



Faculty of Technology Management and Technopreneurship

**THE MEDIATING EFFECT OF JIT ON THE RELATIONSHIP
BETWEEN SCOR MODEL ON SUPPLY CHAIN PERFORMANCE**

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SCOR MODEL ON SUPPLY CHAIN PERFORMANCE**

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**A thesis submitted
in fulfilment of the requirements for the degree of Doctor of Philosophy**

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2020

DECLARATION

I declare that this thesis entitled “The Mediating Effect of JIT on the Relationship between SCOR Model on Supply Chain Performance” is the result of my own research except as cited in the references. This thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature :

Name :

Date :

APPROVAL

I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of Doctor of Philosophy.

Signature :

Supervisor Name : Professor Datuk Dr. Izaidin Bin Abdul Majid

Date :

DEDICATION

To my parents, family and friends with the
greatest love and appreciation

ABSTRACT

The SCOR Model is one of the most applied reference models to support the description of supply chains and understanding the relationship between supply chain operation reference and supply chain performance. The Supply Chain Operations Reference (SCOR) model owes a standard thought to perceive an activity of the Supply Chain Council that provides a framework for characterizing supply chain management practices and processes with the result in better performance. This study examines potentials for future extensions of the model. The survey has been distributed to 270 companies in Malaysia manufacturing industry for extension potentials population. By an exhaustive analysis of 158 samples were returns to be evaluated for this study. This study investigates the level of SCOR Model practices in Supply Chain performance and investigates the relationship between supply chain operation reference (SCOR) Model effect by mediating of Just-In-Time (JIT) and supply chain performance in Malaysia manufacturing industry based on the five decision areas provided in SCOR Model Version 10.0 (PLAN, SOURCE, MAKE, DELIVER, RETURN) and five key supply chain performance derived from supply chain business management experts. The questionnaire tool by Supply Chain Council is used to analyse requirements on modelling tools to support the application of a respective extended SCOR Model. A concept of a tool support which accomplishes most of the requirements is described and realised as a prototype which is introduced in this thesis. The results show that planning processes are important in all SCOR supply chain planning decision areas. Collaboration was found to be most important in the Plan, Source and Make planning decision areas, while teaming was most important in supporting the Plan and Source planning decision areas. Process measures, process credibility and process integration were found to be most critical in supporting the deliver planning on the decision area. Using these results, the study discusses the implications of the findings and suggests several venues for future research.

KESAN MEDIASI JIT TERHADAP HUBUNGAN ANTARA SCOR MODEL TERHADAP PRESTASI RANTAIAN BEKALAN

ABSTRAK

SCOR Model adalah salah satu model rujukan yang digunakan untuk menyokong keterangan rantaian bekalan dalam memahami hubungan antara amalan pengurusan rantaian bekalan dan rujukan operasi rantaian bekalan yang semakin penting. Rujukan Operasi Rantaian Bekalan (SCOR) model mempunyai asas dalam kegiatan Lembaga Rantaian Pembekalan dengan menyediakan rangka kerja dalam proses pengurusan rantaian bekalan bagi menghasilkan prestasi kelas terbaik. Kajian ini menguji potensi untuk lanjutan ke arah masa depan model. Kaji selidik diedarkan ke atas 270 industri pengilangan di Malaysia bagi potensi kajian lanjutan. Sebanyak 158 sampel data dianalisis secara menyeluruh untuk menilai kajian ini. Kajian ini menyelidik tahap penggunaan SCOR Model dalam prestasi rantaian bekalan dan menyelidik hubungan antara pengurusan rangkaian bekalan perancangan perniagaan dengan prestasi rantaian bekalan dalam industri pembuatan di Malaysia berdasarkan lima bahagian SCOR Model melalui Versi 10.0 (PELAN, SUMBER, BUATAN, SALURAN, KEMBALI) dan lima prestasi rantaian bekalan yang utama diperolehi daripada pengurusan perniagaan rantaian bekalan. Sumber kaji-selidik dari lembaga rantai bekalan digunakan untuk menganalisis pemodelan dalam menyokong SCOR Model untuk kajian lanjutan. Konsep kajian sokongan yang mencapai kebanyakan keperluan digambarkan dan direalisasikan sebagai prototaip yang diperkenalkan dalam kajian ini. Dapatan menunjukkan bahawa proses perancangan adalah penting dalam semua bahagian SCOR bagi mendapatkan keputusan perancangan rantaian bekalan. Didapati kerjasama adalah sangat penting dalam bahagian perancangan keputusan Pelan, Sumber, Buatan dan Kembali manakala penggabungan penting dalam menyokong bahagian perancangan Pelan dan Sumber. Ukuran (langkah-langkah) proses, kredibiliti proses dan integrasi proses didapati paling kritikal dalam menyokong bahagian perancangan Saluran. Melalui hasil dapatan, kajian ini membincangkan implikasi penemuan dan seterusnya mencadangkan beberapa tempat untuk penyelidikan masa depan.

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LIST OF PUBLICATIONS

Refereed Journal

Nurhayati, K., and Izaidin, A. M., 2018. Using the Supply Chain Operation Reference (SCOR) Model to Assess the Potential Impact on Business Management in Malaysia SME Industry: A Conceptual Framework. *International Journal of Business Management and Commerce*, 3(5), pp. 14-23.

Nurhayati, K., and Izaidin, A. M., 2018. The Moderating Effect of JIT on the Relationship between SCOR Model on Supply Chain Performance in Malaysia Manufacturing Industry. *Journal of Information*, 3(10), pp. 34-46.

CHAPTER 1

INTRODUCTION

1.1 Background of the study

Supply chain management has attracted a lot of researchers to study the process and activities which impacted performance in this manufacturing industry. Today's manufacturing industry is seen as important in business survival in order to develop competitive advantage towards products and services. A rising focus in leading business performance for supply chain is to identify more advancement wealth, competitiveness and economic growth with supply chain service providers (Thurik and Wennekers, 2004). Also, identifying globalization and demanding worldwide will then compete with technology advancement. It creates a new business condition for rivalry and also, it will provide more chances for the manufacturing industry to succeed (Martin, 2019). Therefore, most of the organizations turned towards developing customer's engagement and measuring the quality of customer's engagement in product and service offered/provided by Malaysia Manufacturing companies (Tasmin et. al., 2013).

The globalization has lead to the growth in business sectors and expanded the performance management standard in terms of cost, quality, benefit, unwavering quality, adaptability, efficiency, and responsiveness. Despite the fact that manufacturing industry is assumed as an essential part for the contributor and production, and this has confronted challenges in exceedingly focused markets. Thus, all manufacturers put an effort to enhance their quality, diminish cost and decrease their item carriage by the transport of the lead time in order to compete in the worldwide market.

Extensive studies have been focusing on local supply chain management procedures and tasks and disregard the worldwide parts of supply chain management, and subsequently neglect the arrangement of Supply Chain organization management performance (Swee et. al., 2010). The idea of supply chain management broadens the tasks of every special unit in the whole production network. An inventory network comprises of an arrangement of procedures which organize free special units in a production network. Since supply chain network individuals complement with each other, they have a tendency to upgrade their own execution objective, without having to consider the effect on the whole inventory network. Besides, it is critical to oversee supply chain production network from a whole of point of view and shift towards supply chain process performance will also help in adding customer value based on profitability such as related issues with non-renewable resource (Chau, 2012). In this study, a supply chain management is characterized as an arrangement in managing the movement of raw material into an organization. Therefore, organizations take part in the processing of the material into goods before it is delivered to the end user which is the customer.

On the other hand, Manataki (2009) mentioned that organizations have to face with the truth which they can't exist in division as they are one of the complicated chains of business accomplishment in management and performance. Furthermore, it can also leave a significant effect on economy, social and environment. Due to supply chain performance, solving an environmental problem through business process management is crucial. In addition, as Chopra and Meindl (2014) mentioned that the key drivers of implementing Supply Chain Operation Reference Model to associate it with a specific end goal to get the most out of supply chain benefit and it will be more feasible to achieve an excellent performance as a practical approach in operational efficiency in the business terms.

In terms of industrial activities strategy in the country, organizations should focus

on the center of the skills and try to achieve growth by becoming actual buying exercise with the suppliers towards manufacturing operations into performance measurement in improving business performance (Piszcalski, 2002). Therefore, a significant competitive advantage in manufacturing industries is needed to enhance the effectiveness of the product and supply chain process towards better performance (Agus et. al., 2011). Thus, supply chain process models and SCOR Model performance measurement was perceived as one of the central points in process assessment and change of manufacturing industries (Patrik Jonsson and Magnus, 1999; Georgise et. al., 2011; Lucato et. al., 2018).

Specifically, Bauhof (2004) expressed that the key parts of the SCOR Model processes involved in the performance measurement focus on five supply chain processes. These include planning, sourcing, production making, delivery, and product return. As indicated in the supply chain council (SCC, 2010), an effective process practice has been implemented in supply chain management performance. Moreover, the idea of supply chain management performance which enhances organization and develops competence and effectiveness through an innovative process system (Gunasegaram et. al., 2004).

This study is aimed at measuring the performance level of the organization of manufacturing companies in the Malaysian industry by using the mediating impact of Just-In-Time (JIT) on the connection between the SCOR Model. Determination of significant products and services to be included will be measured based on the analysis of SCOR Model performance mediated by JIT into several stages of Plan, Source, Make, Deliver and Return. Supply Chain Operation Reference (SCOR) Model involved in the activities of providers which are suppliers, makers which is the manufacturers, wholesalers, and clients for enhancing and incorporating the proceeding with the performance into the manufacturing companies as a whole in sorting out and executing high-performing plan of action (Chopra and Meindl, 2014). As a result of the economic impact, incorporation of

inside procedures of the organization with the suppliers and customers from the entire thought behind the SCOR Model will focus on the managers' level in this study. Across the board utilization of the web, electronic frameworks empower associations in shaping solid client and supplier incorporation for stock management as well as determining client and supplier relationship management (Frohlich and Westbrook, 2001). Reacting proactively to the market and business circumstance changes might gain the ground of smoother continuous supply chain network and the finished good or output of the chain by decision making process inside supply chain management (Ismail et. al., 2011). In the recent decade, supply chain management has reached an incredible growth in making known theories and operations of this area. These arguments have led to the logical acknowledgment of the vital role applied to the SCOR Model towards supply chain performance in economic growth which will help to benefit the country as a whole.

1.2 Statement of problem

Most manufacturing industry is aware of the importance of Supply Chain Operation Reference Model by implementing it but their actual participation in its still not embraced (Naslund, 2010). The inefficiency of current supply chain management system represents a significant financial burden for the manufacturing company. In addition, the current percentage of waste in Malaysian manufacturing industry showed that the financial situation has become inconsistent each month and year. Therefore, supply chain activity requires an effective waste management which is applicable for the industries. Moreover, Malaysian manufacturing business report 2017 have show that the market was unstable from the process supply chain operation with the sales and production output volumes terms of pending operational cost especially local sales and production volume (Diageo, 2017).

Among the most frequently referenced review on the efficiency of supply chain

management forwarded by Pasanen (2015) which specifically develop the internal supply chain operation process and the performance measurement by Perkins et. al. (2014). Furthermore, Pasenan (2015) is includes also the supply chain management process description with the performance measurement tools. However, the study to develop the production planning system by measuring performance into an accurate forecast, internal delivery, stock has reached follow up and customer delivery. In addition, the study maintains this problem to be the central challenges within the internal supply chain and this ensures improvement of the system and process is an inefficient use of the company's time and response (Croxtan et. al., 2001).

Additionally, the Department of Statistics, Malaysia found a total of 1,028,301 employees engaged in the Malaysian manufacturing industry sector (Uzir, 2018). They concluded that researchers have attempted to locate the following huge thing which will give the Malaysian assembling industry the edge in the market by acquainting thoughts by enhancing the item through creative and another, propelled process. Uzir (2018) suggested that studies done must include the implementation of a new concept for the product in manufacturing, thus improving the generality of the finding. Therefore, the study explored the impact of performance on supply chain activities in Malaysian manufacturing industry.

This study will focus on the relationship between supply chain performances on the Supply Chain Operation Reference Model in Malaysian manufacturing companies. Furthermore, it will also help to identify key factors in making them perform in supply chain management. This study explores the business world which changes the supply chain and highlights the SCOR Model performance which provides an overview of the latest trends which take place in the supply chain process of the companies. Besides, Saleh et. al. (2016) categorized the SCOR Model as a reliable and flexible system that should be aided by the management of a basic leadership process that might prove the company's

performance.

Tan (2012) pointed out that “practical business with the common goal of resourceful and successful management is to lead successful cooperation in supply chain management”. By doing this way, coordination of SCOR Model is required to decide and build the output from the stock into the finished products (Lestari et. al., 2014). Therefore, it is also believed to be the key to achieving the objectives of using the SCOR Model. Minimizing waste and providing more incentive the client in order to enhance the interior procedures of organizations for it to be aligned. In addition, the implementation of Just-In-Time (JIT) is to cut expenses and solve of the issues in the supply chain organization (Cigolini et al., 2004; Burgess et al., 2006).

In additional, Malaysia Productivity Corp in 2018 highlighted the utilization of Material Resources Planning (MRP) and LEAN management to calculate the materials and components needed to manufacture the product. It is crucial to make continuous improvement by using a systematic process in order to improve efficiency in quality. Indeed, Malaysia Productivity Corp proposed the researcher to use this approaches in order to enhance the performance in supply chain process of productivity and growth in helping the industry to achieve more, as well as overcoming difficulties, for example; reducing stock, process duration, delivery lead time, defect, labour assets, built buffer stock, space funds, stacking efficiencies, profitability and quality improvement.

Besides, the SCOR Model was a grass-root activity in supply chain management. Around 69 industry visionaries have established the supply chain in 2000 as an expert discussion on the development of incorporated management idea in the expanded undertaking (Susan and Wagoki, 2014). Other than that, Stefanovic (2014) has called attention that the SCOR Model shown has progressed towards becoming supply chain key information commitment to the field when useful hindrances are being tested by the