100 papers were obtained on supply chain and SCOR models. Paper screening is carried out by analyzing the paper carefully so that the paper can meet the research criteria in order to answer the formulation of the research problem. The paper screening process resulted in 44 papers which were divided into publications from 2011 to 2021
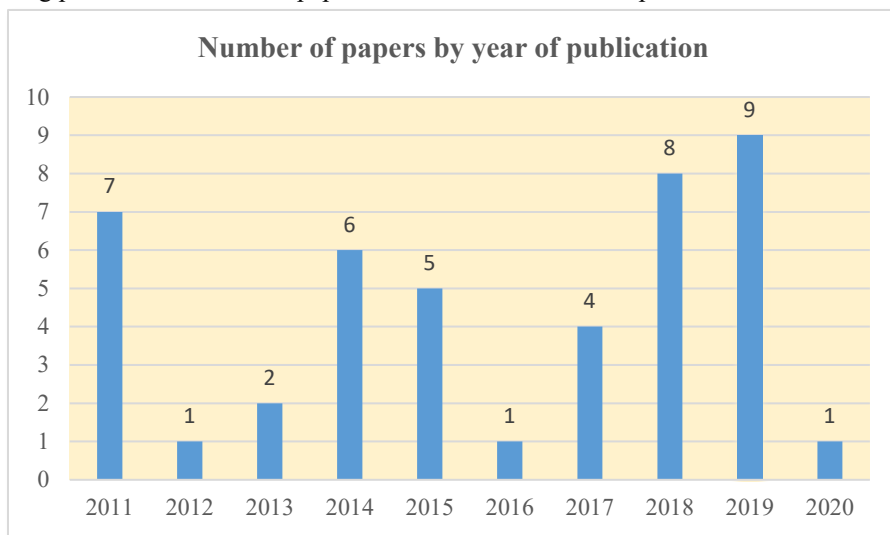

Picture 2. Number of papers by year of publication

Based on the graph above, 44 papers that have been analyzed according to the criteria each year have increased and also decreased from 2011 to 2020. Starting from 2011 there were 7 publications of papers on supply chain and SCOR models. In the following year, there was a significant decrease in publications, namely 1 paper with the year of publication 2012. In 2013 the increase in publication of supply chain papers and score models only got 1 increase in publications and made the paper in that year become 2 publications. In 2014 the publication of supply chain papers

and score models experienced a significant increase, amounting to 6 paper publications. In the following year there was an insignificant decrease, namely 5 paper publications in 2015. In 2016 there was only 1 paper published. After experiencing a decline in publications in the previous year, in 2017 the published papers increased to 4 papers. After 2017, the following year the paper supply chain and score model increased successively, namely in 2018 the published papers were 8 papers and in 2019 there were 9 published papers. In 2020, paper publications decreased drastically to 1 paper.

3.2 Descriptive Analysis Based on Industry

Paper screening carried out using the Mendeley device makes it easier for researchers to search for papers that match the topic. Researchers conducted screening for the industry under study on 44 papers that had been screened. Researchers filter publications of papers for the industry that is the object of research on the paper. In screening there are several industries that are the object of research as follows.
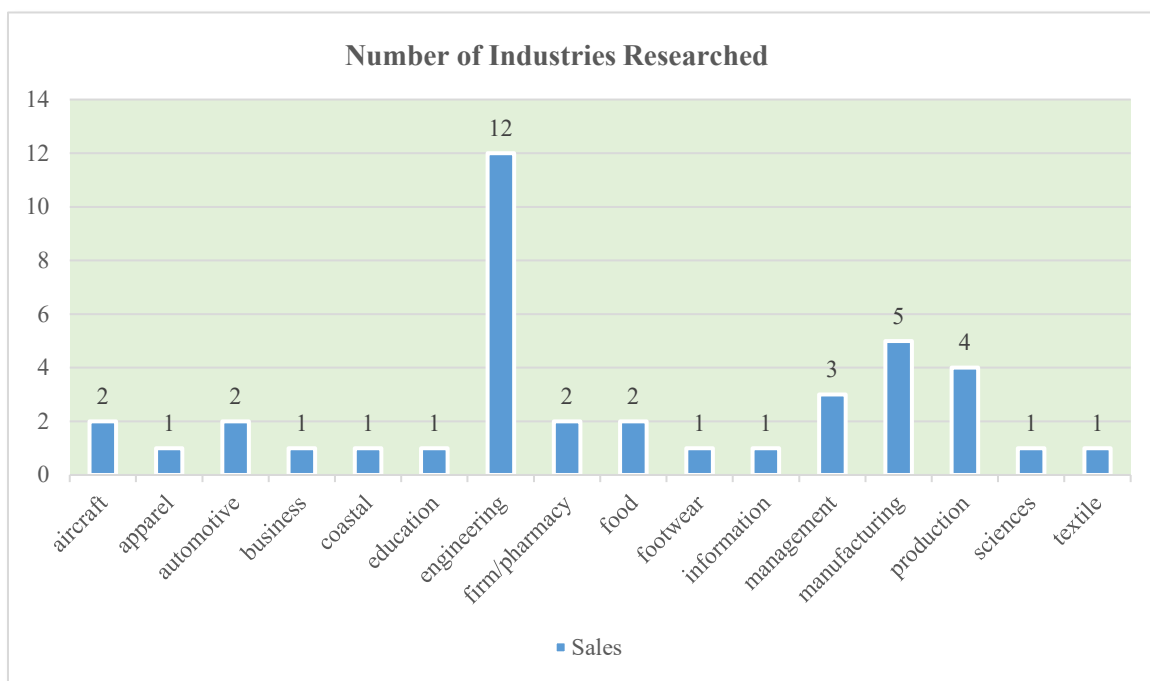
Picture 3. Number of Industries Researched

The following are some of the industries used by researchers as segments of research papers that have been screened. In the engineering or engineering industry, many researchers use the industry in examining supply chain performance with the SCOR Model.
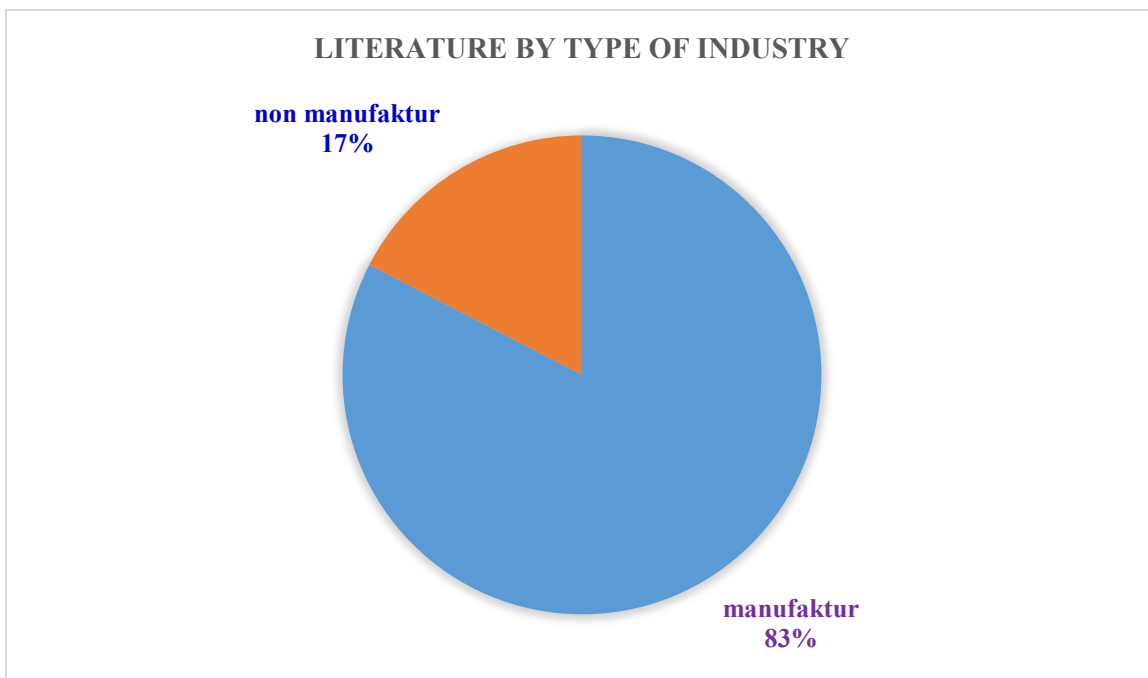
Picture 4. Literature by type of industry

Based on the graph, there are 83% of the total paper which is divided into industrial manufacturing or categorized as an industry that produces products or goods. There are 38 published papers that make up the total industrial manufacturing paper as much as 83%. Non-manufacturing is a category of industry that does not produce products/goods or is called an industry that produces services, etc. There are 8 published papers that are categorized as non-manufacturing papers which make the total paper in that category 17%.

3.3 Descriptive Analysis Based on Publisher

This analysis relates to journals that have been selected by the author based on the publisher or publisher who published the journal. The following is a picture of the table regarding data on 44 journals that have been selected by the authors based on publishers.
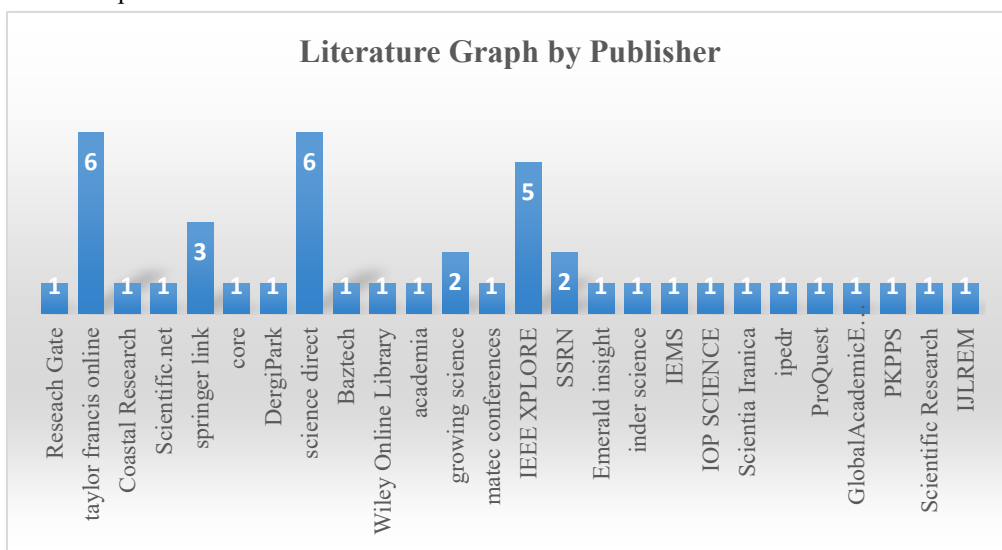
Picture 5. Literature Graph by Publisher

In picture 5. the author uses journal data that has been selected based on the title and abstract of the journal researcher. There are 44 journals as a result of literature selection. Based on picture 5. there are 26 publishers or publishers who have contributed in publishing 44 selected journals. Taylor&Francis Online and Science Direct are publishers that are widely used in publishing journals on Supply Chain and the SCOR Model with the number of journals still being 6 journals. IEEE XPLORE followed by publishing 5 journals. Publisher Springer link also publishes journals related to Supply Chain and the SCOR Model by publishing 5 journals. Growing Science and SSRN each publish 2 journals. While the rest of the other publishers such as Research Gate, Coastal Research, Scientific.net, Core, DergiPark, Baztech, Wiley Online Library, Academia, Matec Conferences, Emerald Insight, Inder Science, IEMS, IOP Science, Scientia Iranica, IPEDR, Proquest, Global Academic Excellence, PKPPS, Science Research, and IJLREM each published 1 journal paper related to Supply Chain and the SCOR Model

3.4 Analysis of Research Results According to Experts

Based on the collection of reports, literature, articles and journals related to the topic of the researcher's study, the SCOR Model has an important role in creating an effective and efficient supply chain (Supply Chain) of a food industry. From 44 literatures, the author made a selection based on abstract analysis and research results in journals and found 15 journals. The results in this research report aim to identify and conclude the understanding of several previous studies that are in accordance with the research topic. Here are some understandings from several previous studies on the topic of Supply Chain and SCOR Model in the industry being studied. The following table analyzes the results of 15 researchers who have been selected and their research results. Research Results Analysis Table Source: processed by the author.

No	Authors and Years	Publisher	Research Result
1	Oztaysi Basar, Surer Ozge (2014)	*Springer Link*	Performance measurement is based on characteristics or metrics related to the supply chain. The literature provides a variety of studies that focus on criteria that can be used for performance measurement. In the proposed approach, the SCOR model is used for the selection of criteria and metrics. Fuzzy AHP is used to determine the weights of these criteria and metrics. Finally, the Fuzzy VIKOR method is used to evaluate and sort the alternatives based on their overall performance.
2	Ling li, Qin Su, Xu Chen (2011)	*Taylor Francis Online*	The application of the SCOR Model method has an important role in determining the quality of Supply Chain performance. By integrating the SCOR Model with ISO 9000, it can have a positive impact on supply chain performance.
3	Turan Erman, Erkan (2011)	*DergiPark*	SCOR Model management tool used to address, improve, and communicate supply chain management decisions within the company and with the company's suppliers and customers. The model describes the business processes required to meet customer demands. It also helps to explain processes along the supply chain and provides a basis for how to improve those processes.
4	C. kalpani Dissanayake, Jennifer A. Cross (2018)	*Science Direct*	This research demonstrates the adaptability and usefulness of the SCOR model as an SCPM model that can be integrated into any organization. It also illustrates how the proposed model will provide management with a clear understanding of its SCPs to better manage them. To summarize, this study demonstrates how an organization-specific SCPM model can be developed by identifying the most appropriate set of SCPM categories and measures.

5	Miguel Afonso Sellittoa, Giancarlo Medeiros Pereiraa, Miriam Borchardta, Rosnaldo Inácio da Silvaa, Cláudia Viviane Viegasa (2015)	*Taylor Francis*	Research shows that Supply Chain performance shows improvement using the SCOR Model. The SCOR Model is a strategy offered by researchers for footwear businesses by focusing on several variables.
6	Girjatovics, Andrejs, Pesoa Laila Mara, Kuznecova Oksan (2018)	*IEEE XPLORE*	SCOR simulation is presented as a tool that aims to improve supply chain performance. The use of the SCOR Model is proving to be useful and more widespread for supply chain improvement. The study of the SCOR model in the supply chain is very useful for future research.
7	Janakl, Daryosh Mohammad (2019)	*Growing Science*	Research reveals that the use of the SCOR Model method in the supply chain in the oil industry is relatively efficient. The results show that the network performance is relatively efficient because this study did not detect low-performing units and most of them maintained relatively high scores.
8	SY Kottala, K Herbert (2019)	*Emerald insight*	Our results show that the SCOR decision area is critical to supply chain processes. This study is one of the first attempts to empirically evaluate the SCOR model process in the Indian manufacturing sector. Thus, the results of our study have several implications for SCM practitioners in terms of understanding the best practices to be selected in the SCOR process.
9	Rodrigues, Francisco Junior, Lima Cesar, Luiz Carpinetti, Ribeiro (2016)	*IEEE*	Another benefit of the proposed approach refers to the adoption of the standard metrics proposed by the SCOR model, as it facilitates communication and integration of SC evaluations and also allows global benchmarking practices against other supply chains (using the SCOR mark) to set targets and drive improvement efforts.
10	Arezoo Moharamkhani*, Ali Bozorgi-Amiri and Hassan Mina (2017)	*Inder Science*	Supply chain performance measurement is a very important issue and is carried out based on supply chain process performance metrics. The SCRO model criteria are used to measure supply chain performance and the criteria are reliability, assets, cost, and agility. concluded that agility is an important criterion. Conclusion SCOR model criteria play an important role in the supply chain of an industry.
11	Abbaspour Akbar (2019)	*IEMS*	The formation of supply chain performance requires a lot of appropriate strategies and focuses on reality-based ideas. The expert group and the feasibility study concluded that the strategies that have the potential to be implemented or executed well are the SCOR Model and the Fuzzy AHP approach. SCOR Model and Fuzzy AHP have a similar and aligned structure to be used and integrated in selecting the best supply chain improvement plan. Therefore, the combination of the Analytical Hierarchy Process and the SCOR model is one of the best options available.
12	Andrejs Girjatovics, Santhosh Somashekaraiah Shekar, Jelena Pecerska, Oksana Kuznecova (2019)	*IEEE XPLORE*	Another strong element of the SCOR methodology Even metrics with many benefits for enterprises, internal as a revision of existing ways to measure supply chain performance and linking it to processes and external as benchmarking, have many challenges to implement in enterprise supply chain performance dashboards.

13	R.H.Thilakarathna, M.N.Dharmawardana,Thashika Rupasinghe (2015)	*SSRN*	A appearel company in sri lanka conducted a study using the SCOR model to measure the company's KPI. There was an increase in the KPI in the results of the study. Looking at these KPIs the researcher can see the SCOR model along with some improvements can be used for comprehensive performance measurement in the apparel supply chain.
14	Kowsar Darivandi Shoushtari, Hossein Ghasemi, Mansooreh Zarezadeh (2011)	*ISS PKPPPS*	The combination of VSM and SCOR Beer models was used to analyze the situation. The resource-based view is used in a complementary role to analyze system requirements2 and strategic environmental relationships. A new structure is proposed for supply chain managerial bodies that implements Ackoff's circular organizational model that will alleviate existing deficiencies.
15	Didik Setiawan Nugroho Suseno, Niken Sulistyowati (2018)	*ISSN*	By using the SCOR method, it is immediately obtained which parts or parts have errors and can be easily corrected, so that the performance of each part will increase to increase the metric value. So that the increase in the value of the metric automatically increases the income to be achieved will increase. Therefore, supply chain performance measurement can be carried out efficiently.

4. Conclusion

The following conclusions are obtained in this study using 44 journals that discuss the Supply Chain and SCOR Model. From a review of existing literature or journals, the SCOR Performance Model is proven to be effective in improving a country's supply chain performance. It is proven that developing countries have alternatives in managing industries that invest state resources to create resource supply performance. The SCOR model has emerged as a standard business reference model in various industries. From a review of existing literature or journals, the application of the SCOR Model makes the operation of the Supply Chain in an industry efficient and effective, including the food industry which is included in the resource. Manufacturing and distribution activities in these industries have demanded more Supply Chain integration in recent years. There is no doubt that the performance and implementation of the SCOR Model in the food industry supply chain plays an important role and has proven to be effective.

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