

# Uncertain Supply Chain Management

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## Strengthening effects of managerial innovativeness in promoting sustainable supply chain management in tourism business

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### ABSTRACT

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This paper aims to investigate sustainable tourism supply chains by examining the roles of environmental management, social support, and financial performance of tourist destination agencies. By placing the mediating role of innovativeness, this study developed a theoretical framework to explore the antecedents of tourism supply chain management. This research was conducted in a national park in Central Sulawesi, Indonesia, with 176 samples from tourism business actors. By using purposive sampling method, data analysis was performed using Partial Least Square-Structural Equation Modeling (PLS-SEM). The results of the analysis show a positive and significant influence of environmental management, social support, and financial performance on managerial innovation. These variables in the next analysis are estimated as antecedents of sustainable supply chain management (SSCM) in tourism, indicating positive and significant effects resulting from the analysis. In particular, the analysis also raises the important role of managerial innovation in improving the performance of sustainable supply chain management (SSCM) in tourism. Empirically, these findings underscore that the greater capabilities of the tourism organization in consolidating organizational resources, organizational performance and social support is more likely to increase the sustainability of SCM.

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### 1. Introduction

The rapid growth of tourism in the last decade has given rise to this sector as a major income generating industry. Mainstreaming tourism does not only apply to developed countries and other world-famous tourist destinations, but also to developing countries and local governments that manifest tourism as a regional image builder and source of income (Saarinen & Rogerson, 2014). The tourism business actor in turn is developing in a focused manner as a promising job. However, this awareness of the significance of tourism in turn raises awareness of the need to protect the environment, social harmony as the main basis for considering tourist visits (Kasim, 2007). The tourism industry offers two main aspects, namely satisfaction and experience, which makes every business involved offer a unique offering (Hariandja, 2021). Environmental damage has so far affected the image of business destinations and has long-lasting negative implications for tourism, which makes it impossible to make it a promising destination. Hence, sustainability becomes an interesting topic to study amidst the current uncertainty of the tourism market. This explains that prioritizing the environment is important and the ability to protect the environment will support the sustainability of tourism itself (Indrayani & Wahyudi, 2020). Each of the businesses involved have something in common and a different way of looking at how a product or service is delivered to consumers. This also applies to the way entrepreneurs in the tourism sector view how sustainable tourism supply chains operate. Furthermore, the influence of the uncertainty of the tourism market has shown a negative significance to the social and economic life in tourist destinations. In addition, the social situation also influences tourism planning to prepare for better sustainable tourism practices. The development of tourism has encouraged the birth of various initiatives regarding the involvement of local communities to obtain increased economic welfare and wellbeing from the existence of tourism in their area (Buckley & de

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Vasconcellos Pegas, 2012; Roe & Urquhart, 2001). In addition, the rapid growth of tourism has encouraged business organizations to consolidate material and financial resources to improve the reputation of a tourist destination (Santra, 2018). In this context, the innovativeness of tourism managers can affect tourism performance in general. This makes sustainable practices in tourism then integrates supply chain management for value creation and future destination projections. Several studies have highlighted the important role of environmental aspects, social support and organizational finance as determinants of tourism SCM sustainability (Font et al., 2008; Eckardt et al., 2020). In this study, the theoretical conception put forward is related to the ability of managers to integrate and consolidate their capabilities and resources to create tourism SCM sustainability (Nguyen et al., 2020; Vu et al., 2022; Modica et al., 2020; Pudjiarti et al. 2017).

The aim of this study is to determine the antecedents and their influence on tourism sustainability in order to examine the role of tourism entities and actors in the tourism supply chain. The tests carried out in this study are also useful for identifying which priorities are important in maintaining sustainable tourism from the perspective of actors involved in the tourism sector. Previous studies have shown that the main considerations for sustainable tourism supply chain management are environmental, economic and social aspects (Adriana, 2009; Sigala (2014). The study of sustainable tourism has been widely researched by scholars, but it still requires more empirical studies and analytical methods as well as different regions and countries (Font et al., 2008; Eckardt et al., 2020; Hall & Williams, 2008; Zach, 2016; Syarief, 2021; Hjalager, 2010). Therefore, this study uses a case study approach to identify in detail sustainable tourism practices in the Togean Islands National Park.

## 2. Literature Review and Hypothesis Development

### 2.1. *Environmental Management, Social Support, Financial Performance and Managerial Innovation*

Tourism and hospitality have become one of the sectors that contribute positively to a country's economy and reduce social and environmental impacts caused by activities in this sector (Rebollo & Baidal, 2003; Tapper, 2001; UNWTO, 2015). This sector has proven to be able to open up quite a large number of jobs for tourism business activities upstream to downstream. The increased activity of this sector has also supported the preservation of historical and cultural heritage around tourist destinations. However, tourism has also been a trigger for increased environmental and social impacts (Rebollo & Baidal, 2003). Infrastructure development that supports tourism has reduced the green space of tourist destinations so that this impact must be reduced immediately by maintaining environmental performance (Thahir et al., 2020). For example, road infrastructure and hotels and restaurants have used several green spaces so that sustainable efforts are needed so that environmental and socio-cultural support for the community around tourist destinations can be maintained. Tourism activities are also inseparable from the supply chain management practices therein (Palang & Tippayawong, 2018). The number of entities involved in the tourism supply chain create complexity in relationships (Schwartz et al., 2008). A lot of business involvement from upstream to downstream to support the final value desired by consumers, namely satisfaction and experience (Fabbe-Costes et al., 2011). The tourism sector is more dependent on the environment and the surrounding communities (Carter & Rogers, 2008). Environmental damage that occurs can damage the image of a tourist destination which in the long run will affect the level of tourist visits (Sundriyal et al., 2018). The ability of tourism to have a social impact on the communities around tourist destinations cannot be ignored (Salleh et al., 2014; Séraphin et al., 2018). Previous research has shown that collaboration and long-term cooperative relationships greatly support the sustainability of the tourism sector (Carter & Dresner, 2001; Sigala, 2008).

**H<sub>1</sub>.** *There is a positive effect of environmental management on managerial innovation.*

**H<sub>2</sub>.** *Social support has a positive effect on managerial innovation.*

**H<sub>3</sub>.** *There is a positive effect of financial performance on managerial innovation.*

### 2.2. *Environmental Management, Social Support, Financial Performance and Tourism Sustainable Supply Chain Management*

As a result of implementing a good SCM, the company will get great value and benefits from consumers and business partners (Cox, 1999). The old view that business can survive on its own is one that has been discouraged. On the other hand, companies must run their business with a more focus on maintaining the sustainability of cooperation with partners and consumers. Companies, partners and end consumers must be able to run a profitable reciprocal relationship (Piboonrunroj, 2012). The continuity of this collaboration will influence improving performance and sustaining competitive advantage based on trust and not merely adversarial reasons (Allen et al., 2012; Fawcett et al., 2012). The concept of sustainable supply chain management (SSCM) is a development of the previous concept regarding SCM. The main foundation of SSCM is a collaboration between good entities. SSCM prioritizes long-term goals, namely to invite all entities from the supply chain to prioritize social and environmental aspects in running a business (Font et al., 2008). When the concept of sustainability of supply chain management is applied, the focal company will face challenges in maintaining relationships with suppliers (Pagell et al., 2010). The situation that has been described will also occur in the sector of sustainable tourism supply chain development.

Supply chain activities can survive if they are able to apply the basic principles of sustainability. Various studies have used various dimensions to explain sustainability practices in tourism businesses (Babu et al., 2018). This research on sustainable supply chain management in tourism focuses on the principle of sustainability by referring to three important things, namely: environment, economic, and social (Elkington, 1998). An organization must meet social and economic goals, for example the effect on environmental impacts, workforce health and safety (Babu et al., 2018). For example, environmentally friendly transportation is provided to reduce air pollution and noise pollution as well as fuel efficiency. For this reason, the demand for skills improvement in the supply chain owned by tourism businesses is getting higher to support sustainable practices (Christopher, 2012; Mageto & Luke, 2020; Rahman & Qing, 2014).

- H4.** *There is a positive effect of environmental management on sustainable supply chain management in tourism.*
- H5.** *Social support has a positive effect on tourism sustainable supply chain management.*
- H6.** *There is a positive effect of financial performance on sustainable supply chain management.*

**2.3. The relationship between Managerial Innovation and Tourism Supply Chain Management**

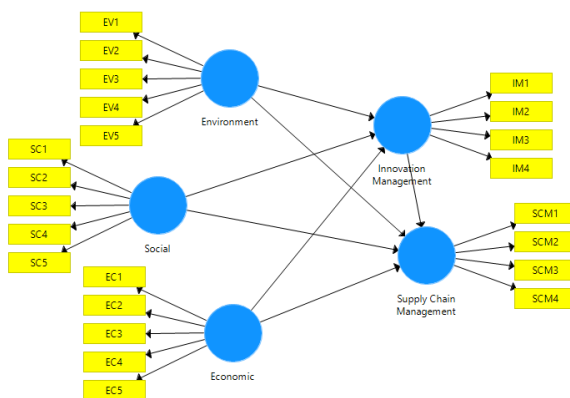
Discussing the concept of sustainable tourism supply chain (SSCM) management should begin with knowing the definition of supply chain management (SCM). According to Tapper & Font (2004), supply chain management is a system that integrates the distribution of materials and information from suppliers to end consumers. Since the beginning, the concept of supply chain management has become a concern (Zhang et al., 2009). Researchers have argued that implementing SCM properly can increase the company's competitive advantage (Li et al., 2006). Competitive advantage can be obtained through efficiency, running procurement management, logistics properly, paying attention to the supply side, and reducing expenses on the transportation sector (Seuring et al., 2008). The results of previous research strongly suggest that research on sustainability practices in the tourism sector be continued with other approaches. Knowledge development can enable companies to increase their capacity and competitive advantage, so it can support their success in achieving sustainability in the long term (Jermisittiparsert et al., 2019). Other research results regarding supply chain management sustainability practices do not only focus on one entity but other entities should be involved (Sigala, 2008).

- H7.** *There is a positive effect of managerial innovation on sustainable supply chain management*

**2.4. Mediating Role of Innovativeness**

Tourism sector activities have uncertainty on the demand for tourism products and a close relationship with the environment and communities around tourist destinations. The quality of the environment and community is the main prerequisite for developing long-term sustainability of tourism (Camacho & Vázquez-Maguirre, 2017). Marketing models and productivity are the basis for determining the success in achieving the performance and competitive advantage of a tourist destination (Sami & Mohamed, 2014). Tourism sustainability can be measured based on tourist demand by looking at the steady growth of tourism contributing to the economy and society as well as the use of sustainable resources and the environment (Butler, 1999). Sustainability is inseparable from the role of achieving performance so that tourism destination managers must know the drivers to achieve performance, including: tourism supporting infrastructure, economic conditions, security, safety and health, competitiveness, government policies, environmental sustainability, labor skills and training, natural and cultural resources (Assaf & Josiassen, 2012; Andriansyah et al., 2021). The knowledge of business actors in the tourism sector is needed in identifying, planning and implementing tourism sustainability through improved performance of sustainable supply chain management in tourism.

- H8.** *Managerial innovation strengthens the relationship between environmental management, social support and financial performance on sustainable supply chain management in tourism.*



**Fig. 1.** Theoretical Model

### 3. Method

This study aims to identify in detail the practice of sustainable tourism supply chain management in the Togean Islands National Park. This park is one of the tourist destinations located in Tomini Bay, Tojo Una-Una Regency, Central Sulawesi-Indonesia Province. Geographically, this national park consists of several island clusters and has become a national priority destination. Besides having the beauty of beautiful beaches, Togean National Park has biodiversity that cannot be found in other destinations. The increase in population has had a major impact on the environment, social and economy. Based on the large tourism potential in this park, tourism development priorities that focus on sustainability are needed. The study used a sample of a total of 176 respondents consisting of tourism business actors in the fields of accommodation, transportation, excursions and local foods and crafts. The sample was collected by a purposive random sampling method. The criteria used in this study consist of three criteria, namely: environmental, social and economic (Elkington, 1998). Meanwhile, the items compared in this study consist of some indicators for each variable. The indicators of this study are adopted from the previous research (Koodsela et al., 2019; Zamfir & Corbos, 2015). In this study, environmental management is measured by several indicators that specifically focus on the tourism business, namely Low Emissions (EV1), Low Waste (EV2), Biodiversity (EV3), Infrastructure (EV4). For social support, it is assessed from five indicators, namely Social Job Opportunities (SC1), Labor Condition (SC2), Well-Being (SC3), Community Development (SC4), and Equality and Diversity (SC5). For the variable of financial performance assessed by Economic Profit (FP1), ROI (FP2), Business Stability (FP3), Financial Resilience (FP4) and Marketing (FP5). Data analysis was performed using Partial Least Square-Structural Equation Modeling (PLS-SEM).

### 4. Results

The results of the validity analysis show the outer loading value of all the variables tested in this study. The findings show that all the independent variables (environment management, social support and financial performance), the mediating variable (managerial innovation) and the dependent variable (sustainable supply chain management) have an outer loading value of  $>0.7$ . The detailed results are shown in Table 1. As a measurement that shows the large correlation between indicators and latent variables, these results indicate that all variables are valid.

**Table 1**

Outer Loading

Indicator	Environment Management	Social Support	Financial Performance	Managerial Innovation	Supply Chain Management
EV1	0.778				
EV2	0.932				
EV3	0.835				
EV4	0.925				
EV5	0.853				
SC1		0.850			
SC2		0.825			
SC3		0.941			
SC4		0.903			
SC5		0.941			
FP1			0.783		
FP2			0.956		
FP3			0.950		
FP4			0.898		
FP5			0.937		
IM1				0.968	
IM2				0.931	
IM3				0.767	
IM4				0.944	
SCM1					0.804
SCM2					0.940
SCM3					0.919
SCM4					0.830

Furthermore, the test with discriminant validity shown in Table 2 shows a high correlation between variables. The findings show that all variables have a correlation value above 0.6. These results confirm that all variables in this study are declared valid.

**Table 2**

Discriminant Validity

Variables	Financial Perf	Env Manag	Innovation	Social Support	SCM
Financial Perf	0.907				
Env Manag	0.626	0.867			
Innovation	0.914	0.589	0.906		
Social Support	0.764	0.321	0.820	0.893	
SSCM	0.835	0.794	0.834	0.673	0.876

The reliability tests shown in Table 3 show Cronbach's Alpha values for Financial Performance (0.946), Environmental Management (0.925), Social Support (0.938), Innovation (0.926), and SCM (0.900). The analysis also shows a high Composite Reliability value, with all variables having a composite value  $> 0.9$ . The results of the Average Variance Extracted (AVE) analysis also show that all variables have a value  $> 0.7$ . All these indicators indicate that the declared variable is reliable.

**Table 3**  
Reliability

	Cronbach's Alpha	rho A	Composite Reliability	Average Variance Extracted (AVE)
Financial Perf	0.946	0.968	0.958	0.822
Env Manag	0.925	1.004	0.938	0.751
Innovation	0.926	0.957	0.948	0.821
Social Support	0.938	0.976	0.952	0.798
SSCM	0.900	0.931	0.929	0.767

The next test is to analyze the fit of the model. The results show the same value between the Saturated Model and Estimated Model for all indicators (SRMR, d\_ ULS, d\_ G, Chi-Square, and NFI). These results indicate that the model used in this study is fit, and can be used for further analysis. The results of the model fit are shown in detail in Table 4.

**Table 4**  
Fit Model

	Saturated Model	Estimated Model
SRMR	0.197	0.197
d_ ULS	10.744	10.744
d_ G	3.929	3.929
Chi-Square	3125.445	3125.445
NFI	0.585	0.585

Furthermore, hypothesis testing is done by analyzing the magnitude of the coefficient between variables and the significance value that is raised. The test results as shown in Table 5 show a significant relationship between environmental management and innovation, social support and innovation, and financial performance with innovation, which is indicated by p-values for all relationships of  $0.00 < 0.05$ . Specifically, statistical analysis shows a positive effect of environmental management on innovation as reflected by Original Sample (O) of 0.114, Sample Mean (M) of 0.114, Standard Deviation (STDEV) of 0.036 and T Statistics ( $|O/STDEV|$ ) of 3,195. Furthermore, a positive effect of social support is also generated on innovation which is reflected by Original Sample (O) of 0.336, Sample Mean (M) of 0.336, Standard Deviation (STDEV) of 0.044 and T Statistics ( $|O/STDEV|$ ) of 7.580. Another positive effect that appears is in the relationship between Financial Performance and Innovation with Original Sample (O) of 0.586, Sample Mean (M) of 0.585, Standard Deviation (STDEV) of 0.051, and T Statistics ( $|O/STDEV|$ ) of 11,604. This shows that environmental management, social support and financial performance are more likely to encourage tourist destination managers to innovate. In addition, community support and the availability of organizational resources can be used as a basis for further innovation and can be empowered to increase organizational capacity in promoting and improving the performance of tourist destinations through various creative channels and innovative ways. These results confirm the positive and significant effect of Environmental Management with Innovation (H1), Social Support with Innovation (H2), and Financial Performance with Innovation (H3). Thus, the hypotheses are declared accepted. This proves empirically that improved environmental management, social support and financial performance are more likely to increase the sustainability of supply chain management in the tourism sector.

**Table 5**  
Path Coefficient and Significance Test Results

Hypotheses	Original Sample (O)	Sample Mean (M)	Std Deviation (STDEV)	T Statistics ( $ O/STDEV $ )	p-values
Env Manag → Innovation	0.114	0.114	0.036	3.195	0.001
Social Support → Innovation	0.336	0.336	0.044	7.580	0.000
Financial Perf → Innovation	0.586	0.585	0.051	11.604	0.000
Env Manag → SCM	0.491	0.493	0.040	12.164	0.000
Social Support → SCM	0.200	0.200	0.048	4.122	0.000
Financial Perf → SCM	0.157	0.151	0.079	1.977	0.049
Innovation → SCM	0.238	0.242	0.078	3.035	0.003
R Square	0.878 (Innovation), 0.854 (SSCM)				
R Square Adjusted	0.876 (Innovation), 0.850 (SSCM)				

The results of the next hypothesis show that there is an effect of Environmental Management with SSCM, Social Support with SSCM, and Financial Performance with SSCM, which is indicated by a p-value  $> 0.05$ , for all of these relationships which are below the specified confidence level of 95%. Specifically, the fourth hypothesis is accepted as indicated by the positive effect of environmental management on SSCM with Original Sample (O) of 0.491, Sample Mean (M) of 0.493, Standard Deviation (STDEV) of 0.040 and T Statistics ( $|O/STDEV|$ ) of 12,164, with p-value  $0.00 < 0.05$ . Furthermore, the results of the analysis show a positive and significant effect of social support on SSCM, which is indicated by Original

Sample (O) of 0.200, Sample Mean (M) of 0.200, Standard Deviation (STDEV) of 0.048 and T Statistics ( $|O/STDEV|$ ) of 4.122, with a p-value of  $0.00 < 0.05$ . Thus, the fifth hypothesis is accepted.

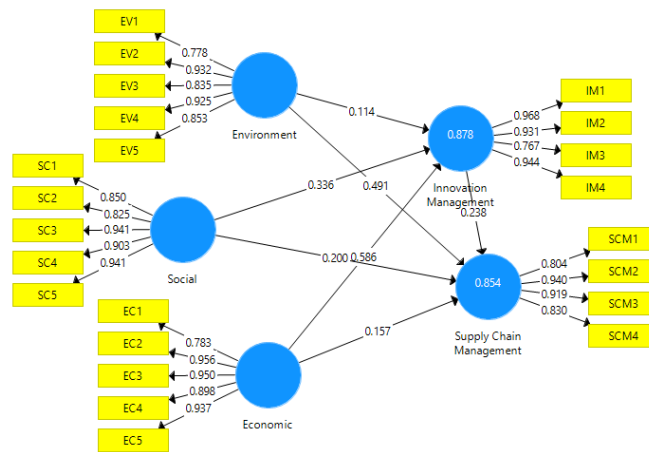


Fig. 2. Full Model

Furthermore, the sixth hypothesis examines the effect of financial performance on SSCM. The statistical results show Original Sample (O) of 0.157, Sample Mean (M) of 0.151, Standard Deviation (STDEV) of 0.079 and T Statistics ( $|O/STDEV|$ ) of 1.977, with a p-value of  $0.049 < 0.05$ . Thus, the fifth hypothesis is accepted. All of these results show empirically that environmental management, social support, and financial performance are antecedents in sustainable supply chain management (SSCM), especially in the tourism sector. The statistical results theoretically confirm that H4, H5, and H6 are accepted. This indicates that the greater the tourism organization is able to consolidate organizational resources, the achievement of internal performance and social support is the more likely to increase the sustainability of SCM (Hutomo & Pudjiarti, 2021). Statistical analysis for the seventh hypothesis which states there is a positive effect between innovation on SCM obtains Original Sample (O) of 0.238, Sample Mean (M) of 0.242, Standard Deviation (STDEV) of 0.078, and T Statistics ( $|O/STDEV|$ ) of 3.035 with p-value  $0.003 < 0.05$ . This shows that the higher the managerial innovation, the higher the sustainability of supply chain management in the tourism business. Thus, the seventh hypothesis is accepted. In this context, the activeness of managers in exploring creativity and innovation through available resources can contribute to increasing the sustainability of SCM (Fig. 2).

Table 6  
Indirect and Total Effects

	Original Sample (O)	Sample Mean (M)	Std Dev (STDEV)	T Statistics ( $ O/STDEV $ )	p-values
<b>Mediating Effects</b>					
Env Manag → Innovation → SSCM	0.027	0.027	0.011	2.394	0.017
Social Support → Innovation → SSCM	0.080	0.081	0.027	2.993	0.003
Financial Perf → Innovation → SSCM	0.139	0.142	0.050	2.763	0.006
<b>Total Effects</b>					
Financial Perf → Innovation	0.586	0.585	0.051	11.604	0.000
Financial Perf → SSCM	0.296	0.293	0.053	5.579	0.000
Env Manag → Innovation	0.114	0.114	0.036	3.195	0.001
Env Manag → SSCM	0.518	0.520	0.038	13.762	0.000
Innovation → SSCM	0.238	0.242	0.078	3.035	0.003
Social support → Innovation	0.336	0.336	0.044	7.580	0.000
Social support → SSCM	0.279	0.280	0.045	6.184	0.000

The results of the analysis of the indirect and total effects generally show the role of the mediating variable of managerial innovation in bridging the relationship between environmental management, social support, financial performance and sustainable supply chain management (SSCM) in tourism (Table 6). The statistical results show that the p-values resulting from the mediating role of managerial innovation are  $< 0.05$ . This shows that the variables play an important role in strengthening the positive effects of environmental management, social support, and financial performance with sustainable supply chain management (SSCM) in tourism. Thus, the eighth hypothesis which states that managerial innovation is able to strengthen the relationship of the antecedents of SSCM is accepted.

This finding is in accordance with previous research which has empirically found the relationship between environmental management, social support, financial performance and sustainable supply chain management (SSCM) in tourism. Specifically, in the relationship between environmental management and sustainable supply chain management (SSCM) in tourism, these results are in accordance with Adriana (2009) and Sigala (2014) which underline the important role of environmental considerations in supply chain management (SSCM) in tourism. Furthermore, Font et al. (2008), Eckart et al.

(2020) emphasizes the importance of community support for tourism development and supply chain management effectiveness. In the context of the relationship between financial performance and sustainable supply chain management, Nguyen et al. (2020), Vu et al. (2022) and Modica et al. (2020) underscores the crucial role of organizational financing and financial capabilities to realize SCM sustainability in the tourism industry.

In addition, another study highlights the importance of innovation as a crucial part of SSCM in the tourism sector. Chen (2009) found the important role of innovation through strengthening cooperation platforms with partners to improve the quality of SCM. SCM innovation in the tourism sector is made possible by collaboration and consolidation of internal resources that encourage organizational performance improvement (Hall & Williams, 2008; Zach, 2016; Syarief, 2021; Hjalager, 2010).

## 5. Conclusion

The results of this study indicate that environmental aspects, apart from social and economic capacity of an organization, are the main priorities that must be considered in maintaining the sustainability of tourism supply chain management. Specifically, the test results show the influence of environmental management, social support, and financial performance on managerial innovation. Furthermore, sustainable supply chain management (SSCM) in tourism is directly influenced by the three antecedents, namely environmental management, social support, and financial performance. The output statistics show that managerial innovation has a positive and significant influence on sustainable supply chain management (SSCM) in tourism. Finally, testing the mediating variable shows that theoretically managerial innovation is more likely to be able to strengthen the positive effects of environmental management, social support, and financial performance on sustainable supply chain management (SSCM) in tourism.

Theoretically, the results of this study are expected to enrich knowledge about tourism supply chain management by focusing on sustainability. This study aims to fill the research gap in the field of sustainability so that it can be used as a reference for further research and in the policy-making process related to tourism supply chain management. This study can be used as a representative case for sustainable supply chain management practices. It is hoped that this research can add to the results of other research so that it can be used as a reference in the preparation of tourism planning and further studies.

Furthermore, these findings practically show that environmental management, social support and financial performance are more likely to encourage tourist destination managers to innovate. In addition, community support and the availability of organizational resources can be used as a basis for further innovation and can be empowered to increase organizational capacity in promoting and improving the performance of tourist destinations through various creative channels and innovative ways. In addition, the greater the tourism organization is able to consolidate organizational resources, the achievement of internal performance and social support is more likely to increase the sustainability of SCM.

Since this study is only based on one tourist destination, it is hoped that further studies will expand the sample. In addition, further studies can analyze in groups the perceptions of managers in the practice of SCM in the tourism business. The limitation of this research is that it is hoped that in the future it can include more respondents with different analytical methods. These findings can practically provide useful information for determining which priorities should be focused on sustainable tourism supply chain management in the tourism sector. Practically, this research can further be used by policy makers in formulating strategies for implementing sustainable tourism in other regions in Indonesia, especially related to the super priority tourist destination program that has been echoed by the government recently.

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