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Service Performance Measurement Using the Supply Chain Operation Reference Model in The Events and Travel Industry

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Abstract

Objective: This study aims to measure the performance of supply chain services using the Supply Chain Operation Reference (SCOR) Version 11.0 model in the events and travel industry.
Design/Methods/Approach: The Supply Chain Operation Reference (SCOR) version 11.0 framework was employed to measure the performance of supply chain services. The performance indicators were assigned weights using the Analytical Hierarchy Process in Expert Choice Software. The performance achievements were marked using the traffic light system method, and an Action Plan was suggested for the company to improve its performance.
Findings: The present study found 17 performance indicators consisting of 4 Plan performance attributes, 5 Source performance attributes, 3 Make performance attributes, 2 Deliver performance attributes, 2 Return performance attributes, and 1 Enable performance attribute. The weighting of each indicator resulted in the weight values for each activity from highest to lowest order, namely, Plan (0.317), Enable (0.297), Deliver (0.225), Source (0.95), Make (0.44), and Return (0.22). The performance measurement using a scoring system with the "larger is better" method and marking achievements through the traffic light system resulted in the company's aggregation value of 78%, indicating that the company still needs improvements in its supply chain service process even though the company's performance achievement is quite good.
Originality: This research presents a new perspective on using SCOR-based performance measurement in service companies to become the basis for strategic decision-making and lead companies to achieve their competitive capabilities.
Practical/Policy implication: The SCOR framework in every company business activity will provide a comprehensive view of the service supply chain as evaluation material for the company's service supply chain.

Keywords: Service performance measurement, Supply chain operation reference model, Key performance indicators, Tourism

JEL Classification: L83, L84

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1. Introduction

The service industry plays a significant role in global and local economies. According to data from an international survey institute in 2019, the service industry accounted for at least 64.79% of the global GDP. This makes the service industry a key sector in global economic development (O'Neill, n.d.). This achievement marks a new era in which the service industry is the primary support for the world economy and the countries, including Indonesia, involved in it. Indonesia has a similar economic condition in that the service sector plays a vital role in the sustainability of the national economy. According to the former Minister of Tourism and Creative Economy, the service industry has enormous potential and contribution to Indonesia's economic growth (UGM, 2022). This sector has contributed to increasing national GDP, creating jobs, and reducing poverty. The Ministry of Trade (2019) stated that the service industry sector contributed to the national GDP by 54% in 2018 and continues to increase along with the development of the service industry globally. This industry has also absorbed over 74.4 million workers, equivalent to 55% of total employment (BPS, 2021). As an archipelagic country with thousands of cultures, Indonesia has promising potential for domestic and international tourism service industries (Rahmafitria et al., 2017). The Deputy Minister of Tourism and Creative Economy has emphasized the importance of developing and enhancing the tourism services industry post-pandemic, especially for business actors in related industries (Kemenparekraf, 2022). This development could contribute to the national economic growth. However, implementing improvements has encountered major challenges, which are closely related to the complexity and characteristics of the tourism services sector (Baggio, 2008). To compete and expand their market coverage, tourism companies need to improve their performance by having a structured understanding of their business activities and conducting evaluations related to their company performance. Performance measurement is the first step to improving the company's performance, which provides feedback to managers in monitoring and advancing organizational performance, increasing motivation and communication, and diagnosing problems. Previous studies (Ikatrinasari et al., 2020; Kottala & Herbert, 2019; Ricardianto et al., 2022) revealed that the approach model widely used by companies to measure service performance is Supply Chain Operation Reference (SCOR), and it helps companies increase efficiency and effectiveness and improve their supply chain (Lockamy & McCormack, 2004).

The object of this research is Company T, a tourism company with market coverage dominated by government consumers with the aim of official travel since its operational period in 2018. However, with the development and high growth momentum of the tourism services industry, the company wishes to enter a new consumer segment that focuses on general recreational travel consumers, which have the largest potential interest based on data from the Central Statistics Agency in 2020. The company needs performance improvements to expand market segments according to a good understanding of business processes and company performance, thus requiring structured and comprehensive performance measurements (Kaydos, 2020; Lamb et al., 2022). However, until now, Company T still relies on complaints and less structured assessments to measure the performance of the company's service supply chain. It can result in various obstacles, such as errors in seeing opportunities and objects for improvement, decreased quality, and increased covering costs in company operations (Ikatrinasari et al., 2020). Through this research, the author carried out the performance measurement using the SCOR matrix and provided suggestions for improving service supply chain performance in Company T as a first step in improving the company. This research presents a new perspective on the use of SCOR-based performance measurement in service companies so that it can become the basis for strategic decision-making and lead companies to achieve their competitive capabilities.

This research makes several contributions. First, the present study adds insight that can be used as reference material in developing operational policies. Second, the present study provides perspectives and ideas for advancing companies facing the development momentum in the service industry sector. Third, the present study contributes to the overall operation management literature on the design and implementation of performance measurement for the service supply chain in a company operating in the events and travel sector. Finally, the present study provides a comprehensive view of the service supply chain as evaluation material for the company's service supply chain.

The remainder of the paper is structured as follows. We first present the literature review of service performance measurement, supply chain operations reference, analytical hierarchy process, and traffic light system. Next, the methodology section explains our qualitative research process, followed by the results and discussion section. Lastly, the conclusion section is provided.

2. Literature Review

2.1. Service Performance Measurement

Performance in business refers to the attainment of strategic goals that have been established and can be measured through success criteria or specific targets set by the company (Nugrahayu & Retnani, 2015). Achieving long-term performance is the outcome of utilizing one's knowledge, skills, and abilities effectively through consistent evaluations and appropriate actions (Lidinska & Jablonsky, 2018). Setting clear goals from the start is crucial for the survival of any business. Nevertheless, it is not enough to evaluate only the performance that does not align with the company's objectives and strategy. The prosperity of the company strategy must also be assessed to recognize opportunities for development and enhancement (Dharma, 2012). Performance measurement is a valuable tool that can

help evaluate the company's performance and enable managers to make informed decisions to achieve sustainable business operations.

Service performance plays a vital role in managing customers' activities. Service supply chain metrics ought to be linked to customer satisfaction to ensure an effective performance measurement. It is composed of six indicators. Firstly, service performance evaluation shapes the cause and effect of service delivery and business performance, thereby maintaining a direct and strong relationship between service deliveries and the business. Secondly, service flexibility involves the ability of the service process to adapt to meet customers' expectations and the changing needs of customers, including volume, delivery speed, and specification flexibility. Thirdly, the range of services provides a wide range of services and assesses the added value per employee. Fourthly, the total service delivery cost is an essential consideration for the organization, as it should be developed to achieve overall cost-effectiveness. Fifthly, customer query time is another significant indicator, as it denotes the time it takes for a firm to respond to a customer inquiry with the required information. Lastly, post-process services are applied after the core service process has occurred and provide valuable feedback for further improvements in the service supply chain (Palang & Tippayawong, 2019).

Performance measurement, in general, is defined as the process by which organizations or individuals determine their level of success in achieving their desired goals after a series of management actions (He et al., 2022). Paparoidamis et al. (2019) defined performance measurement as a process that evaluates the effectiveness and efficiency of an action. Performance measurement provides feedback to managers for monitoring and improving organizational performance. Performance indicators are used to evaluate the performance of products, services, and production processes (Van der Vorst, 2000). The most important indicators of performance include cost (budget), time (schedule), and quality (He et al., 2022). A company needs to adhere to certain principles to ensure the effectiveness of a performance measurement system. These principles include ensuring that the measurement scales are aligned with the company's overall strategy, using a combination of financial and non-financial measures, recognizing the unique characteristics of each department, and designing a system that provides fast feedback and encourages continuous improvement (Franceschini et al., 2019). Various modelling approaches can incorporate performance indicators into a performance measurement system, such as the Supply Chain Council's SCOR Model, Balance Scorecard, Multi-Criteria Analysis, Data Envelopment Analysis (DEA), Cycle-Live Analysis, and Activity-Based Costing. By following these principles, companies can effectively monitor and improve their performance over time.

Jääskeläinen et al. (2014) identified three distinctive features of service performance measurement, including a contingency perspective, customer orientation, and a systemic perspective. The contingency perspective emphasizes the importance of considering different service contexts. The customer orientation suggests that performance measurement should cover customers' actions during service operations and their impacts. The systemic perspective proposes that performance measurement should encompass all actors participating in service operations. Overall, performance measurement is a crucial tool for managers to assess and evaluate company performance and improve competitive capabilities.

2.2. Supply Chain Operations Reference

The Supply Chain Operations Reference model (SCOR) is a tool for evaluating and comparing supply chain activities and performance that captures a consensus view of supply chain management (APICS, 2014). The SCOR model was first presented by the Supply Chain Council (SCC), a global non-profit organization and part of the American Production and Inventory Control Society (APICS). SCOR provides a framework that connects performance, matrix, process, best practice, and people aspects in a unified structure. SCC explained that SCOR is structured based on six supply chain processes (Plan, Source, Make, Deliver, Return, and Enable). SCOR is recommended to use more than one metric for each attribute in conducting performance measurement, which aims to ensure that the decision-making process in performance measurement can be balanced (Zeydan et al., 2011). The previous study stated that utilizing the SCOR framework and its associated performance indicators can lead to better overall supply chain performance. Demographic factors such as company size and age can also influence this relationship. In the Indian manufacturing sector, supply chain practitioners can use the SCOR processes and overall supply chain performance measures for sustainable business growth in the global environment (Kottala & Herbert, 2019). Another study suggested that improving the supply chain performance of a printing services company using the SCOR method and focusing on reliability, responsiveness, cost, and assets can lead to better performance measurement. The authors of this study recommended several improvements to the shipping process (Ikatrinasari et al., 2020). According to recent research, the SCOR model can evaluate supply chain performance in the oil and gas industry. The study showed that the fuel supply chain management at the oil and gas company is at an intermediate level, indicating the need for ongoing assessment to optimize strategies and address problems in the network. Developing a comprehensive fuel supply chain management is necessary to align with the company's business objectives (Ricardianto et al., 2022).

2.3. Analytical Hierarchy Process

The analytical hierarchy process (AHP) is a decision-making method developed by Professor Thomas Lorie Saaty in 1970. AHP will decompose complex multi-factor or multi-criteria problems into a hierarchy. Marimin and Maghfiroh

(2010) believes that AHP aims to make decision-making on a problem effective by simplifying the problem with an organized thinking framework. AHP can provide a realistic picture by including all hierarchical aspects of a problem. AHP also provides a mechanism used to check the consistency of evaluation actions, which can reduce bias in decision-making (Dweiri et al., 2016; Saaty, 2008). In general, the AHP procedure is (1) arrange hierarchical levels of decision elements, (2) collect preference data between decision elements with pairwise comparisons, (3) determine the priority and importance weight of each decision element (criteria) from paired matrix data at each level of the same hierarchy, (4) make a consistency test on the comparison of each pairwise element at each hierarchical level, as well as (5) synthesize and aggregate each decision element at all existing hierarchical levels. Supriyono et al. (2007) stated that the pairwise comparison value in the performance matrix is said to be consistent if the consistency ratio (CR) ≤ 0.1. If CR is >0.1, the pairwise comparison value in the given criteria matrix is inconsistent or can be called inconsistency.

2.4. Traffic Light System

The traffic light system is a system that functions as a marker for performance indicators requiring performance improvement (Syairuddin et al., 2008). Several studies have utilized the Traffic Light System (TLS) method to evaluate and enhance the sustainable performance of various industries. For instance, Action Research was implemented in one of the largest retailers in Spain to minimize out-of-stock events and maintain store image. This research established a ranking of stores with the worst KPI values and implemented a monthly traffic light system (red-amber-green) to execute the methodology (García-Arca et al., 2020). Another study introduced a fresh method based on the integration of the Triple Bottom Line concept to evaluate the sustainability performance of manufacturing processes. This study used the TLS principle to classify the Manufacturing Sustainability Index and make it easier for decision-makers to assess indicators of sustainable manufacturing, thereby allowing them to determine the necessary strategies and actions for improving sustainable performance (Dewi et al., 2023). A separate paper proposed a framework for evaluating manufacturing sustainability, employing relevant indicators for efficiency and utilizing a modified Sus-VSM array with the TLS method for precision and detail. The traffic light system can facilitate decision-making, increase the effectiveness of supervision, and improve overall manufacturing performance (Utama & Abirfatin, 2023). Additionally, a new framework was suggested for sustainable performance assessment in the agro-food coffee industry in Indonesia, which integrates the fuzzy AHP, rating assessment, and TLS procedures to evaluate the efficiency of the indicators used to compute the sustainability score (Santoso et al., 2024). Finally, a study on the fashion sector recommended extending the KPIs into four categories and highlighted four indicators as the highest priority areas for improvement using the TLS method (Sarasi et al., 2024). According to Syairuddin et al. (2008), the red light indicates a Key Performance Indicator (KPI) score that falls short of or is below the target range of 0-55. Yellow indicates the score needs improvement with a range of 56-79, while green indicates the score meets or exceeds the target range of 80-100 (Syairuddin et al., 2008). The traffic light system is solely used to indicate performance and not to calculate company performance. Furthermore, there is no standard for each color score as it is adjusted to individual company conditions through discussion with internal parties. The traffic light system scores are adjusted as follows: Green indicates KPIs that have been achieved and met the company's targets within the range of 80-100. Yellow indicates KPIs that have been achieved but are close to the company's targets within the range of 56-79. Red indicates KPIs far below the company's targets, requiring immediate improvement, within the range of 0-55.

3. Method

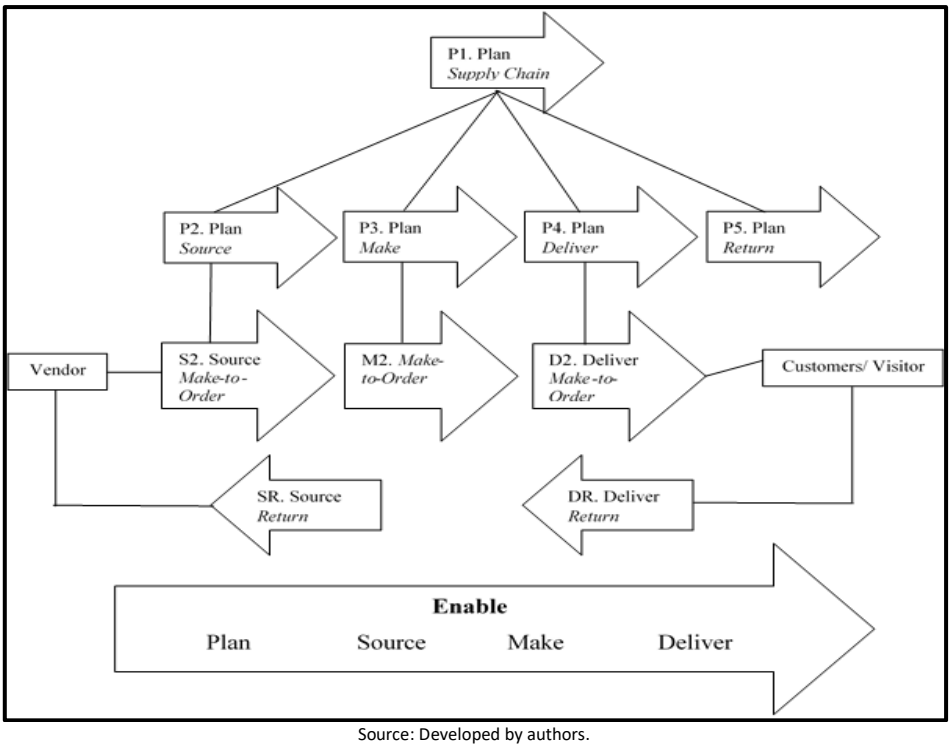
This qualitative research aims to understand the application of performance measurement in the company's service supply chain. The authors conducted this study on internal parties related to the service supply chain process for tourism event organizing services at the Company T from January to August 2022. The performance measurement of supply chain service is based on a set of key performance indicators (KPIs) that are derived from the SCOR attribute. These KPIs serve as the criteria for measuring the performance of Company T's service supply chain. The KPI criteria encompass reliability, responsiveness, flexibility, cost, and asset attributes, which are identified through data processing of interviews with the company owner and operational staff. KPIs in the company's supply chain service process are validated by the company owner. Those considered less effective and don't reflect performance are eliminated. The effective KPIs are then weighted in the next stage.

The KPI weighting process is used to determine the level of importance and priority of each performance indicator using the Analytic Hierarchy Process (AHP) method. Data processed for KPI weights determination was obtained by distributing questionnaires to business owners as decision-makers and parties related to the service supply chain at Company T with the help of AHP. This weighting is also assisted by Expert Choice Software version 11. The next stage is to mark performance achievements using the traffic light system method. The results of this research are a performance measurement design consisting of KPIs and the weight of each KPI, which is then concluded as the KPI with the highest weight to describe the KPI with the highest influence on Company T's performance and provide suggestions for priority performance indicators that need improvement. Improvements to the supply chain service process are carried out based on the results of performance measurements and suggested action plans for Company T.

4. Result and Discussion

Through interviews with the company's owner, it was discovered that the performance measurements in Company T were less structured in their application, which can result in a lack of control over the company's performance that leads to several problems, such as a decline in the quality of the company's services, consumer complaints and increased operational costs. The interview results presented an overview of the company's service supply chain activities, then mapped in a toolkit (Fig. 1) according to the SCOR model mapping activities. Service supply chain activities are explained further below. The Plan Process consists of P1 (Plan Service Supply Chain), P2 (Plan Source), P3 (Plan Make), P4 (Plan Deliver), and P5 (Plan Return). Service supply chain planning (P1) is a crucial first step for any business activity. It involves all planning activities across the pre-event, event, and post-event processes. The source planning process (P2) of the "T" company team involves preparing and planning for the vendors involved, such as modes of transportation (tourist buses, trains, planes), accommodations (hotels, inns, and ballrooms), consumption, and tourist attraction providers. The planning process (P3) in the "Pre-event" stage includes activities related to coordination planning to create a tourism event service on the event day. These activities include plan set-up (night planning and planning regarding the location and service specifications), plan show days (rundown and specifications), and a detailed breakdown of the entire series of events. The delivery planning process (P4) in organizing tourism events explains how companies plan to present concepts, themes, and services that will be received and experienced directly by consumers. The return planning process (P5) is planning if there is feedback from the level of satisfaction and complaints by consumers by immediately providing the best solution or compensation. Apart from that, the return plan also plans if there is an evaluation in the form of feedback or complaints from internal companies to the vendors involved.

The company team engages in procurement activities through the Source Make-to-Order (S2) process, which involves adjusting specifications and meeting consumer needs. In this stage, the company negotiates prices and service specifications with vendors that support tourism services. Make-to-order (M2) is characterized by setting up, coordinating, planning, and breaking down activities throughout the event. While it can be challenging to differentiate the making process in the source-make-deliver series of service companies, particularly for tourism event organizers, Company T's making process is characterized by the activities it carries out to prepare for the D-day (Deliver) after going through the procurement process (Source) and plans. The Deliver Make-to-Order (D2) stage occurs on the D-day of the event, where the coordination established during the making process is implemented in each supply chain service subject. The company presents themes and plans to consumers through travel services.



Source: Developed by authors.

Figure 1. Company T's Service Supply Chain Activity Mapping Toolkit

The Return Process consists of DR (Deliver Return) and SR (Source Return). Deliver Return (DR) is a process of providing feedback on the level of satisfaction and complaints by consumers by carrying out the opening suggestions and criticism directly to the "T" company team. Source Return (SR) is the process of returning a return to the supplier (vendor), such as a complaint regarding an error or non-conformity to specifications or agreements. The Enable process is carried out on the Plan, Source, Make, and Deliver attributes. In the process, the four attributes conform to company

rules (Management Rules) and Agreements with several related parties (MOU). Enable is also defined by Paul (2014) as a process associated with creating, maintaining, and monitoring information, relationships, resources, assets, business rules, compliance with regulations, and commercial contracts to operate the supply chain.

Table 1. Identification of Key Performance Indicators of the Service Supply Chain at "T" company

Activity	Performance Indicator	Definition
Plan	**The Reliability attribute**	
	Accuracy of Forecast Technique	This performance indicator is used to determine the suitability of planning forecasts with actuals when organising tourism events.
	The Flexibility attribute	
	Planning Flexibility	This performance indicator is used to measure the flexibility of the company and team in planning the tourism events.
	Re-planning Flexibility	This performance indicator is used to determine the level of flexibility in re-planning if changes occur.
	The Cost attribute	
	Planning Cost	This performance indicator is used to perceive the importance of planning the expense (Cost Budget Plan) in the supply chain cycle.
Source	**The Reliability attribute**	
	Perfect Order Fulfilment	Assessment of vendor performance according to quality or quantity compliance and on time as determined.
	The Responsiveness attribute	
	Supplier Deliver Lead Time	The speed or response of the supplier (vendor) is in accordance with predetermined provisions.
	The Flexibility attribute	
	Supplier Volume Flexibility	The ability of the supplier (vendor) to fulfill requests for additional equipment or equipment at any time.
	The Cost attribute	
	Acquisition Cost	This indicator is used to measure the ratio of costs incurred to additional costs.
	The Aset attribute	
	Utilization Asset	This indicator is used to measure the amount of assets used for organising tourism events.
Make	**The Reliability attribute**	
	Make Employee Reliability	This performance indicator is used to determine the level of employee reliability in supervising and implementing plans, set up, show days, and coordinating with various parties.
	Reliability Implementation Supplier Performance	This performance indicator is used to determine the reliability level of supplier (vendor) performance during plan implementation, set-up, show days, and coordination with various parties.
	The Flexibility attribute	
	Volume Flexibility	This performance indicator is used to measure the flexibility of the company/team in organising tourism events.
Deliver	**The Reliability attribute**	
	Concept Deliver Reliability	This performance indicator is used to determine the reliability level of the company team in delivering the planned concept.
	The Flexibility attribute	
	Concept Flexibility	This performance indicator is used to measure the team's flexibility in delivering the planned concept.
Return	**The Reliability attribute**	
	Return Employee Reliability	This performance indicator is used to determine employees' ability to respond to deficiencies in the process of organizing tourism events.
	The Responsiveness attribute	
	Satisfaction	This performance indicator is used to determine consumer and vendor (supplier) satisfaction recommendations.

Activity	Performance Indicator	Definition
Enable	**The Reliability attribute**	
	Enable Reliability	This performance indicator is used to measure the reliability of the MOU Management Rules and related regulations.

Source: Developed by authors.

Performance indicators are designed and adjusted to the targets, objectives, and evaluation of the projects undertaken by Company T according to their service supply chain activities. These activities are based on the SCOR hierarchy, which comprises six main activities: Plan, Source, Make, Deliver, Return, and Enable. The indicators are designed to measure the performance of these activities and are divided into 17 KPIs. These KPIs consist of four plan activity performance indicators, five source activity performance indicators, three make performance indicators, two deliver performance indicators, two return activity performance indicators, and an enable performance indicator. Once the KPIs are established, they are weighed using the AHP technique in conjunction with Expert Choice 11 Software. The weighting process determines the level of importance of each performance indicator, and the results are presented in Table 2. The activity with the highest weight is deemed to be the most critical, and in this case, it is Plan Activities (0.317), followed by Enable Activities (0.297), and then Deliver Activities (0.225). All consistency ratio values in the weighting process are under 0.1, ensuring validity and consistency.

Plan activity has the highest significance because of the urgency in plan activities, which are related to every other activity's starting point (kickstart). Plan activities relate to every stakeholder in a tourism event project, such as vendors, consumers, internal companies, and other parties. Proper execution of planned activities is the initial key to successfully organizing a tourism event. After going through the Plan activities, the next most important activity is the Enable Activity. Enable activities are important, especially in the tourism industry, because the contract realization of the planning process is carried out in enabling activities. Enable activities at Company T, which also present boundaries and scope of cooperation and specifications between parties in a tourism event collaboration, such as consumers, vendors, etc. The third activity with the highest weight score falls on the Deliver Activity. Delivering activities are essential because they provide direct contact with consumers when executing tourism event plans. The success of the Plan Activity is also determined by the series of delivery processes carried out by the company to handle consumers on D-day.

The performance attribute that has the highest weighting value in plan activities is the reliability performance attribute (0.540), so the reliability performance attribute is more important in company management compared to others because the reliability attribute ensures that the company has high competence and capability in the planning and planning process for tourism events. In addition, companies and consumers are more concerned with the certainty and clarity of the tourism event planning process than the flexibility and cost of such planning. In enable activities, there is one performance attribute, namely reliability, which weighs 0.297 globally. The reliability performance attribute explains the importance of the company's level of reliability and ability to manage the MOU and management rules and local regulations in a tourism event project. The performance attribute that has the highest weighting value in the Deliver Activity is the reliability performance attribute (0.768), so the reliability performance attribute is more important in company management when compared to the flexibility performance attribute because the reliability attribute is a representation of the capability and reliability of the company team in dealing directly with consumers. Reliability in handling consumers becomes important on D-day because consumers have direct experience with the services provided to them, which significantly influences consumer satisfaction assessments by delivery activities on D-day. Opposite to flexibility, which can still be tolerated by referring to the related contract.

Table 2. Key Performance Indicator Weighting

Activity	Performance Indicator	Type of KPI	Weight	Global Weight
Plan 0.317	Reliability Performance Attributes		0.540	0.17118
	Accuracy of Forecast Technique	Larger is better	1.000	0.17118
	Flexibility Performance Attributes		0.400	0.1268
	Planning Flexibility	Larger is better	0.316	0.040069
	Re-planning Flexibility	Larger is better	0.648	0.082166
	Atribut Kinerja Cost		0.060	0.01902
	Planning Cost	Larger is better	1.000	0.01902
Source 0.095	Reliability Performance Attributes		0.197	0.018715
	Perfect Order Fulfillments (POF)	Larger is better	1.000	0.018715
	Responsiveness Performance Attributes		0.368	0.03496
	Supplier Deliver Lead Time	Larger is better	1.000	0.03496
	Flexibility Performance Attributes		0.274	0.02603
	Supplier Volume Flexibility	Larger is better	1.000	0.02603

Activity	Performance Indicator	Type of KPI	Weight	Global Weight
	Cost Performance Attributes		0.032	0.00304
	Acquisition Cost	Larger is better	1.000	0.00304
	Asset Performance Attributes		0.130	0.01235
	Utilization Asset	Larger is better	1.000	0.01235
Make 0.044	Reliability Performance Attributes		0.442	0.019448
	Make Employee Reliability	Larger is better	0.806	0.015675
	Reliability Implementation Supplier Performance	Larger is better	0.194	0.003041
	Flexibility Performance Attributes		0.558	0.024552
	Volume Flexibility	Larger is better	1.000	0.024552
Deliver 0.225	Reliability Performance Attributes		0.768	0.1728
	Concept Deliver Reliability	Larger is better	1.000	0.1728
	Flexibility Performance Attributes		0.232	0.0522
	Concept Flexibility	Larger is better	1.000	0.0522
Return 0.022	Reliability Performance Attributes		0.343	0.007546
	Return Employee Reliability	Larger is better	1.000	0.007546
	Responsiveness Performance Attributes		0.657	0.014454
	Satisfaction	Larger is better	1.000	0.014454
Enable 0.297	Reliability Performance Attributes		1.000	0.297
	Enable Reliability	Larger is better	1.000	0.297

Source: Data processed using Expert Choice 11.0 Software

The performance attribute with the highest weighting value in Source activities is the responsiveness performance attribute (0.368), so the responsiveness performance attribute is more important in company management compared to others because this attribute influences the first process in Source activities, namely listing and negotiating. Responsiveness is also important because this attribute influences the other three attributes. Company T considers that the responsiveness attribute can support them in Source activities that require accuracy, speed, and a high level of certainty regarding vendor and consumer information and specifications. The performance attribute with the highest weighting value in Make activities is the flexibility performance attribute (0.558), so the flexibility performance attribute is more important in company management compared to others because the company experiences conditions that require a high level of adaptation in Make activities. Consumer demands and field conditions from both vendors and the environment often change during the Make activity stage, which requires companies to have a high level of flexibility. The performance attribute with the highest weighting value in Return activity is the responsiveness performance attribute (0.657), so the responsiveness performance attribute is more important in company management compared to others because the feedback process from consumers requires speed and accuracy of good responses from the company. Return activities supported by a responsive company can convince consumers to make repeat orders.

Table 3. The use of Traffic Light System

Code	Performance Indicator	Score	Performance Index	%	Agregation
A.1.1	Accuracy of Forecast Technique	75%	0,1712	13%	78%
A.2.1	Planning Flexibility	75%	0,0401	3%	
A.2.2	Re-planning Flexibility	100%	0,0822	8%	
A.3.1	Planning Cost	80%	0,0190	2%	
B.1.1	Perfect Order Fulfillment	80%	0,0187	1%	
B.2.1	Supplier Deliver Lead Time	60%	0,0350	2%	
B.3.1	Supplier Volume Flexibility	100%	0,0260	3%	
B.4.1	Acquisition Cost	100%	0,0030	0%	
B.5.1	Utilization Aset	60%	0,0124	1%	
C.1.1	Make Employee Reliability	40%	0,0157	1%	
C.1.2	Reliability Implementation Supplier Performance	80%	0,0030	0%	
C.2.1	Volume Flexibility	80%	0,0246	2%	
D.1.1	Concept Deliver Reliability	75%	0,1728	13%	
D.2.1	Concept Flexibility	80%	0,0522	4%	

Code	Performance Indicator	Score	Performance Index	%	Agregation
E.1.1	Return Employee Reliability	80%	0,0075	1%	
E.1.2	Satisfaction	80%	0,0145	1%	
F.1.1	Enable Reliability	80%	0,2970	24%	

Source: Developed by authors

The performance results in Table 2 have a formula or measurement method obtained from discussions with the company and studies related to KPIs measurement and previous research. Performance measurements were carried out in 2018-2022 on each accumulated tourism event activity. Table 3 is a table of actual performance values combined with the company targets for each key performance indicator, in which an aggregation assessment and marking of the company's achievements are carried out. Through the performance measurement results at Company T, the company's aggregate value data was obtained at 78%, where the traffic light system was classified as a yellow score, which means the KPI performance was achieved but with a value close to the target. Company T requires management and improvement in the company's entire supply chain service process. Three Activities with the highest weighting values were chosen as they have a high value of urgency and influence on the company, which is a priority in management and monitoring. Meanwhile, three KPIs with the worst performance values were chosen because even though they do not have high urgency, they show in which processes the company has poor performance so that long-term business sustainability improvements are needed. These activities and indicators include Accuracy of Forecast Technique in Plan activities, Enable Reliability in Enable activities, Concept Deliver Reliability in Deliver activities, Supplier Deliver Lead Time in Source activities, Asset Utilization in Source activities, and Make-Employee Reliability in Make activities.

Accuracy of Forecast Technique in Plan activities has a performance value of 75% locally and 13% globally, which means that Company T has carried out well-managed Accuracy of Forecast Technique performance. The level of accuracy in the planning process is important because this process initiates other processes, namely cost determination, contract agreements, service specifications, and many other outputs. Companies need to maintain this performance, which can be assisted through steps according to J. Scott Armstrong (2005), including adapting planning methods to the situation faced by the company, utilizing specific knowledge of employees and external personnel in collaborative forecasting of ongoing conditions, creating a database system planning and structuring requests for repetitive situations, developing and utilizing company information networks, and establishing safe points in dealing with uncertain situation.

Company T has achieved good performance regarding the Enable Reliability attribute in Enable activities with a performance of 80% of the company target. Company T can improve and maintain Enable Reliability performance with several strategic steps, including creating databases and various contract models tailored to needs, creating information networks related to knowledge sharing regarding regulations and related contract needs, planning training, and contract creation for related employees, contract implementation training for related employees, training on identification and risk management regarding contracts for related employees, as well as creating the company's rules and terms in the context of contractual cooperation. Enable activities have an important role in the company's business processes, including several Key activities, such as creating and evaluating MOU contracts, local regulations, and processes related to the other five activities (Plan, Source, Make, Deliver, Return) are carried out.

The reliability indicator is a performance indicator in Deliver Activities with the highest weighting value. By obtaining a performance score of 75% of the company target, Company T has quite good performance on the Concept Deliver Reliability attribute but still requires further management and performance improvement. Several strategic actions that can improve the performance, namely establishing SOPs for implementing company service delivery, integrating the flow of information from upstream to downstream (Plan, Source, Make, Deliver, Return) for each supply chain service actor, as well as regular training for employees regarding tourism event implementation. Service delivery activities are very crucial, considering their role in direct contact with consumers. Proper handling and implementation under the initial planning contract can play a major role in consumer satisfaction, which reduces complaints at the next stage (Return).

KPI Supplier Deliver Lead Time in Source activities has the lowest performance measurement value with a percentage of 60% of the company target. Even though it does not have a high urgency value, the KPI supplier delivers lead time still influences the company performance quality, making improvement and management mandatory for this KPI. Improving the supplier deliver lead time attribute can be done through several strategic steps, namely detailed evaluation of vendors collaborating with the company, expanding the supply chain service network, especially vendors as a choice of sourcing activities, making basic improvements to supplier selection methods, one of which is using the MCDM (Multi-Criteria Decision) method. Making) on alternative suppliers, as well as providing incentives to encourage supplier performance. As an attribute related to the speed or response of suppliers (vendors), improving supplier delivery lead time can increase the company's speed and ability to respond to consumer requests. This improvement can also create a competitive advantage for the company in the future, thus benefiting the company's position and competition for a long time.

KPI Asset Utilization in Source activities also has the lowest value in overall company performance at 60% of the company target, so further improvement and management are required to encourage the performance of the company's

source activities. This attribute is related to the company's ability to manage internal information and assets. Strategic actions for the company are collecting data, integrating information on company assets, and increasing employee knowledge regarding sourcing company assets and their use. Through these suggestions, companies can maximize the use of assets related to organizing tourism events to improve overall company performance.

The employee reliability KPI in the "make" activities is at only 40% of the company target, the lowest in the overall KPI performance. However, this process is crucial to ensure the sustainability of tourism event organizations. Therefore, effective management is required to encourage improvement. To achieve this, the company can focus on outlining job specifications, conducting training based on each job specification, conducting regular evaluations, and rewarding high-performance employees. In addition, periodic internal evaluations and work meetings can be leveraged to provide suggestions for improvement. The goal is to enhance employee skills and performance in executing the company's supply chain service process.

5. Conclusion

This study measured supply chain service performance at Company T using the SCOR method and AHP assisted by Expert Choice 11.0 software for weighting each KPI. Based on the SCOR method, there are six activities (Plan, Source, Make, Deliver, Return, and Enable), each with metrics such as reliability, responsiveness, flexibility, costs, and assets. The performance indicators found in this research consist of 4 Plan activity performance attributes, 5 Source activity performance attributes, 3 Make performance attributes, 2 Deliver activity performance attributes, 2 Return activity performance attributes, and 1 Enable performance attribute. Activity weighting produces a priority order of urgency at the level of activities, key performance indicators, and performance attributes. The Plan activities are given the highest priority, followed by Enable, Deliver, Source, Make, and Return activities. Reliability is the performance attribute with the highest weight. The aggregation value of 78% indicates that Company T still needs improvements in its supply chain service process.

Our analysis finds that Company T has achieved good performance in enabling reliability, concept delivery reliability, supplier delivery lead time, and asset utilization in Source activities. However, the company needs further management and performance improvement in these areas. Moreover, the company needs to focus on improving employee reliability in Make activities. Therefore, the company can take strategic steps like creating databases and various contract models, creating information networks related to knowledge sharing, planning training and contract creation for employees, and creating company rules and terms in the context of contractual cooperation to improve and maintain the performance of the enable reliability. The company can determine Standard Operating Procedures (SOP) and integrate information flow from upstream to downstream for each supply chain service actor to improve the concept delivery reliability. The company can evaluate vendors, expand the supply chain service network, and make basic improvements to supplier selection methods to improve supplier delivery lead time. For asset utilization in Source activities, the company can collect data on company assets, integrate information, and increase employee knowledge. Finally, to improve employee reliability in Make activities, the company can focus on improving the skills and performance of employees as implementers of company activities. These steps can help companies achieve better performance in these areas and maintain it in the long run. Adopting the Supply Chain Operations Reference (SCOR) framework in every business activity of Company T will provide a comprehensive view of the service supply chain from pre-event, event, and post-event as evaluation material for the company's service supply chain. It would also be beneficial for the company to pay attention to external competition with competing companies to expand management and improvement alternatives while maximizing performance measurement as evaluation material.

This research primarily focused on the internal parties directly linked with the service supply chain process at a tourism event-organizing service company. This study utilized metrics on the SCOR attribute to determine key performance indicators and the AHP method to determine criteria weights. The decision-makers involved in this process were the business owners and the parties related to the company's service supply chain. However, it is important to note that there may be limitations in the research, which may pave the way for further studies. Future research could potentially explore other performance measurements, such as the Performance Prism and the Balanced Scorecard (BSC), or delve into specific topics focusing on the service supply chain activities of the company.

Author Contribution

Author 1: writing original draft, review, and editing, writing review and editing, supervision, validation, visualization.
Author 2: conceptualization, writing original draft, data curation, formal analysis, investigation, methodology.

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Conflict of Interest

The authors declare that the research was conducted without any potential conflict of interest.

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Appendix 1.

I. Key Performance Indicator Weighting Questionnaire

This questionnaire aims to determine the weight of each key performance indicator at each level. This research uses a level 1 to 3 weighting questionnaire. The way to fill out this questionnaire is to give an indicator value for each level with the following rating scale:

Intensity of Interest	Definition
1	Both elements are equally important.
3	One element is slightly more important than the other.
5	One element is more important than the other.
7	One element is evident more important than the other.
9	One element is absolutely important compared to other elements.
2, 4, 6, 8	Values between two values of adjacent considerations.

After knowing the indicator values for each level, an example of filling out this questionnaire is as follows:

Level	Scoring scale																	Level 1
Plan	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Source

Weight 9-2 (left part) is the intensity of interest value belonging to the leftmost indicator, namely, plan. Meanwhile, weight 9-2 (right part) is the interest intensity value belonging to the rightmost indicator, namely, source.

The Level 1 questionnaire is a weighting of the service supply chain activities that occur, namely, Plan, Source, Make, Deliver, Return, and Enable.

Question:

1. Which one is more important: Preparing the overall planning for the company's service supply chain in the Plan process or The company's service supply chain activities in the Source process?
2. Which one is more important: Preparing the overall planning for the company's service supply chain in the Plan process or The company's service supply chain process in coordinating vendors, consumers and company employees and ensuring preparation for the tourism events in the Make process?
3. Which one is more important: Preparing the overall planning of the company's service supply chain in the Plan process or The company's service supply chain activities to channel and adapt the execution of organizing tourism events with concepts and themes for customers in the Deliver process?
4. Which one is more important: Preparing the overall planning for the company's service supply chain in the Plan process or Consumer and vendor feedback in tourism event organizing activities in the Return process?
5. Which is more important: Preparing the overall planning for the company's service supply chain in the Plan process or Engagement, rules and regulations related to suppliers, government and companies in the activities of organizing tourism events in the Enable process?
6. Which one is more important: The company's service procurement activity through vendors in the Source process or The company's service supply chain process in coordinating vendors, consumers and company employees and ensuring preparations for organizing tourism events in the Make process?
7. Which one is more important: The company's service supply chain activities through vendors in the Source process or The company's service supply chain activities to channel and adapt the execution of organizing tourism events with concepts and themes to consumers in the Deliver process?
8. Which one is more important: The company's service procurement activities through vendors in the Source process or Consumer and vendor feedback in tourism event organizing activities in the Return process?
9. Which one is more important: The company's service procurement activities through vendors in the Source process or Engagement, rules and regulations related to suppliers, government, consumers and companies in the implementation of tourism events in the Enable process?
10. Which one is more important: The company coordinates vendors, consumers and company employees, as well as ensures preparations for organizing tourism events in the Make process or The company's service supply chain activities to distribute and adapt the execution of organizing tourism events with concepts and themes for consumers in the Deliver process?
11. Which one is more important: The company's supply chain service process in coordinating vendors, consumers and company employees and ensuring preparations for organizing tourism events in the Make process or Consumer and vendor feedback in tourism event organizing activities in the Return process?
12. Which one is more important: The company's supply chain service process in coordinating vendors, consumers and company employees, as well as ensuring preparations for organizing tourism events in the Make process or

Engagement, rules and regulations related to suppliers, government and companies in organizing tourism event activities in the Enable process?

13. Which one is more important: The company's service supply chain activities to channel and adapt the execution of organizing tourism events with concepts and themes to consumers in the Deliver process or Consumer and vendor feedback in organizing activities tourism events in the Return process?
14. Which one is more important: The company's service supply chain activities to channel and adapt the execution of organizing tourism events in the Deliver process or concepts and themes to consumers or Engagement, rules and regulations related to suppliers, governments and companies in organizing tourism events in the Enable process?
15. Which one is more important: Consumer and vendor feedback in the company's supply chain service activities in the Return process or Engagement, rules and regulations related to suppliers, government and companies in tourism event organizing activities in the Enable process?

The Level 2 questionnaire is a weighting of performance attributes from service supply chain activities, including Reliability, Responsiveness, Flexibility, Costs and Assets.

Questions for Weighting Plan Process Performance Attributes:

1. Which one is more important, the reliability or the flexibility performance attribute?
2. Which one is more important, the reliability or the cost performance attribute?
3. Which one is more important, the flexibility or the cost performance attribute?

Questions for Weighting Process Performance Attributes Source

1. Which one is more important, the reliability or the responsiveness performance attribute?
2. Which one is more important, the reliability or the flexibility performance attribute?
3. Which one is more important, the reliability or the cost performance attribute?
4. Which one is more important, the reliability or the asset performance attribute?
5. Which one is more important, the responsiveness or the flexibility performance attribute?
6. Which one is more important, the responsiveness or the performance cost attribute?
7. Which one is more important, the responsiveness or the asset performance attribute?
8. Which one is more important, the flexibility or the cost performance attribute?
9. Which one is more important, the flexibility or the asset performance attribute?
10. Which one is more important, the cost or asset performance attributes?

Questions for Weighting Make Process Performance Attributes:

1. Which one is more important, the reliability or the flexibility performance attribute?

Questions for Weighting Deliver Process Performance Attributes:

1. Which one is more important, the reliability or the flexibility performance attribute?

Questions for Weighting Return Process Performance Attributes:

1. Which one is more important, the reliability or the responsiveness performance attribute?

The Level 3 questionnaire is a weighting of each key performance indicator developed from each activity and performance attribute.

1. Questions for Plan Flexibility: Which performance indicator is more important, the planning flexibility (i.e. to measure the flexibility of the company and team in planning tourism events) or the re-planning flexibility (i.e. to determine the level of flexibility in re-planning if changes occur)?
2. Questions for Make Reliability: Which performance indicator is more important, make employee reliability (i.e. measuring the level of employee reliability in supervising and implementing set up, showdays and coordination) or reliability implementation supplier performance (i.e. reliability of supplier/vendor performance) during implementation of set up, showdays, and coordination)?

II. Actual Performance Value Design Questionnaire

This questionnaire aims to determine the actual achievement value of the company's desired targets for several key performance indicators of service supply chain activities, where:

a. The actual condition assessment column is the condition of the performance indicators that occurred in the company's supply chain service process.
b. The company target column is the desired performance indicator condition achieved in the company's supply chain service process.

The assessment of the actual condition and company target column uses a scale of 1-5 (1: not suitable, 2: slightly suitable, 3: quite suitable, 4: suitable, 5: very suitable) with different conditions for each performance indicator.

Appendix 2.

Research Question

1. How is the business flow running in the company at present?
2. Has the company ever evaluated its supply chain performance in the past? If not, what is the reason behind it?
3. How does the company review its current performance to identify its strengths and weaknesses?
4. Is the current assessment method sufficient for evaluating the company's supply chain performance?
5. What is the duration of the manufacturing process in the company?
6. Is the manufacturing process performing as per the company's targets?
7. What is the company's current planning process (Plan)?
8. What are the challenges encountered during the planning process (Plan)?
9. How did the company address the obstacles? Did the company modify or adjust production planning based on it?
10. How is the current procurement process (Source) carried out?
11. Does the supplier's performance align with the company's requirements and specific criteria?
12. What is the current delivery process in the company?
13. How many vendors does the company collaborate with?
14. Is the vendor's performance up to the mark?
15. Has the company ever implemented a product return process? If yes, what is the current process to return the product?
16. Are there any specific criteria for the return process?
17. What is the current enablement process in the company?
18. How does the company's Memorandum of Understanding (MoU) relate to collaborating with other parties?
19. Can the designed indicators accurately represent the company's supply chain performance indicators?