Ann PUBLISHER
Journal of Tourism Sciences (Toursci)
e-ISSN 3046-7713
p-ISSN 3032-7539

Enterprise Architecture Design of Tourism Supply Chain Management Platform Application at the Level of Business Process Flow and Information

Suhana Minah Jaya, Andri Hermawan
Universitas Muhammadiyah Cirebon, Jabar-Indonesia.
Email : suhana@umc.ac.id

Abstract
Background. The tourism sector in Indonesia plays a strategic role in national economic growth; however, its performance is constrained by fragmented supply chains, lack of integration among stakeholders, and the absence of a unified digital platform.
Aims. This study aims to design an Enterprise Architecture (EA) for a Tourism Supply Chain Management (TSCM) digital platform that integrates tourism actors from upstream to downstream.
Methods. The research adopts a qualitative design approach, utilizing Focus Group Discussions (FGD) involving 110 participants representing tourism associations, service providers, local governments, and tourists.
Result. The findings reveal critical issues related to distribution inefficiencies, price instability, service quality inconsistency, and supply uncertainty. Based on stakeholder needs analysis, the study develops an enterprise architecture blueprint comprising a Business Model Canvas, application service process flow, service network design, organizational structure, and graphical user interface (GUI).
Conclusion. The proposed architecture provides a comprehensive framework for coordinating information, distribution processes, and payment systems within the tourism supply chain.
Implementation. This research contributes a structured EA-based solution that supports efficiency, price stability, and service quality enhancement in Indonesia's tourism industry.

Keywords: Supply Chain Management, Enterprise Architecture, Hybrid Technology, Business Process Flow

INTRODUCTION

Indonesia is a rich country with natural resources consisting of oceans, sun, beaches, and land, which, if appropriately managed, can provide significant benefits for the country. One effort that can be made is to utilize exotic resources to attract tourists. If not hindered by the COVID-19 Pandemic, the number of tourist visits to Indonesia tends to increase year over

year. This proves that the tourism sector is a market-driven industry, offering a huge opportunity to market tourism products in Indonesia.

In 2019, this sector contributed around IDR 280 trillion in foreign exchange with 16.11 million foreign tourists and 282.93 million domestic tourist trips. Total tourism in Indonesia contributed US$63.6 billion or 6 percent of the total GDP. In addition, the tourism sector is estimated to employ more than 12.6 million workers, equivalent to 10 percent of Indonesia's total workforce. In 2019, ASEAN countries recorded a total of 133.1 million tourist visits. Of these, Indonesia ranks fifth after Thailand, Malaysia, Vietnam, and Singapore. Thus, we must take advantage of the current conditions, where Tourism in Southeast Asia is still lagging in 5th place. Even though Indonesia won No. 5, the World's achievements are still superior and won at the international level. However, the amount of foreign exchange earnings in the tourism sector is still ranked 5th in SOUTHEAST ASIA. For this reason, during this Pandemic, it is time for Indonesia to improve itself. What's more, the Tourism industry has not yet formed a qualified Supply Chain Management and Built Connectivity to the entire Supply Chain. The problem statement in this research is: there is no solution in Indonesia that serves as a platform to help both foreign and domestic tourists plan their holiday trips based on the tour packages offered. And the Research Questions that will be the material for this research are like; What is the Application Process Flow that will become a Platform that can be a solution to the problem above, How can this application link all existing tourism supply chains, how is the proper organization to run this platform going forward, the Graphic User Interface (GUI) form, all of that is summarized in the Enterprise Architecture that can be applied to the development of the Platform.

Recent studies in **Supply Chain Management (SCM)** emphasize the transition toward **SCM 4.0**, characterized by digital integration, real-time information sharing, and coordinated logistics supported by information technology. In the tourism context, SCM has been recognized as a complex network involving tour operators, transportation providers, accommodation services, restaurants, and destination managers. Prior research highlights that ineffective coordination and lack of integrated information systems lead to inefficiencies, increased costs, and inconsistent service quality.

Enterprise Architecture has been widely applied to align organizational strategy, business processes, and information systems, particularly in complex and multi-stakeholder environments. Existing EA studies demonstrate its effectiveness in reducing system duplication, improving integration, and optimizing IT investment. However, most

implementations focus on manufacturing, logistics, or single-enterprise environments rather than service-based, multi-actor tourism ecosystems.

In Indonesia, digitalization initiatives in tourism primarily focus on marketing platforms and booking systems, while comprehensive EA-based designs that integrate the entire tourism supply chain remain limited.

This research aims to design the Enterprise Architecture for the Digital Platform to manage Tourism Supply Chain Management in Indonesia. The scope of this research will be carried out and applied in Indonesia, a country seeking to advance its income from tourism. This research will benefit the Indonesian government, entrepreneurs in the tourism sector, and the tourism industry as a whole. The limitation of this research, of course, is that it is to be applied in the territory of Indonesia. In addition, the limitations of this study's discussion primarily concern Enterprise Architecture Design.

LITERATURE REVIEW

According to Douglas Lambert, Supply Chain Management is like managing a pipeline, so this chart provides a clearer picture of how It is carried out. According to Frazzon, Enzo Morosini, Rodriguez, Carlos Manuel Taboada, Pereira, Marina Meireles, Pires, Matheus Cardoso, Uhlmann, Iracyanne, 2019, in the Brazilian Journal of Operations & Production Management, with the title Towards Supply Chain Management 4.0, said that the future development of SCM goes hand in hand with the development of Logistics and Industry.

The application of enterprise architecture is essential, especially as the company grows and becomes more complex. Enterprise architecture is an attempt to optimize: 1. the contribution of resources; 2. the investment in information technology;3. system development activities. To achieve company performance goals, the organizational mission can be realized through the optimal performance of business processes supported by effective, efficient information technology. Enterprise architecture can organize and clarify the relationships among a company's strategic goals, investments, business solutions, and measurable performance improvements. To achieve improved target performance, Enterprise architecture must be integrated with strategic planning, capital planning, and investment.

Enterprise architecture can identify the information flows and business processes that occur within a company, as well as the information systems implemented. The impact of a company not having enterprise architecture includes: 1. enabling duplication of information

systems; 2. the systems are not mutually integrated; 3. financing of maintenance activities becomes less efficient.

Despite growing interest in tourism digital platforms and SCM integration, several gaps remain:

1. **Lack of EA-Based Tourism SCM Models**
   Previous studies rarely apply enterprise architecture frameworks to tourism supply chain management, especially at a national scale.
2. **Fragmented Digital Solutions**
   Existing platforms focus on isolated functions (e.g., booking, promotion) without integrating upstream and downstream supply chain processes.
3. **Limited Stakeholder Integration**
   Research often overlooks coordinated participation among diverse tourism actors such as local guides, transport providers, SMEs, and regional tourism offices.
4. **Insufficient Organizational and Governance Design**
   Few studies address how a tourism SCM platform should be organizationally managed and governed to ensure sustainability and scalability.

This study addresses these gaps by presenting a comprehensive EA blueprint that integrates processes, technology, stakeholders, and governance into a unified Tourism Supply Chain Management platform.

METHODS

In this study, the authors tried to use the research methodology as follows: 1. Determine the title and research objectives, 2. Create an overview of the research in an abstract narrative 3. Conduct a Literature Review on several topics related to the keywords in the abstract. 4. 5. Include research stages in which the methodology is determined in detail beforehand. Create a discussion on the topic of the Application of Tourism Supply Chain Management in an FGD, 6. Summarize the results of the FGD in the Stakeholder Needs Analysis list (7).Design Platform Design in a Business Model Canvas, 8. Designing Platform Application Service Process Flow, 9. Designing a Service Network from upstream to downstream, 10.Designing the Organizational Structure of the Supply Chain Platform Application Management, 11.Designing a GUI (Graphic User Interface),

DATA ANALYSIS

To start this research, it is necessary to organize an FGD (Focus Group Discussion) to gather tourism supply chain actors. The number of actors across several organizations, such as ASITA, HPI, IFTA, PHRI, ASPPERWI, and others. The FGD included 110 participants representing several of the above organizations, including tour and travel companies, tour guides, restaurants, hotels, tourist transportation, local government tourism offices, and tourists. From the results of the FGD, the following data:

The Phenomena of tourism supply chain problems

Distribution :

1. T&T Agency Competition is getting tougher. Prices don't match Reality
2. Price is too high due to the long Sales distribution
3. It is not sure that the price is appropriate in the field because relying on Internet information does not involve field people (local) in the area
4. Quality of service cannot be ensured
5. Service handling is not good
6. Vehicle arrangements are not guaranteed to be available (stock out), especially on holidays holidays
7. The selling price in the market is below the lower service price
8. Unorganized distribution of food in the restoration
9. Transport routes are difficult to reach
10. Certainty of Transportation Modes to Remote Destinations

Supply :

1. Vehicles are difficult to obtain during busy periods of holidays or holidays
2. Unclear supply needs (tour packages)
3. Hotel/lodging/vehicle rental prices fluctuate a lot
4. Price instability
5. Very few tourism supply companies
6. Quality of Supply decreased

The Design Results

Below is the need for the development of Supply Chain Management: To maintain a balance between Market Needs and Supply Chain, to maintain Tour Package Readiness on the

market, and to maintain price stability. And the Final objectives of SCM (Supply Chain Management): low cost, time-effective, and Good quality. To design an Enterprise Architecture, it must first be translated into a Business Model Canvas. The following are the results of the Design Platform Design in a Business Model Canvas.

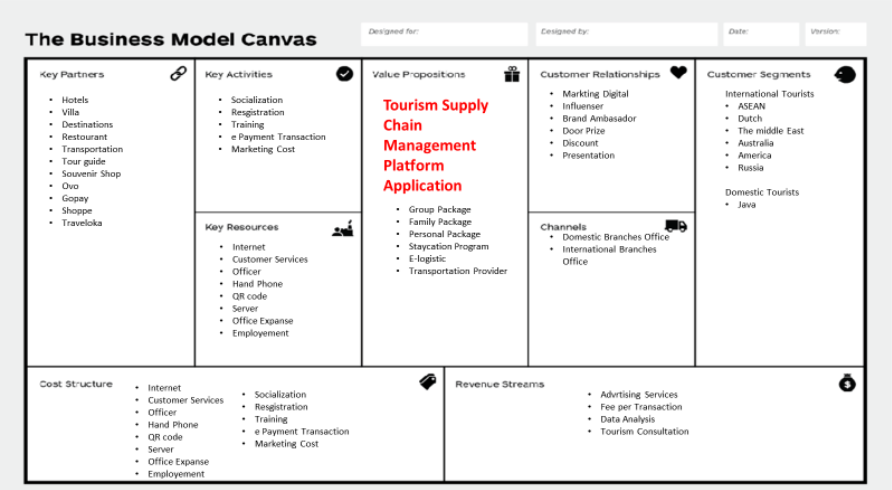
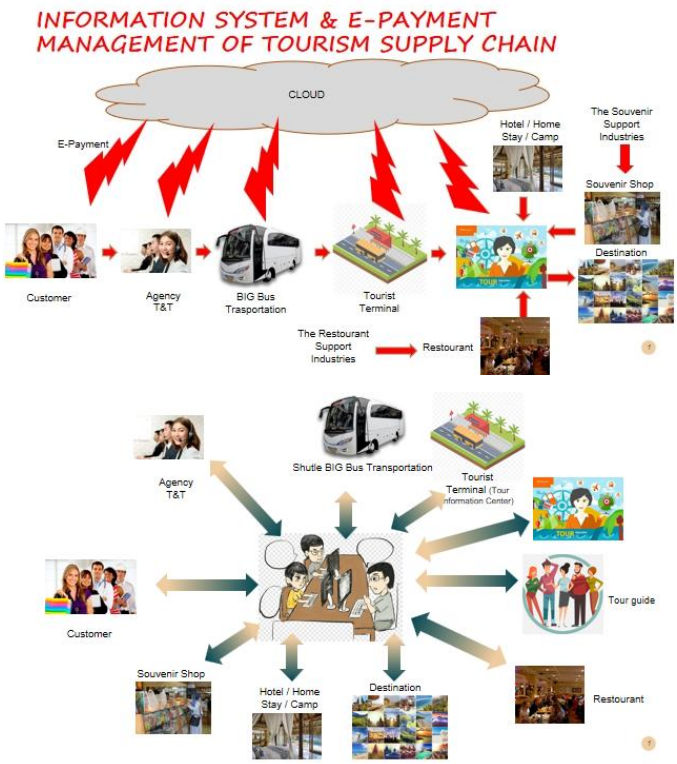
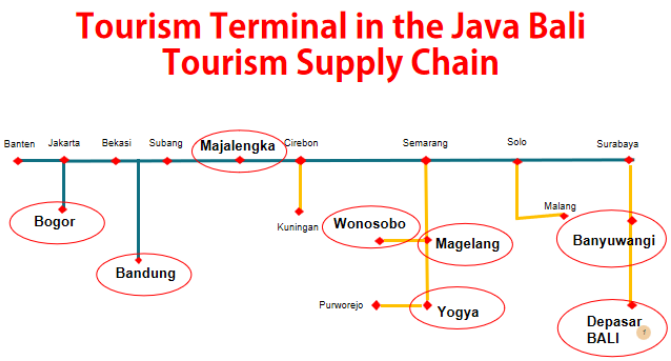


Figure 1. Business Canvasing Model of Tourism

The following are the results of the Designing Platform Application Service Process Flow stage.





Designing **a Service Network from upstream to downstream**,

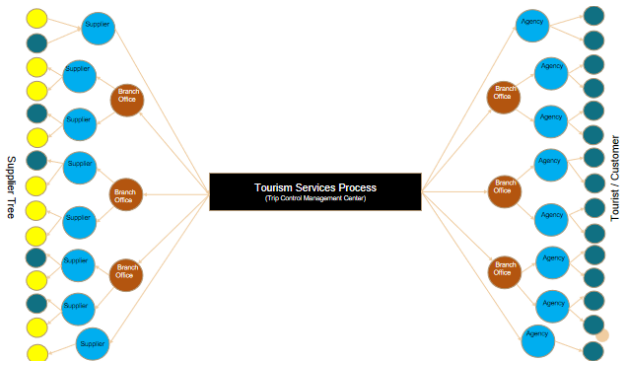


Figure 2. The Designing Platform Application Service Process Flow stage.

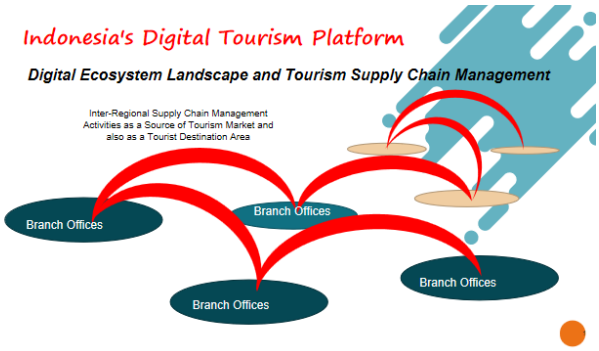


Figure 3. Indonesia's Digital Tourism Platform

So from the picture above that the Functions of the Branch Office are as follows; Recruitmnet vendors in their own territory, Project Trip Management at the Location of the Destination Area if there are Guests as Tour Operators in their own area, Retrieval of Data and Videography of the Destination area, Market the Tour Packages in other areas and the Destination area itself to its own territory, Market Banner Installation Services and other

promotions, Tourism Information and Consulting Services, Selling souvenirs, handicrafts & tourism t-shirts

SCM of Tourism Subject is ;

1. Information and Communication; Determine Information and Communication Management Technology and Methods needed by all Supply Chain actors
2. Product and Service Distribution Process; Determine the route, method, fleet, hotel, rest, destination, and other tourism services, including tourism packages and supply chains, according to customer requests
3. Payment method; Establish Payment Methods and mechanisms for tourists and payments for all Tourism actors and the Supply Chain

Tourism Supply Chain Management is a series of activities Which cover; Coordination, scheduling and control of: procurement, services, supplies and services in the field of tourism to tourists, Which include: payments, daily administration, operations, logistics and information processing, Starting from: Tourists to Tour Operators, Tour Guides, Transportation, Restaurants, Hotels / Lodging, Gift Shops and Tourist Destinations, the Tourism Industry such as handicrafts, food gifts, T-shirts, souvenirs and other decorations.

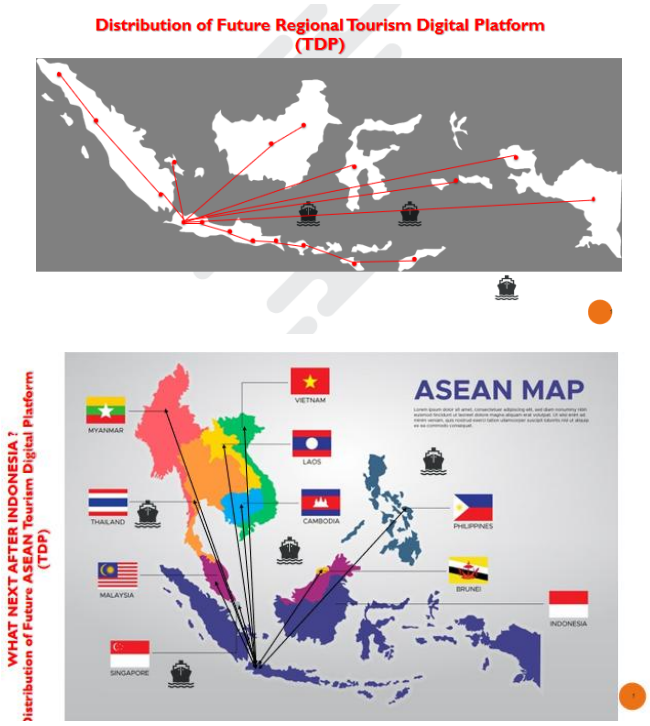


Figure 4. Distribution of the Future Tourism Digital Platform

Designing the **Organizational Structure** of the Supply Chain Platform Application Management,

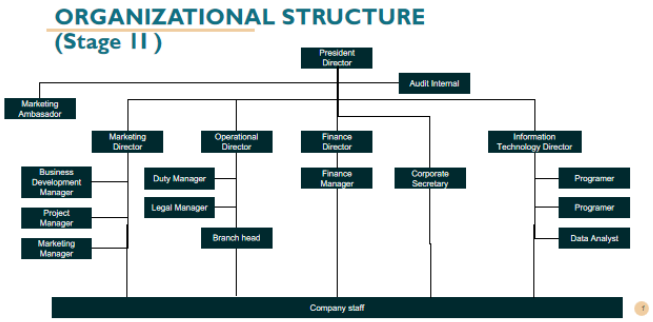
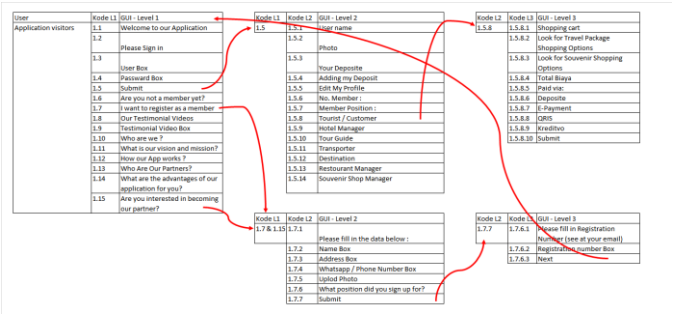


Figure 5. Organizational Structure

Designing GUI (Graphic User Interface),

Before we create a Graphic User Interface (GUI) we first make a feature map and questions that will become GUI material. After that, we will create a GUI for each level and user. Below are examples:



The following is the result of a risk analysis before the application is made and after the application is made, based on the results of the FGD.

RISK ANALYSIS												
No	FGD results	Reason	Impact	Possibility	Severity	Level/ Level of Risk	Risk Map	Response to Risk/ Risk Improvement and Prevention Plan	Residual Risk If Corrections and Prevention are implemented		Level/ Level of Risk	Risk Map
								Description	Possibility	Severity		
		4	5	6	7	8	9	10	11	12	13	14
A	Distribution :											
1	Tour and Travel Agency Competition is getting tougher Prices don't match Reality	Unhealthy competition	Price drop is unprofitable	5	5	25	IV	Created a joint application that will refer to tour package prices	2	2	4	I
2	Price is too high due to too long Sales distribution	The more agents the more expensive the tour package price	The price is too expensive hard to sell	5	4	20	IV	Simplify Supply Chain and sign up directly to shared Apps	1	2	2	I
3	It is not certain that the price is appropriate in the field because relying on Internet information does not involve field people (local) in the area	Many companies only guess the price in the field because they don't involve local people	The price is too expensive hard to sell	5	4	20	IV	Simplify Supply Chain and sign up directly to shared Apps	1	2	2	I
4	Quality of service cannot be ensured	Each supply chain does not have a Quality Standard	Disappointing customers	5	4	20	IV	Someone needs to oversee Quality while improving each component in the Supply Chain	2	3	6	I
5	Service handling is not good	Each supply chain does not have a Quality Standard	Disappointing customers	5	4	20	IV	Someone needs to oversee Quality while improving each component in the Supply Chain	2	3	6	I
6	Vehicle arrangements are not guaranteed to be available (stock out), especially on holidays, holidays	Does not have a Long-Term Cooperation with a Transportation Company to ensure its availability, and or does not have a Main Vehicle	Disappointing customers	5	4	20	IV	Long Term Cooperation with Transportation Companies in ensuring their availability, and or owning Main Vehicles	2	3	6	I
7	The selling price in the market is below the lower service price	Competition is very tight and unorganized	Price drop is unprofitable	5	5	25	IV	Created a joint application that will refer to tour package prices	2	2	4	I
8	Unorganized distribution of food in restoration	There is no structured food supply chain in every restaurant	Health and Food Quality are maintained	4	4	16	III	Guidance and Assistance in the food supply chain and Food Safety Training	2	2	4	I
9	Transport routes are difficult to reach	There is no proper mode of transportation system yet to go to the destination	Tourist Security and Safety when delivering transportation to tourist destinations	5	4	20	IV	Long Term Cooperation with Transportation Companies in ensuring their availability, and or owning Main Vehicles	2	3	6	I
10	Certainty of Transportation Modes to Remote Destinations	Does not have a Long-Term Cooperation with a Transportation Company to ensure its availability, and or does not have a Main Vehicle	Disappointing customers	5	4	20	IV	Long Term Cooperation with Transportation Companies in ensuring their availability, and or owning Main Vehicles	2	3	6	I
B	Supply :					0						
1	Vehicles are difficult to obtain during busy periods of holidays or holidays	Does not have a Long-Term Cooperation with a Transportation Company to ensure its availability, and or does not have a Main Vehicle	Disappointing customers	5	4	20	IV	Long Term Cooperation with Transportation Companies in ensuring their availability, and or owning Main Vehicles	2	3	6	I
2	Unclear supply needs (tour packages)	Closeloop Tourism Package Cooperation has not yet been formed	Disappointing customers	5	4	20	IV	Long Term Collaboration with companies or individuals involved in Closeloop Tour Packages	2	3	6	I
3	Hotel/lodging/vehicle rental prices fluctuate a lot	Competition is very tight and unorganized and prices fluctuate	Fluctuating prices are not profitable for customers	5	5	25	IV	Created a joint application that will refer to the price of the tour package from the agreement to form a Closeloop Tour Package	2	2	4	I
4	Price instability	Competition is very tight and unorganized and prices fluctuate	Fluctuating prices are not profitable for customers	5	5	25	IV	Created a joint application that will refer to the price of the tour package from the agreement to form a Closeloop Tour Package	2	2	4	I
5	Very few tourism supply companies	The price is very high because the supply is very small	The price is too expensive hard to sell	5	4	20	IV	Inviting local partners to build a supply chain and at the same time coaching them	1	2	2	I
6	Quality of Supply decreased	Every supply chain does not have a Quality Standard	Disappointing customers	5	4	20	IV	Someone needs to oversee Quality while improving each component in the Supply Chain	2	3	6	I

The novelty of this research lies in:

1. **Integrated EA for Tourism SCM**

   Proposing a holistic enterprise architecture that explicitly integrates all tourism supply chain actors—from tourists to local vendors—within a single digital platform.

2. **FGD-Based Stakeholder-Centric Design**

   Utilizing large-scale FGDs to directly translate stakeholder needs into architectural components, ensuring practical relevance and contextual suitability.

3. **End-to-End Supply Chain Perspective**

   Addressing tourism SCM not merely as a booking or marketing system, but as a coordinated network encompassing information flow, service distribution, payment mechanisms, and organizational governance.

4. **Context-Specific Architecture for Indonesia**

   Developing an EA blueprint tailored to the tourism ecosystem and institutional structure of **Indonesia**, rather than adopting generic global models.

CONCLUSIONS

The conclusion from this study is that the development of the TSCM application design in Indonesia should provide a significant solution to improving the economy in the tourism sector. For this reason, we recommend that this be followed up on the TSCM Application Development in Indonesia.

ACKNOWLEDGMENT

We would like to thank our associates in the field of tourism in Indonesia who always strive to improve tourism in their respective regions, and also thank you for the guidance given to me in writing this research and paper. We are very open to receiving suggestions and criticism for writing this paper and can be improved in the future in deeper research.

BIBLIOGRAPHY

Bukhori, A. S., Kurniastuti, I. M., Yudianto, F., & Susanto, F. A. (2024). An enterprise architecture planning for tour and travel company using TOGAF ADM. *Revista de Gestão Social e Ambiental*, *18*(5), 1-11.

Chang, S. E., & Chou, Y. C. (2007). A virtual enterprise based information system architecture for the tourism industry. *International Journal of Technology Management*, *38*(4), 374-391.

Dimitriou, N. K., & Pollalis, Y. A. (2009). Designing a systemic information systems architecture for interoperability in tourism. *Journal of Marketing and Operations Management Research*, *2*(3), 149-162.

Douglas M. Lambert. (2014). *Supply Chain Management; Processes, Partnerships, Performance* (Fourth ed.). (L. Duglas M, Ed.) Supply Chain Management Institute.

Harrie.W.M. van Bommel Saxion. (2011). A conceptual framework for analyzing sustainability strategies in industrial supply networks from an innovation perspective. *Journal of Cleaner Production 19 (2011) 895e904 C*.

Hindarto, D. (2023). Enterprise Architecture Development to Strengthen Sustainability in the Supply Chain. *Jurnal JTIK (Jurnal Teknologi Informasi Dan Komunikasi)*, *7*(4), 714-723.

Jayakrishnan, M., Mohamad, A. K., & Yusof, M. M. (2020). Business architecture model in strategic information system management for effective railway supply chain perspective. *Int. J. Eng. Res. Technol*, *13*(11), 3927-3933.

Karjadi, D. A., Dazki, E., & Indrajit, R. E. (2022). proposed enterprise architecture design for agroforestry and ecotourism towards industry 4.0. *JATISI (Jurnal Teknik Informatika dan Sistem Informasi)*, *9*(2), 1013-1023.

Kurganov, V., & Dorofeev, A. The Practice Of Business And Information Technology Integration In The Transport Company Using Enterprise Architecture Framework.

Lamola, K. X. (2022). Moulding information systems components and agitations for the adoption of enterprise application architecture for supply chain management. *Journal of Transport and Supply Chain Management*, *16*, 707.

Marques, A. F., Borges, J. G., Sousa, P., Fonseca, M., Garcia, R., & Batista, G. (2010, October). Applying enterprise architecture to the design of the integrated forest products supply chain management system. In *International Conference on ENTERprise Information Systems* (pp. 32-40). Berlin, Heidelberg: Springer Berlin Heidelberg.

Mayakul, T., Kiattisin, S., & Prasad, R. (2018). A sustainable medical tourism framework based on the enterprise architecture design: The case in Thailand. *Journal of Green Engineering*, *8*(3), 359-388.

Zaenal Arifin, S. (2005). *Pengantar Aristektur Enterprise.* (Unpublished).