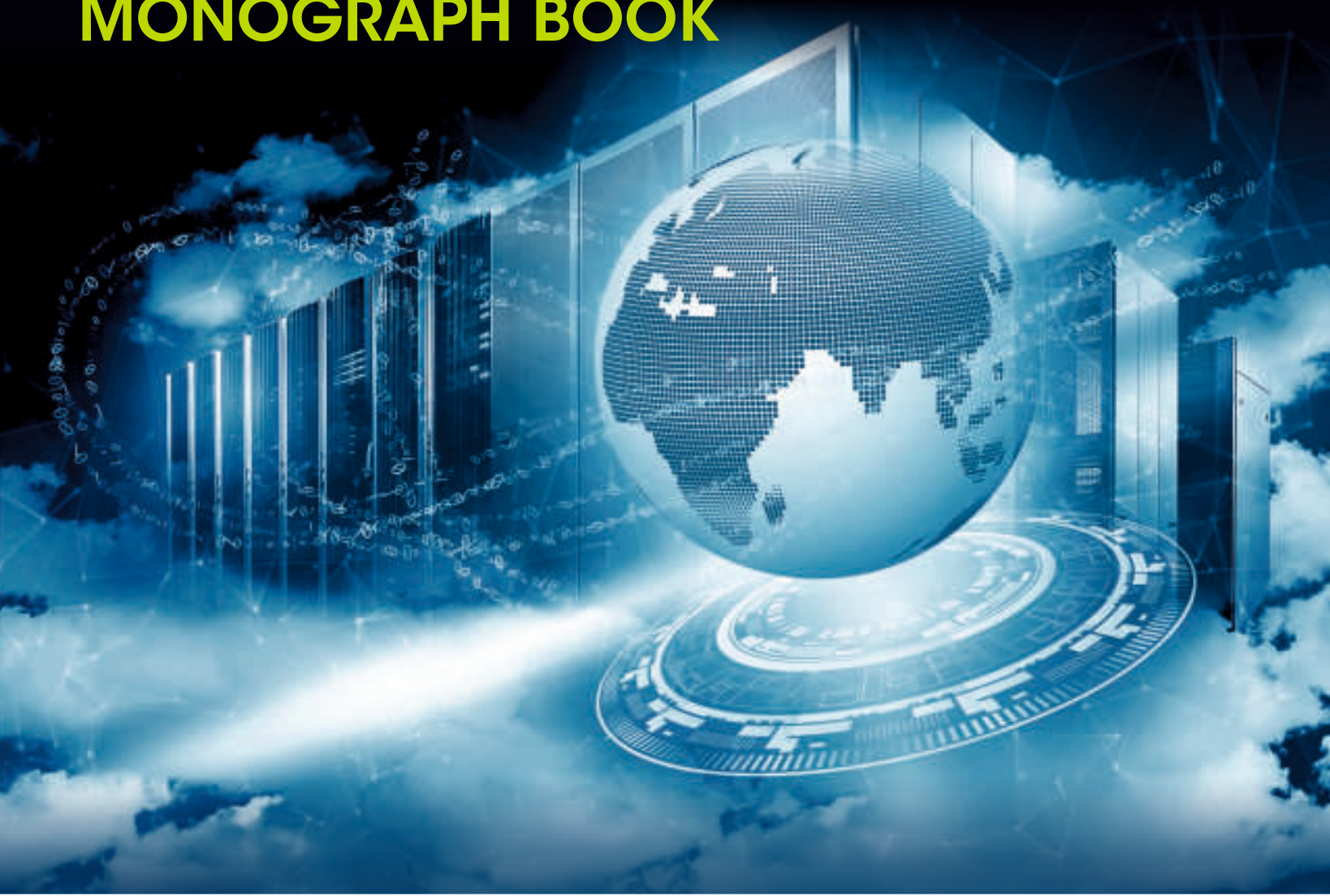




# Advancements in Global Business Research Across Emerging Countries

**MONOGRAPH BOOK**



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# ADVANCEMENTS IN GLOBAL BUSINESS RESEARCH ACROSS EMERGING COUNTRIES

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**McGraw Hill Education (India) Private Limited**



Published by McGraw Hill Education (India) Private Limited  
444/1, Sri Ekambara Naicker Industrial Estate, Alapakkam, Porur, Chennai 600 116

**Advancements in Global Business Research Across Emerging Countries**

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This edition can be exported from India only by the publishers,  
McGraw Hill Education (India) Private Limited.

ISBN (13): 978-93-5316-740-0

ISBN (10): 93-5316-740-X

1 2 3 4 5 6 7 8 9 D103074 23 22 21 20 19

Printed and bound in India.

Managing Director: *Lalit Singh*

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Typeset at APS Compugraphics, 4G, PKT 2, Mayur Vihar Phase-III, Delhi 96, and printed and bound in India at

Cover Image Source:

Cover Designer: APS Compugraphics

Cover Printer:

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# AGBA Introduction

## AGBA Brief

- Academy for Global Business Advancement (AGBA) is global association of professionals in the fields of business administration, commerce, economics, entrepreneurship, information technology, tourism, hospitality and recreational sectors.
- AGBA is an independent, non-aligned and not-for-profit, charitable NGO registered in the state of Texas (USA) with a worldwide network of over 1000 members based across more than 50 countries that include scholars from reputed academic institutions, corporate leaders, governmental officials, entrepreneurs and consultants hailing from both western and emerging countries.
- AGBA, as a global organization, aims to help academics and scholars at business schools across emerging countries to connect with the western (developed) world for mutual benefit. Such collaboration would accelerate the process of globalization by furnishing ample opportunities to scholars in emerging countries to get recognition, disseminate new knowledge and assert themselves on the global stage.

## AGBA's Vision

To be globally recognized as a leading “not-for-profit charitable NGO” dedicated to serve the academic, professional, government, corporate and entrepreneurial sectors worldwide.

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Building on the dynamics of the ongoing globalization process, AGBA is committed to provide a global platform aimed at assisting academics, scholars, professionals, officials, entrepreneurs and consultants of emerging countries to assert themselves on the global stage for recognition, networking and dissemination of knowledge.

## AGBA's Core Business

- Nurture globally competitive talents; expertise and skills in academics across the emerging countries;
- Arrange apprenticeships for academics, scholars, professionals, officials, entrepreneurs and consultants on the global stage;
- Provide advisory services to upcoming business schools across the emerging countries for accreditation by the US based Association to Advance Collegiate Schools of Business (AACSB);
- Provide advisory services to peers worldwide to obtain “Fulbright Grants” from the US government successfully;
- Offer customized training and professional development programs globally;
- Act as a platform for the advancement of “Global Entrepreneurship”. and
- Act as a platform for the publications of scholarship in globally respected and world-class journals.

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## Preface

AGBA's 2019 "*Monograph Book*" entitled, "Advancements in Global Business Research Across Emerging Countries" consists of 30 BEST scholarly papers selected out of over 300 papers presented at AGBA's 15th World Congress held at AACSB accredited NIDA Business School, National Institute of Development Administration (NIDA), Bangkok, Thailand.

After the fabulous success and overwhelming response from global scholars, we are delighted to bring out AGBA's 3rd monograph book. As AGBA is committed to nurture world-class academic research across emerging countries, this monograph book is an attempt to showcase the kind of research papers that are presented at AGBA's global conferences. Through this monograph book, AGBA intends to inspire global scholars based across emerging countries to foray into uncharted territories of academic research of global prominence and bring forth substantial findings that could be beneficial for business firms (private and public) and policy makers across emerging countries.

In this monograph book, an attempt has been made to highlight the advancements in global business research across emerging countries. This monograph book opens up wide range of dimensions that are important for emerging countries. The research streams covered in this monograph book encompass areas as diverse as Accounting, Economics, Commerce, Operations, Finance, Information System, Management, Marketing, Entrepreneurship, International Business, Hospitality and Tourism Management, to name a few. This monograph book makes an interesting read supported by facts, figures, and analyses of scholarly research of world-class quality, depth, and rigor.

By sponsoring this monograph book, AGBA has truly exhibited its adherence to its mission statement – "Building on the dynamics of the ongoing globalization process, AGBA is committed to provide a global platform aimed at assisting academics, scholars, professionals, officials, entrepreneurs and consultants of emerging countries to assert themselves on the global stage for recognition, networking and dissemination of knowledge."

We are also fortunate that so many peers across the world so generously gave their precious time and invested their intellectual capital to refine their papers on time. We met with these peers in person at AGBA's 15th global conference held in Thailand and subsequently teleconferenced with them. The insights and recommendations of these peers were instrumental in the design and format of this monograph book. We extend our heart-felt gratitude and thanks to all the authors, co-authors and reviewers for making this AGBA's initiative (publication of a global monograph every year) possible.

This monograph book would not have been possible without the tireless efforts of many dedicated professionals at our globally acclaimed publisher (McGraw Hill). We are especially grateful to Mr. Nikhil Wadhera for his invaluable contribution facilitating the successful completion of this project on time.

We hope readers will discover/rediscover, how stimulating, challenging, fascinating, and sometimes frustrating this world of global business research could be.

Thank you very much.

Sincerely,

**Prof. Dr. Zafar U. Ahmed (Editor)**

**Dr. Sahil Raj (Co-Editor)**



## Biopic of Editors

### PROF. DR. ZAFAR U. AHMED (EDITOR)

**Prof. Dr. Zafar U. Ahmed** is currently enjoying his sabbatical since January 1, 2019. Prior to embarking on his sabbatical, Zafar served American University of Ras Al Khaimah (United Arab Emirates) as a Professor of Marketing and International Business for two years. He earned his BBA in International Business from the University of the State of New York's Regents College at Albany (USA), an MBA in International Business from the Texas A&M International University (USA), and a Ph.D., in a Business Related Field (with specialization in Branding) from Utah State University (USA) in 1988. He has well over 10-year industry experience earned across Africa as an exporter and global entrepreneur, and 30 years academic experience accumulated at six different American universities (e.g., Texas A&M University at Commerce (Texas); Fort Hays State University (Kansas); Sacred Heart University (Connecticut); Minot State University (North Dakota); and State University of New York at Fredonia (New York). He has published over 200 scholarly papers in Thomas Reuters (ISI) and Scopus indexed journals. He has a *Google Scholar Citation Index* of over 5,000, an "h-index of 33", and "i-10 index of 73" to his credit. He has organized and presided over 16 global conferences across the world, serves on the editorial boards of more than 10 world-class journals, and serves as the Founder, President and CEO, US based Academy for Global Business Advancement (<http://agba.us/>), Founder and Editor-in-Chief, UK based and Scopus indexed "*Journal for Global Business Advancement*" (<https://inderscience.com/jhome.php?jcode=jgba>), and Founder and Honorary Chief Editor, UK based and Scopus indexed, "*Journal for International Business and Entrepreneurship Development*" (<https://www.inderscience.com/jhome.php?jcode=jibed>). He has been invited to guest edit a special issue of the *Journal of Business Research* with a focus on Africa. He could be reached via his email: [zafaruahmed@gmail.com](mailto:zafaruahmed@gmail.com)

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## Chapter # --- 17

# **Developing Performance Measurement of Supply Chain Management using SCOR Model and Analytical Hierarchy Process: A Case of National Automotive Exhibition in Indonesia**

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### **ABSTRACT**

Recently the event management especially Meeting Incentive Conference and Exhibition (MICE) plays a very important role. In Indonesia, the competition of the MICE industry is getting tighter especially in the exhibition industry. The aim of this research is developing supply chain performance measurement of exhibition event process using the Supply Chain Operations Reference (SCOR) model and Analytical Hierarchy Process. This is a qualitative case study research. The object of the research in Indonesia national automotive exhibition event, organized by the biggest and most popular event organizer in Indonesia, namely PT Dyandra Promosindo. The finding of this study identified 17 activities as performance indicators of SCOR. Analytical hierarchy process (AHP) was used to measure the weight for each activity using Expert Choice 11.0 software. There is still very little research in supply chain management of exhibitions. In the future research should examine supply chain performance measurement in a more complex event such an international exhibition which involve global supply chain networks.

**Keywords:** Event management, exhibition, supply chain management, Performance measurement, SCOR, key performance indicator (KPI), Analytical Hierarchy Process (AHP)

### **INTRODUCTION**

In Indonesia, the growth of the Meeting Incentive Convention and Exhibition (MICE) industry has been very rapid. This industry is showing an upward trend. A variety of national and international meetings, incentives, conferences, and exhibitions events have been held in Indonesia. National and

international MICE industries in major cities of Indonesia are excellent support systems for promoting and highlighting the Indonesian products (Ministry of Trade of the Republic of Indonesia, 2011). The exhibition industry today is at a new economic growth point and is one of the important pillars of the Indonesian economy. Furthermore, MICE is also a business that contributes significantly to the economies of developing countries. The development of the MICE industry as a new industry can provide benefits to many parties because the MICE industry is a complex industry involving many parties. Therefore, it is necessary to improve the quality of good coordination and collaboration between various parties involved in MICE implementation. It is, therefore, necessary to improve the quality of good coordination and collaboration between the various parties involved in the MICE business process. The concept that can accommodate this collaboration and coordination is supply chain management. However, research on supply chain management for MICE remain limited. The study of event management is a relatively recent phenomenon, and the field has experienced a rapid change in research focus. A growing number of tourism organizations have planned and held events like local product festivals, community fairs, or sporting events to attract residents and travellers and bring economic and social benefits to communities. The growth of events and festivals in recent decades has led researchers to investigate the phenomenon and outcomes of these events (MacCarthy, Blome, Olhager, Srail, & Zhao, 2016). Through the application of supply chain concepts, a company and especially event organizers can understand and manage the flow of integrated activities and services from upstream to downstream. Moreover, good integration within all parties can produce optimal performance. This requires the coordination of all members in the supply chain, both internally and externally. The SCOR model enables enterprises in enhancing their supply chain performance in a systematic way, to enhance communication among member in the supply chain, and to design a better supply chain network. The SCOR model is a supply chain performance evaluation model. It provides a consistent supply chain management framework, including business process, performance evaluation and the best practice (Hwang, Lin, & Lyu, 2008).

This study uses a case study approach. The object of this research is a case occurring at the national automotive exhibition in Indonesia. The event is held in the city of Surabaya, the second biggest city of Indonesia after Jakarta. The organizer of the exhibition is PT Dyandra Promosindo, a subsidiary of PT Kompas Gramedia group. PT. Dyandra Promosindo Surabaya has several annual events that vary from automotive events, clothing, concerts, exhibitions, and corporate events in various cities, especially Surabaya and Eastern Indonesia. The focus of this research is Surabaya Automotive Exhibition event, which is one of the big annual events in Indonesia. The main topic of discussion is the measurement of supply chain performance, in order to be a benchmark and improvement strategy for PT. Dyandra Promosindo Surabaya through the concept of Supply chain Operations Reference (SCOR). The purpose of this study is to evaluate the evaluation criteria, (ie., performance indicators for SCOR and determine the weight with Analytical Hierarchy Process (AHP). The practical contribution of this research is to give an alternative for companies to perform systematic performance measurement in order to measure the performance of an event and to know the performance from the upstream to the downstream chain. The theoretical contribution is to provide an application development concept of supply chain performance measurement, especially in event management and especially in the exhibition.

The implementation of supply chain performance measurement is very important, especially to improve the integration performance among supply chain members involved in the exhibition, which is crucial for the success of the event. Therefore, we need an appropriate performance measurement model to measure event success. One of the most popular tools for measuring supply chain performance is the

SCOR Model. A model introduced by the Supply Chain Council (SCC) a nonprofit organization that develops frameworks, methodologies, and benchmarking to develop processes and measure supply chain performance. This research is intended to identify performance indicators for each SCOR component, namely Plan, Source, Make, Deliver and Return. Furthermore, it will measure the weight for each indicator item that has been formulated to find out the most important indicators to be considered and influence the success of the event. The supply chain performance measurement model is useful for event organizers, especially the exhibition as a more systematic future evaluation and planning tool

## **LITERATURE REVIEW**

### **Supply Chain Management**

Supply chain management (SCM) has been a major component of competitive strategy to enhance organizational productivity and profitability ((A. Gunasekaran, Patel, & McGaughey, 2004). Supply Chain Management (SCM) is the integration of key business processes from end user through original suppliers that provides products, services, and information that add the value for customers and other stakeholders ((Sillanpää, 2015). SCM is not only required in the manufacturing industry, but also in a non-manufacture industry, which require the design and management in an integrated manner, as stated by Giannakis (2011) where the development of a robust reference framework for SCM in service industries may be of paramount importance. This emanates from the promised benefits that effective SCM can create for all the collaborating parties: reduced costs and increased revenues, improvements in delivery, dependability and service quality. Supply chain management has the ability to promote the integration of organizations which was previously independent, for improvement in organizational collaboration (Kaliani Sundram, Chandran, & Awais Bhatti, 2016); (Du, Ma, Fu, Zhu, & Zhang, 2015). The field of supply chain management (SCM) has emerged over the past decade from a functional perspective whose central focus was the management of the physical distribution of goods to a multidisciplinary concept where supply chains compete as a whole utilizing global networks (Bernon & Mena, 2013). Supply chains evolve and change in size, shape and configuration, and in how they are coordinated, controlled and managed. Some supply chains are mature and relatively unchanging. Some are subject to significant change (MacCarthy et al., 2016). In manufacturing supply chains, suppliers are upstream, and customers are downstream. Supply chains are not static, they evolve and change in size, shape and configuration, and in how they are coordinated, controlled and managed. Some supply chains are mature and relatively unchanging, some are subject to a significant change. New supply chains may emerge and evolve for a variety of reasons. Groups of customers may contribute ideas or their feedback information to the design of the product, but that feedback is not an essential input to the production process for a specific customer. Both manufacturers and service providers conduct this type of market research, and general customer feedback is not exclusive to either domain (Zhong, Ma, Tu, & Li, 2016). Chopra and Meindl (2009) state that the main purpose of the supply chain is to meet customer needs. The term supply chain is to create a product or service offering with a network of suppliers or vendors, manufacturers, distributors, retailers, and consumers or clients along the chain. Thus, most supply chains are actually networks that are not always just one player, each part has a different function.

### **Event Management And Exhibition**

Event and Exhibition Management is defined as an organized, professional, systematic, efficient and effective activity. Activities include planning the concept, implementation, and control

(supervision). In event management, all functions or related divisions must be at the same vision and mindset in order to create activities that meet stakeholders' expectations. Event has an important role for the company, such as building community, cultural development to stay updated, and also to carry the identity of every event. Most of the attraction of the event is a characteristic or concept that is always different and must be in accordance with the event target. Therefore, the attraction in an event is very important to be created, in order to build a positive image of the company both internal stakeholders and external stakeholders. In addition, these activities are related to economic impact, sponsorship, publication, and marketing communication. (Getz, 2008).

Organizing event exhibition cannot be separated from the role and the existence of production suppliers/vendors (sound system, stage, barricade, partition, tent, electricity), talent and manpower, media campaigns (online and offline), visitor, exhibitor, and sponsor. Supply chain management has the ability to integrating all parties including organizations that involve in the exhibition and improving organizational collaboration. Organizing an event for a business is an activity that aims to support Public Relations activities to create a positive image of the company in the eyes of internal stakeholders and external stakeholders.

### **Supply Chain Performance Measurement**

An organisation's performance measurement system (PMS) has a significant role in managing businesses and SCs. (Balfaqih, Nopiah, Saibani, & Al-Nory, 2016). There are different purposes for developing a PMS in SCs, such as to identify success, identify whether customer needs are met, understand business processes, provide factual decisions, enable progress, track progress and identify bottlenecks, waste, problems and improvement opportunities (Angappa Gunasekaran & Kobu, 2007). In supply chain management, performance measurement needed for several reasons, they are:

1. Monitoring and controlling
2. Communicating objectives to all parties of supply chain functions
3. Knowing the achievement of supply chain objectives
4. Identifying the supply chain improvement

### **Supply Chain Operation Reference (SCOR)**

The Supply Chain Operation Reference (SCOR) method is introduced by the Supply Chain Council (SCC), a global nonprofit organization that develops frameworks, methodologies, and benchmarking to develop processes and measure supply chain performance. SCC was founded in 1996 and was pioneered by several organizations or companies such as Bayer, Compaq, Procter and Gamble, and more. At the beginning of its establishment, SCC has a membership of 69 companies, it has reached more than 1000 companies worldwide. Hwang (2008) states Supply Chain Operations Reference (SCOR) is a standard evaluation of supply chain performance measurements that have been widely implemented in modern companies. The SCOR method provides a unique performance overview that links business processes, metrics, best practices and technologies to a single structure to support communication throughout the supply chain and develop the effectiveness of supply chain management and link to supply chain development activity (Rotaru, Wilkin, & Ceglowski, 2014).

According to Pujawan (2010), SCOR method is a reference model of supply chain operations that are implemented based on the process by integrating the three main elements in management that



are business process reengineering, benchmarking, and process measurement into the cross-functional framework in the supply chain. Basically, SCOR is a model based on a process defined as a planning process, procurement (source), making, delivery, return, and enable.

### SCOR Metric

SCOR metrics consist of five attributes related to the company's supply chain process to detail the strategic direction of a company with a structured hierarchy of performance processes. The SCOR method connects the five attributes associated with the supply chain process. The five attributes are as follows: (1) Reliability, ability to perform performance in accordance with expectations that focus on the results of the process undertaken. The attributes included are timing, quantity and quality. (2) Responsiveness, explains the speed in performing in the supply chain to provide products to consumers related to customer-focused cycle times. The attributes included are the order fulfilment according to the time cycle. (3) Flexibility, the ability to respond from external influences such as changes in planning and natural disasters that result in changes in business processes.

The attributes included are flexibility and adaptability. (4) Costs, costs arising from the operation of supply chain processes (internal company). The attributes included are labour costs, materials, management, and transportation. (5) Asset Management Efficiency (Assets), the ability to utilize assets efficiently including cost reductions from the measurement of cash-to-cash cycle time and return on fixed asset attributes. In SC performance measurement, the main purpose is not only to obtain information for top management's needs but also several kinds of SC measures are required at every management and operational level. SC should be measured because of management interest in measuring how efficient SC is (Sillanpää, 2015).

### Key Performance Indicator (KPI)

The Key Performance Indicator (KPI) supply chain is determined based on the company's internal policies. KPI expected to reflect the company's goals, strategies, or work programs of the company. In determining KPIs, companies must be on target so they can determine their future performance because KPI is a key indicator that is able to represent overall organizational performance. KPIs also have criteria that must be met in achieving them which are synchronized as "SMART" (Specific, Measurable, Attainable, Realistic and Time Sensitive). After selecting the KPI, then scoring is given on the selected KPI, weighting and *scoring* using *Analytical Hierarchy Process* (AHP) method. Weighting and scoring will use the Analytical Hierarchy Process (AHP) method. Three main principles when using AHP (Saaty, 2008), (1) Principle of Hierarchy Preparation, (2) Priority Determination Principle and (3) The principle of logical consistency. In implementing this principle, AHP includes both quantitative and qualitative aspects of the human mind. Quantitative aspects are used to express judgment and preferences in a concise, and solid manner. While the qualitative aspect is used to define the problem and its hierarchy.

### Previous Research

Research on Supply Chain Performance Measurement Methods using the Supply Chain Operations Reference (SCOR) has been widely developed with various objects. Some of these studies include:

1. Research conducted by Mihalis Giannakis in 2011 with the title "Management of Service Supply Chains with a Service-Oriented Reference Model: The Case of Management Consulting". This study aims to explore something biased with the Supply Chain Operations Reference (SCOR) in its services and development. In the development of the SCOR model researchers can explore the capacity of service companies as a resource inventory to build offerings in a service. The six main processes of supply chain design and management in the service industry are plan, source, develop, adapt, operate, and recover. So that the management proposition in the service supply chain can be standardized. SCOR, in this case, can improve overall performance and can be integrated, synchronous, and well coordinated in the supply chain. This research equation with the research contained in this thesis is a supply chain performance measurement model that uses the SCOR model and analyzes the same activities and is applied to the same company in the service industry. Another equation is to have the same goal in improving the performance of a company and its resources so that it can be integrated, synchronized, and well-coordinated in the supply chain.
2. Research conducted by Lee, Tzong-Ru (Jiun-Shen), Shiu, Yi-Siang, P.Sivakumar in 2012 with the title "The Application of SCOR in Manufacturing: Two Cases in Taiwan". The purpose of this study is to measure two cases of different companies in Taiwan and determine a decision for policy in purchasing Information, Communication, and Technology (ICT). The researchers used the SCOR method as a framework for thinking with KPIs at every level that was included. KPI also adopted ICT to help conduct this research. The application of SCOR and KPI by executives from both companies in Taiwan (Company A and Company B), found conformity if ICT was important in helping the development of a company or organization. The similarity of this study is the use of supply chain performance measurement models that use the SCOR and KPI models and analyze the same activities of the SCOR. Other similarities are having the same goal in determining a decision or policy and improving the performance of a company.

## **RESEARCH METHOD**

This research is a qualitative case study research, the objective of the research is to develop a framework to measure the performance of supply chain management practice in a case of the national automotive exhibition in Surabaya. The advantage of the case study approach is the high level of interaction to the research object, which allows an in-depth investigation by a semi-structured interview (Usman.I, 2017). Data were collected by observation and interviewing Senior Project Manager, Project Manager, Junior Project Manager Human Resource Development & General Affair, Graphic Designer, Finance & Accounting of the event. The interview transcripts and observation notes were analysed through intensive reading and rereading in order to allow prevalent themes, issues and phraseology to crystallise. (Moore, 2016). The Supply Chain Operations Reference (SCOR) model is used to identify KPIs through SCOR components according to the Supply Chain Council. The research informant is the key parties involved in the implementation such as branch manager, senior project manager, project officer. The study was conducted in three stages.

Step-1, identifying KPI based on the SCOR and metric model based on interview result.

Step-2, compiling performance measurement by performing KPI weighting with AHP through expert choice software.

Step-3, the phase of drawing conclusions based on KPI analysis and interpretation according to the SCOR model.

The object in this study is supply chain performance of the supply chain at the Surabaya Automotive Exhibition. The Surabaya Automotive Exhibition is one of the annual events held by PT. Dyandra Promosindo Surabaya. Data collection methods are carried out through, (1) observation, (2) semi-structured interviews. Identification of KPIs by conducting interviews with internal parties related to supply chain activities that occur at the Surabaya Automotive Exhibition event including planning, sourcing, making, delivering, returning and enabling and performance attributes of each activity, namely reliability, responsiveness, flexibility, cost, and assets.

1. Validating KPIs conducted by internal parties of PT. Dyandra Promosindo Surabaya.
2. Define KPIs specifications to avoid confusion and clarify information contained in each KPIs.
3. Weighting KPIs to determine the level of importance of each performance indicator using AHP Expert Choice 11.0 software.
4. Assessment of actual performance against targets set by the company on each KPIs
5. Calculating system scoring on each KPIs to determine the value of achieving the target that has been set and to equalize different units of each indicator, which is larger is better. With the following calculations:  
 Target = Target expected by the company  
 Achievement = The value of achieving current company performance
6. Calculate the value of performance aggregation from the results of the scoring system to determine the value of performance every month. Multiply the performance value of each indicator and the weight.  

$$IKPI_i = W_i * S_i$$
 IKPI<sub>i</sub> = Performance Value of the i KPI Index  
 W<sub>i</sub> = i weight of KPI  
 S<sub>i</sub> = i scoring KPI score
7. Color giving to the achievement of scoring results using a traffic light system. Giving this type of color is:
  - a. Green, Determine the performance of KPIs that have been achieved and have met the targets set by PT. Dyandra Promosindo at the 2016 Surabaya Automotive Exhibition in the range of 80-100.
  - b. Yellow. Determine the performance of KPIs that have been achieved but the value is close to the target set by PT. Dyandra Promosindo Surabaya Automotive Exhibition in the range 56-79.
  - c. Red, Determine the performance of KPIs far below the target set by PT. Dyandra Promosindo at Surabaya Automotive Exhibition event so that it needs repairs as soon as possible. The target is set in the range 0-55.

8. Draw conclusions and suggestions on research conducted for the company on indicators that need to be prioritized for further improvement and development.

This research was conducted at all the exhibition process: 1. During the pre-event preparation process which included planning and licensing activities, 2. During the event takes place, starting from the setup activities, show days, daily evaluations and breakdowns. 3. During the post-event, the implementation of the evaluation report and press release publications.

## ANALYSIS AND RESULT

### Event Supply Chain of Automotive Exhibition

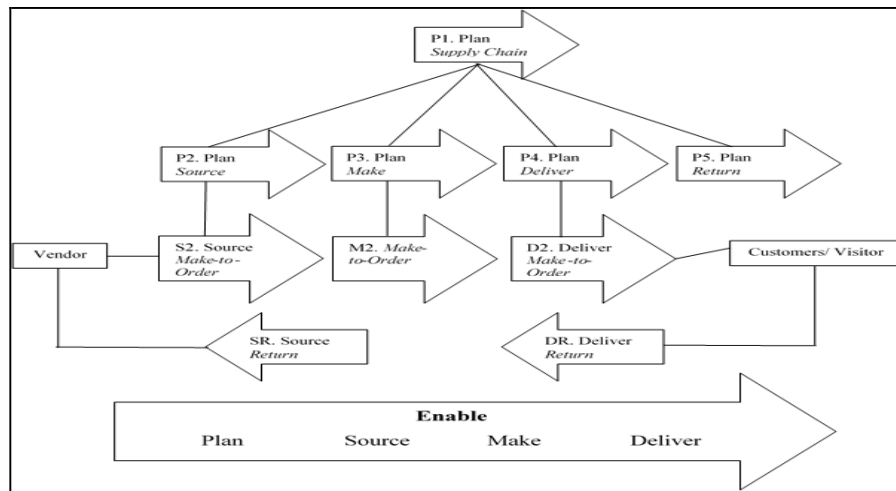
Based on field observations and interviews with the event organizers obtained a general description of the event implementation process, complete with details of its activities. Automotive Exhibition consists of three processes. Pre- Event, Event process and Post- Event. Figure -1 shows the business process of an event of Surabaya automotive exhibition.



**Figure 1. Surabaya Automotive exhibition business process**

Identification of preparation of supply chain activities for exhibitions based on interviews conducted with the branch manager, project manager, project officer and human resource development manager and general affair.

Next step, figuring the mapping the activity with the toolkit corresponds to the SCOR model. The representation of the toolkit makes it easy for companies to integrate separate activities into an integrated entity. The toolkit is arguably an architecture in the supply chain.



**Figure 2: Toolkit Mapping of Supply Chain Activities Surabaya Automotive Exhibition**

Note: P1. Plan Supply Chain; P2. Plan Source; P3. Plan Make; P4. Plan Deliver; P5. Plan Return; S2. Source Make to Order; M2. Make to Order; D2. Deliver Make to Order; DR. Deliver Return; SR. Source Return.

## Description of the process:

### Plan process

P1. *Supply Chain (Plan)*, The supply chain planning process is the first step of every activity. Planning includes supplier planning, pre-event planning, event planning, and post-event planning.

P2. *Source (Plan)*, The Surabaya automotive exhibition Team's source planning process prepares involved vendors such as central contactors (sarnafil tents, barricades, stages, sound systems, partitions, electricity), management talent and manpower, and outdoor promotion contractors.

P3. *Make (Plan)*, Make planning process in the "event" stage of the process of setting up, show days (rundown), and breakdown in detail in the entire series of indoor and outdoor venue events.

P4. *Deliver (Plan)*, The process of delivering deliveries in the Event / Exhibition Organizer is more about how to present concepts and themes that have been planned to be received and felt by visitors, sponsors, and participants.

P5. *Return (Plan)*. The return planning process is a plan if there is feedback from the level of satisfaction and complaints by visitors, sponsors, and participants to immediately do an alternative plan and find the best solution.

### Source Process

S2. *Source Make-to-Order*, The Surabaya Automotive Exhibition Team is an annual event which is part of the continuation of the Indonesia International Motor Show event. Where this event is held regularly with the same average visitor segment, suppliers (vendors), exhibitors, sponsors, and media that are more or less the same.

### **Make Process**

M2. *Make-to-Order*, The make process is at the stage of the event starting from the process of setups, show days (rundowns), and breakdowns and in the whole series of indoor and outdoor venue events, which are all adjusted to the concepts and themes and will be floored to sponsors and participants.

### **Deliver Process**

D2. *Deliver Make-to-Order*, In the Exhibition Organizer process is a way of presenting concepts and themes tailored to the survey results obtained from visitors, sponsors, and participants.

### **Return Process**

DR. *Deliver Return*, Feedback process from the level of satisfaction and complaints by visitors, sponsors, and participants (in each show days the surveyor team always gives a questionnaire for the evaluation process)

SR. *Source Return*, The process of returning to the supplier (vendor) such as errors or nonconformities, talent and manpower, and outdoor promotion.

### **Enabler Process**

In the enable process, attributes for Plan, Source, Make, and Deliver are used in the supply chain event, which is adjusting to the company rules and Agreements on several related parties. Figure-2 illustrates the construction toolkit mapping of automotive exhibition supply chain activities in Surabaya.

### **Supply Chain Process KPIs Identification**

In this study developed performance measurement that focuses on the process of supply chain activity that occurred in PT. Dyandra Promosindo Surabaya at the Automotive Exhibition event. Performance measurement indicators are determined based on six performance activities according to the SCOR model, ie plan, source, make, deliver, return, and enable. Moreover, this research also applies supply chain metrics, as a performance attribute, i.e. reliability, responsiveness, flexibility, cost, and assets. KPIs identification is obtained through interviews and discussions with the internal member of the company, such as branch manager, project manager and HRD & General Affair.

Performance indicators prepared are adjusted to the target, objectives and evaluation of the exhibition in the previous year. After identifying KPIs on each supply chain activity, check the validity of the performance indicators that have been identified. Identify the validity of performance indicators performed by Project Manager and Project Officer.

The first phase of the research is the design of performance indicators. The results of the research have identified 17 KPIs representing supply chain activities.

1. Plan Activity consists of four Performance Indicators; a. <i>Accuracy of Forecast Technique</i> b. <i>Planning Flexibility</i> c. <i>Re-planning Flexibility</i> d. <i>Planning Cost</i>	b. <i>Reliability Implementation Supplier Performance</i> c. <i>Volume Flexibility</i>
2. Source Activity consists of five Performance Indicator a. <i>Perfect Order Fulfillments (POF)</i> b. <i>Supplier Deliver Lead Time</i> c. <i>Supplier Volume Flexibility</i> d. <i>Acquisition Cost</i> e. <i>Asset Utilization</i>	4. Deliver Activity consist of two Performance Indicator a. <i>Concept Deliver Reliability</i> b. <i>Concept Flexibility</i> 5. Return Activity consists of two Performance Indicator a. <i>Return Employee Reliability</i> b. <i>Satisfaction</i>
3. Make Activity consist of three Performance Indicator a. <i>Make Employee Reliability</i>	6. Enable Activity consist of one Performance indicator <i>Enable Reliability</i>

The second phase is the determination of weight for each attribute of KPIs by using AHP model. Table-1 below shows the result of weight calculation for each attribute indicator of supply chain management event performance for automotive exhibition in Surabaya Indonesia. Each KPIs has a different level of importance and each indicator has a weighting value. The greater the value of an indicator the greater the level of importance than other indicators. The definition for each performance indicator is explained in Appendix-1.

**Table 1. Key Performance Indicator's weight**

Activity	Code	Performance Indicator of Supply Chain	Type KPI	Weight	Global Weight
<b>A. Plan</b> <b>0,096</b>	<b>A.1</b>	<b>Performance Attribute: Reliability</b>		<b>0.311</b>	<b>0.0299</b>
	A.1.1	<i>Accuracy of Forecast Technique</i>	<i>Larger is better</i>	1.000	0,0299
	<b>A.2</b>	<b>Performance Attribute: Flexibility</b>		<b>0.196</b>	<b>0.0188</b>
	A.2.1	<i>Planning Flexibility</i>	<i>Larger is better</i>	0.667	0.0125
	A.2.2	<i>Re-planning Flexibility</i>	<i>Larger is better</i>	0.333	0.0063
	<b>A.3</b>	<b>Performance Attribute: Cost</b>		<b>0.493</b>	<b>0.0473</b>
	A.3.1	<i>Planning Cost</i>	<i>Larger is better</i>	1.000	0.0473
<b>B. Source</b> <b>0,062</b>	<b>B.1</b>	<b>Performance Attribute: Reliability</b>		<b>0.124</b>	<b>0.0077</b>
	B.1.1	<i>Perfect Order Fulfillments (POF)</i>	<i>Larger is better</i>	1.000	0.0077
	<b>B.2</b>	<b>Performance Attribute :Responsiveness</b>		<b>0.287</b>	<b>0.0178</b>
	B.2.1	<i>Supplier Deliver Lead Time</i>	<i>Larger is better</i>	1.000	0.0178
	<b>B.3</b>	<b>Performance Attribute: Flexibility</b>		<b>0.158</b>	<b>0.0098</b>
	B.3.1	<i>Supplier Volume Flexibility</i>	<i>Larger is better</i>	1.000	0.0098
	<b>B.4</b>	<b>Performance Attribute: Cost</b>		<b>0.294</b>	<b>0.0182</b>
B.4.1	<i>Acquisition Cost</i>	<i>Larger is better</i>	1.000	0.0182	

	<b>B.5</b>	<b>Performance Attribute: <i>Asset</i></b>		<b>0.137</b>	<b>0.0085</b>
	B.5.1	<i>Asset Utilization</i>	<i>Larger is better</i>	1.000	0.0085
<b>C. Make 0,102</b>	<b>C.1</b>	<b>Performance Attribute: <i>Reliability</i></b>		<b>0.667</b>	<b>0.0680</b>
	C.1.1	<i>Make Employee Reliability</i>	<i>Larger is better</i>	0.333	0.0226
	C.1.2	<i>Reliability Implementation Supplier Performance</i>	<i>Larger is better</i>	0.667	0.0454
	<b>C.2</b>	<b>Performance Attribute: <i>Flexibility</i></b>		<b>0.333</b>	<b>0.0340</b>
	C.2.1	<i>Volume Flexibility</i>	<i>Larger is better</i>	1.000	0.0340
<b>D. Deliver 0,254</b>	<b>D.1</b>	<b>Performance Attribute: <i>Reliability</i></b>		<b>0.667</b>	<b>0.1694</b>
	D.1.1	<i>Concept Deliver Reliability</i>	<i>Larger is better</i>	1.000	0.1694
	<b>D.2</b>	<b>Performance Attribute: <i>Flexibility</i></b>		<b>0.333</b>	<b>0.0846</b>
	D.2.1	<i>Concept Flexibility</i>	<i>Larger is better</i>	1.000	0.0846
<b>E. Return 0,402</b>	<b>E.1</b>	<b>Performance Attribute <i>Reliability</i></b>		<b>0.333</b>	<b>0.1339</b>
	E.1.1	<i>Return Employee Reliability</i>	<i>Larger is better</i>	1.000	0.1339
	<b>E.2</b>	<b>Performance Attribute <i>Responsiveness</i></b>		<b>0.667</b>	<b>0.2681</b>
	E.2.1	<i>Satisfaction</i>	<i>Larger is better</i>	1.000	0.2681
<b>F. Enable 0,083</b>	<b>F.1</b>	<b>Performance Attribute: <i>Reliability</i></b>		<b>1.000</b>	<b>0.0830</b>
	F.1.1	<i>Enable Reliability</i>	<i>Larger is better</i>	1.000	0.0830

**Table 2. Actual Performance of Key Indicators**

<b>Code</b>	<b>Performance Indicator</b>	<b>Scale</b>	<b>Type KPI</b>	<b>Perfor mance</b>	<b>Target</b>	<b>Scoring</b>
A.1.1	Accuracy of Forecast Technique	1-5	<i>Larger is better</i>	3	4	75%
A.2.1	<i>Planning Flexibility</i>	1-5	<i>Larger is better</i>	4	4	100%
A.2.2	<i>Re-planning Flexibility</i>	1-5	<i>Larger is better</i>	3	3	100%
A.3.1	<i>Planning Cost</i>	1-5	<i>Larger is better</i>	4	5	80%
B.1.1	<i>Perfect Order Fulfillment (POF)</i>	1-5	<i>Larger is better</i>	3	5	60%
B.2.1	<i>Supplier Deliver Lead Time</i>	1-5	<i>Larger is better</i>	2	4	50%
B.3.1	<i>Supplier Volume Flexibility</i>	1-5	<i>Larger is better</i>	2	5	40%
B.4.1	<i>Acquisition Cost</i>	1-5	<i>Larger is better</i>	5	5	100%
B.5.1	<i>Utilization Asset</i>	1-5	<i>Larger is better</i>	4	5	80%



C.1.1	<i>Make Employee Reliability</i>	1-5	<i>Larger is better</i>	4	5	80%
C.1.2	<i>Reliability Implementation Supplier Performance</i>	1-5	<i>Larger is better</i>	2	5	40%
C.2.1	<i>Volume Flexibility</i>	1-5	<i>Larger is better</i>	5	5	100%
D.1.1	<i>Concept Deliver Reliability</i>	1-5	<i>Larger is better</i>	3	5	60%
D.2.1	<i>Concept Flexibility</i>	1-5	<i>Larger is better</i>	4	4	100%
E.1.1	<i>Return Employee Reliability</i>	1-5	<i>Larger is better</i>	3	5	60%
E.1.2	<i>Satisfaction</i>	1-5	<i>Larger is better</i>	4	5	80%
F.1.1	<i>Enable Reliability</i>	1-5	<i>Larger is better</i>	4	4	100%

The calculation of the target achievement of each indicator multiplied by the weight of each indicator in order to calculate the overall performance index (aggregation) of each indicator, according to the following formula:

$$IKPI_i = W_i * S_i$$

Note:  $IKPI_i$  = Value of Index performance KPI-i

$W_i$  = Weight of KPI-i

$S_i$  = Scoring value KPI-i

Example calculation index work value: *Accuracy of Forecast Technique*:

$$IKPI_i = 0.0299 * 75 = 2\%$$

Aggregate performance index calculation results can be seen in the table-3 as follow:

**Table 3. Aggregate Value of Supply Chain Performance**

Code	Performance Indicator	Performance Index	%	Aggregate
A.1.1	Accuracy of Forecast Technique	0.0224	2%	<b>76%</b>
A.2.1	<i>Planning Flexibility</i>	0.0125	1%	
A.2.2	<i>Re-planning Flexibility</i>	0.0063	1%	
A.3.1	<i>Planning Cost</i>	0.0378	4%	
B.1.1	<i>Perfect Order Fulfillment (POF)</i>	0.0046	0%	
B.2.1	<i>Supplier Deliver Lead Time</i>	0.0089	1%	
B.3.1	<i>Supplier Volume Flexibility</i>	0.0039	0%	
B.4.1	<i>Acquisition Cost</i>	0.0182	2%	
B.5.1	<i>Utilization Asset</i>	0.0068	1%	
C.1.1	<i>Make Employee Reliability</i>	0.0181	2%	
C.1.2	<i>Reliability Implementation Supplier Performance</i>	0.0182	2%	
C.2.1	<i>Volume Flexibility</i>	0.034	3%	

D.1.1	<i>Concept Deliver Reliability</i>	0.1016	10%
D.2.1	<i>Concept Flexibility</i>	0.0846	8%
E.1.1	<i>Return Employee Reliability</i>	0.0803	8%
E.1.2	<i>Satisfaction</i>	0.2145	21%
F.1.1	<i>Enable Reliability</i>	0.083	8%

Activity "return" has the highest value of weight that is 0.402, then the second highest value of weight on the deliver activity is 0.254, the third highest weight value in the make activity is 0.102. Furthermore, the activity plan has a weight value of 0.096, enable activity has a weight value of 0.083 and the lowest activity is on the activity source that has a weight value of 0.062. Return activity at Surabaya Automotive event becomes the main priority because it involves the three most important parties i.e, visitors, sponsors, and participants where three parties give feedback on satisfaction level and complain from visitors, sponsors and participants (exhibitors).

The performance attribute that has the most important weighting value in the return activity is the responsiveness attribute of 0.667 compared with the reliability performance attribute of 0.333. Therefore, attributes responsiveness need to be considered because responsiveness is more helpful in following up feedback of the 3 most important parties namely visitors, sponsors, and participants.

## CONCLUSION

The design of performance indicators or KPI at Surabaya Automotive Exhibition, identified six activities based on SCOR i.e. plan, source, make, deliver, return, and enable and metrics namely reliability, responsiveness, flexibility, cost, and assets. Performance indicators were found to be 17 performance indicators, consisting of 4 indicators of activity plan performance, 5 performance indicators of source activity, 3 performance indicators, 2 deliverables performance indicators, 2 performance indicators of return activity, and 1 performance indicator. Activity "return" has the highest value of weight that is 0.402, then the second highest value of weight on the deliver activity is 0.254, the third highest weight value in the make activity is 0.102. Furthermore, the activity "plan" has a weight value of 0.096, enable activity has a value of the weight of 0.083 and the lowest activity is on the activity source that has a weight value of 0.062.

Based on the calculation of the aggregate value is 76%, which is classified in the range 56%-79%, is in the position of color traffic light system "yellow". With SCOR implementation at every exhibition event of PT. Dyandra Promosindo will add options as a thorough evaluation material from pre-event, event and post-event. In addition to maximizing performance measurement as an evaluation material and automotive exhibition competition, the company should also pay attention to similar events as an international standard benchmark.

Limitation of this study is to only use one particular case, namely the national automotive exhibition so that it cannot be generalized. Future research can be done on an international scale event, using quantitative explanatory research in the international exhibition event to generalize the concept.

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## APPENDIX

## 1a. Performance Indicator definition - Key Performance Indicator Plan Process

Activity	Code	Supply Chain Performance Indicator	Definition
A. PLAN	<b>A.1</b>	<b>Performance Attribute <i>Reliability</i></b>	
	A.1.1	<i>Accuracy of Forecast Technique</i>	This performance indicator is used to see the suitability of actual planning forecasting
	<b>A.2</b>	<b>Performance Attribute <i>Flexibility</i></b>	
	A.2.1	<i>Planning Flexibility</i>	This performance indicator is used to measure the flexibility of the company and the team in planning
	A.2.2	<i>Re-planning Flexibility</i>	This performance indicator is used to determine the level of flexibility in re-planning when changes occur.
	<b>A.3</b>	<b>Performance Attribute <i>Cost</i></b>	
	A.3.1	<i>Planning Cost</i>	This performance indicator is used to determine how important planning costs will be spent in the supply chain (RAB) cycle.

Note:

A. : Level 1 (SCOR Activity )

A.1, A.2, A.3 : Level 2 (SCOR Attribute)

A.1.1, A.2.1, A.2.2, A.3.1 : Level 3 (Indicator SCOR)

Definition : Level 4

## 1b. Performance Indicator definition - Key Performance Indicator Process Source

Activity	Code	Supply Chain Performance Indicator	Definition
B. SOURCE	<b>B.1</b>	<b>Performance Attribute <i>Reliability</i></b>	
	B.1.1	<i>Perfect Order Fulfilment (POF)</i>	Assessment of the performance of the vendor in accordance with the quality or quantity and on time in accordance with the predetermined.
	<b>B.2</b>	<b>Performance Attribute <i>Responsiveness</i></b>	
	B.2.1	<i>Supplier Deliver Lead Time</i>	Supplier (vendor) speed or response is in accordance with the provisions that have been determined.
	<b>B.3</b>	<b>Performance Attribute <i>Flexibility</i></b>	
	B.3.1	<i>Supplier Volume Flexibility</i>	The ability of suppliers (vendors) in fulfilling additional demand for equipment/equipment at any time
	<b>B.4</b>	<b>Performance Attribute <i>Cost</i></b>	
	B.4.1	<i>Acquisition Cost</i>	This indicator is used to measure the ratio of costs incurred for additional costs.
	<b>B.5</b>	<b>Performance Attribute <i>Asset</i></b>	
B.5.1	<i>Utilization Asset</i>	This indicator is used to measure how much assets are used	

Note:

B. : Level 1 ( SCOR Activity)

B.1, B.2, B.3, B.4, B.5: Level 2 (SCOR Attribute)

B.1.1, B.2.1, B.3.1, B.4.1, B.5.1: Level 3 (SCOR Indicator)

Definition: Level 4

### 1c. Performance Indicator definition - Key Performance Indicator Make Process

Activity	Code	Supply Chain Performance Indicator	Definition
<b>C. MAKE</b>	<b>C.1</b>	<b>Performance Attribute <i>Reliability</i></b>	
	C.1.1	<i>Make Employee Reliability</i>	This performance indicator is used to determine the level of employee reliability in monitoring and implementing setups, show days, and breakdowns.
	C.1.2	<i>Reliability Implementation Supplier Performance</i>	This performance indicator is used to determine the level of reliability of supplier (vendor) performance when setting up, show days, and breakdown.
	<b>C.2</b>	<b>Performance Attribute <i>Flexibility</i></b>	
	C.2.1	<i>Volume Flexibility</i>	This performance indicator is used to measure the flexibility of a company/team in organizing POS 2016.

Note:

a. : Level 1 (SCOR Activity)

C.1, C.2 : Level 2 (SCOR Attribute)

C.1.1, C.2.1, C.2.1 : Level 3 (SCOR Indicator)

Definition : Level 4

### 1d. Performance Indicator definition - Key Performance Indicator Process Deliver

Activity	Code	Supply Chain Performance Indicator	Definition
<b>D. DELIVER</b>	<b>D.1</b>	<b>Performance Attribute <i>Reliability</i></b>	
	D.1.1	<i>Concept Deliver Reliability</i>	This performance indicator is used to determine the reliability level of the 2016 POS Team in delivering the planned concept.
	<b>D.2</b>	<b>Performance Attribute <i>Flexibility</i></b>	
	D.2.1	<i>Concept Flexibility</i>	This performance indicator is used to measure the flexibility of the Team in delivering the planned concept.

Note:

C. : Level 1 (SCOR Activity)

D1, D.2: Level 2 (SCOR Attribute)

D.1.1, D.2.1: Level 3 (SCOR Indicator)

Definition: Level 4

**1e. Performance Indicator definition - Key Performance Indicator Return Process**

Activity	Code	Supply Chain Performance Indicator	Definition
<b>E. RETURN</b>	<b>E.1</b>	<b>Performance Attribute <i>Reliability</i></b>	
	E.1.1	<i>Return Employee Reliability</i>	This performance indicator is used to determine the employee's ability in response to POS 2016 shortages.
	<b>E.2</b>	<b>Performance Attribute <i>Responsiveness</i></b>	
	E.2.1	<i>Satisfaction</i>	This performance indicator is used to determine the actions of suggestions for the satisfaction of visitors, participants, and sponsors.

Note :

- D. : Level 1 (SCOR Activity)  
 E.1, E.2 : Level 2 (SCOR Attribute )  
 E.1.1, E.2.1 : Level 3 (SCOR Indicator)  
 Definition : Level 4

**1f. Performance Indicator definition - Key Performance Indicator Enable Process**

Activity	Code	Supply Chain Performance Indicator	Definition
<b>F. ENABLE</b>	<b>F.1</b>	<b>Performance Attribute <i>Reliability</i></b>	
	F.1.1	<i>Enable Reliability</i>	This performance indicator is used to measure the reliability of MOUs and Management Rules.

Note:

- E. : Level 1 (SCOR Activity)  
 F.1: Level 2 (SCOR Attribute)  
 F.1.1: Level 3 (SCOR Indicator)  
 Definition: Level 4