

Uncertain Supply Chain Management

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Antecedents of green supply chain collaborative innovation in tourism SMEs: Moderating the effects of socio-demographic factors

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ABSTRACT

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The importance of environmentally friendly issues related to manufacturing industry activities in Makassar City is currently a special concern. Green supply chain management integrates supply chain management with environmental management, so it is important to reduce environmental impacts. This study aims to determine the antecedents of green supply chain collaborative innovation on the performance of Small and Medium Enterprises in the Tourism Sector. Data was collected by distributing questionnaires. The unit of research analysis is Small and Medium Enterprises in the Tourism Sector in West Java. Respondents who were used as samples were 311 respondents. The analytical method used in testing the hypothesis is Partial Least Square (PLS). The results show: green supply chain management has a positive and significant effect on the performance of Small and Medium Enterprises in the Tourism Sector in West Java, green supply chain management mediates the effect of green innovation and transformational leadership on the performance of Small and Medium Enterprises in the Tourism Sector.

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1. Introduction

In today's world, competition in the business world, whether it is in large, medium or small-scale businesses, which is increasingly growing, causes productivity and production efficiency to become an important thing. Competition between companies is not only determined by the number of products/outputs produced, but also by the quality of the production itself. The quality of a product is determined by several factors such as processes, human resources and systems that are interconnected with each other. With the development of technology and market demand, the demands and needs of customers are increasing. Thus, industry players are aware that getting cheap and quality products is not enough, there needs to be factors such as collaboration, coordination and synchronization of work with various parties related to the production process (Jamaludin et al., 2021a). Supply chain management is a method for managing the flow of products, information and money in an integrated manner involving certain parties consisting of suppliers, factories, actors in distribution activities and logistics services (Pujawan & Mahendrawati, 2017). In the last 40 years supply chain management or supply chain management has become vulnerable, so strategies are needed such as creating better alignment between strategy and coordination and integration in the production process, this is needed to meet customer demand for the supply chain (Khan & Qianli, 2017). Based on the research results of Green et al. (2012) that in the production process there is a need for integration which includes logistics, purchasing, marketing and manufacturing. Nowadays, in production practice, special attention is needed for environmental friendliness, and it is a concern for every business actor in carrying out environmentally friendly production. This is in line with the results of research from Green et al. (2012) that the need for a balance between efficiency, responsiveness, quality, customer focus, environmentally friendly practices and environmental sustainability in a production. The current condition is that many companies are focused on implementing green supply chains or green supplies

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in business (Khan & Qianli, 2017) and are manifested in environmentally friendly marketing practices, using environmentally friendly brands/labels and environmentally friendly advertising (Smith, 2010).

Green supply chain management is the practice of improving environmental performance along the supply chain, including product design, operations management and customer relations (Choi & Hwang, 2015). The impact of green supply chain practices on the financial or economic performance of the organization such as decreasing the cost of purchasing raw materials and energy consumption, increasing productivity, profitability and sales as well as having an impact on environmental impact (Vijayvargy & Agarwal, 2014). The application of green supply chain practices affects the company's performance (Khan & Qianli, 2017). The advantages of implementing a green supply chain in a company are the creation of cost savings (saving materials, reducing energy and water use), creating a better public image and environmental responsibility (Chin et al., 2015; Jamaludin et al., 2020). Based on the research results of Khan & Qianli (2017) that green supply chain management does not have much effect on economic improvement but has a direct impact on the company's environmental performance (Jamaludin et al., 2021b). However, not all companies are suitable to carry out green supply chain management, this is based on the results of research by Al-Zaabi et al. (2013), that green supply chain management incurs additional costs. Based on the research results of Khan & Qianli (2017) that green supply chain management does not have much effect on economic improvement but has a direct impact on the company's environmental performance. Starting from the problems above, the researchers are interested in conducting research related to collaborative innovation of green supply chain management on the Performance of Small and Medium Enterprises in the Tourism Sector in West Java based on the socio-demographic characteristics of the owner.

2. Literature Review

2.1 Green Innovation

According to Chen and Chang (2011) in Seman et.al. (2019) The concept of green innovation is another concept of environmental management, which was recently introduced with the aim of eliminating negative environmental consequences. To increase the growth of business organizations in the future, green innovation is especially prepared to build new markets, given its alarming growth over the next decade, which offers a lot of potential and opportunities (Walz & Eichhammer, 2012). Green innovation is referred to as a revolutionary environmental innovation of practice, process, managerial, and marketing, resulting from the implementation of GSCM that has brought about improvements in organizational environmental performance (Li et al., 2017 in Seman et al., 2019). The implementation of Green Innovation is one of the company's incentives to participate in protecting the environment in a sustainable manner. Green Innovation or green innovation is referred to as a revolutionary environmental innovation of practice, process, managerial, and marketing, which is generated from the application of green supply chain management that has brought improvements in organizational environmental performance (Li et al., 2017).

H₁: *Green innovation influences green supply chain management.*

H₂: *Green innovation affects SME performance through green supply chain management.*

2.2 Transformational leadership

Leadership is always described as behavior and personal traits that are unconsciously needed to influence the process of a relationship (Grint, 2005; Bolden et al., 2011; Gosling et al., 2016; Jamaludin, 2021). This causes the manager's leadership style to be an important factor in supply chain leadership such as research by Defee et al. (2010); Gosling et al. (2016) and Bag (2018) which not only affect the company but also the entire supply chain including suppliers such as research by Gosling et al. (2016) and Bag (2018). Supply chain leadership styles are generally distinguished into transactional leadership styles and transformational leadership styles according to the research of Hult et al. (2000), Defee et al. (2009), and Gosling et al. (2016). Transformational leadership more often shows four components, namely influencing through ideas, inspiring and motivating, providing intellectual stimulation, and providing individual consideration (Hult et al., 2000; McCleskey, 2014). The supply chain transformational leadership style will also play a role in improving the quality of integration with suppliers and maintaining long-term relationships with suppliers (Hult et al., 2000) as well as the broad application of supply chain management strategies (Gosling et al, 2016) because the transformational leadership style directs followers with motivation through a change in mindset so that the expected performance can last in the long term (Bass, 1985; Jung & Avolio, 2000).

H₃: *Transformational leadership strategy influences green supply chain management.*

H₄: *Transformational leadership affects SME performance through green supply chain management.*

2.3 Green supply chain management

Green supply chain management is the practice of managing companies in the supply chain (supply, manufacturing, distribution to products to consumers). Green supply chain management refers to the way in which innovations in supply chain management and industrial purchasing can be taken into account in environmental contexts. Practices undertaken to

monitor and improve environmental performance in the supply chain (Godfrey, 1998). In several research results, the practice of green supply chain management has been adopted with the hope of having a positive impact on the company's environment and company performance (Khan & Qianli, 2017).

Green Supply Chain Management has an impact on company performance, one of which is increasing company performance (Choi & Hwang, 2015; Jamaludin, 2021). Green supply chain has a significant impact on the company's performance. Thus, the practice of Green Supply Chain Management contributes directly to the company's performance. Thus, it can be said that Green Supply Chain Management can help companies lead to better performance.

H₅: *Green supply chain management influences SME performance.*

Based on the description of the literature review and previous research, the framework developed in this study is described in a chart as follows:

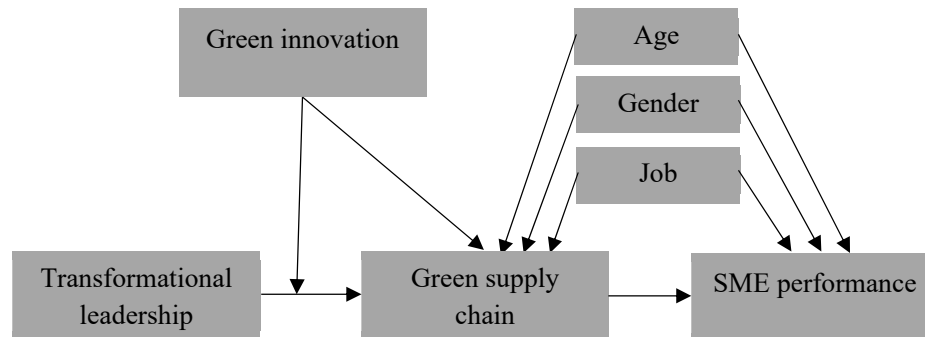


Fig. 1. The proposed study

3. Method

In this study, the role of the independent variable is transformational leadership. Green innovation in this study as a moderating variable, green supply chain management as an intervening variable. In this study, the dependent variable is SME performance. This research also includes age, gender (male/female), job position as control variables. The population used in this study is Small and Medium Enterprises in the Tourism Sector in West Java.

Variable	Indicator Code	Indicator	Sources
Green innovation	GI1	Use of environmentally friendly raw materials	(Chen et al., 2006; Ar, 2012)
	GI2	Products that are easy or can be recycled	
	GI3	Manufacturing processes that reduce the use of emissions and waste.	
	GI4	Manufacturing processes that recycle waste.	
Transformational leadership	TL1	Leaders communicate business goals clearly and positively	(Jung & Avolio, 2000)
	TL2	Leaders always support employee development	
Green supply chain management	GSCM1	The company reduces the use of hazardous materials or components in the product manufacturing process and product design	(Heriyanto & Noviardy 2019; Brilliana et al., 2020)
	GSCM2	The company applies the practice of recycling the remaining production	
	GSCM3	The company enforces specifications on the requirements of purchased components and their impact on the environment on suppliers	
	GSCM4	The company manages residual production waste before it is discharged into the environment and pays attention to the amount of waste produced	
SME performance	SP1	The company is able to increase profits after implementing green management	Choi & Hwang (2015)
	SP2	The company is able to increase market share after implementing green management	

In this study, the process of distributing questionnaires was addressed to 311 respondents, namely micro, small and medium enterprises in various tourism sectors in the West Java region. All items in this questionnaire were measured using a 5-point Likert scale ranging from 1=strongly disagree to 5=strongly agree. The tests carried out in the analysis of variance-based SEM have two stages, namely the outer model and the inner model test. The explanation of the test is as follows: In this study, the data collection method was carried out by distributing questionnaires or questionnaires. Respondents were taken using a purposive sampling technique (Sekaran & Bougie, 2013). The respondents of this research are small and medium-scale entrepreneurs who carry out production and retail activities in various tourism sectors in the West Java region. The data analysis method used is the Partial Least Square (PLS) analysis method with the Smart Partial Least Square 3.2.7 program.

4. Results

4.1 Outer Model

Table 1 shows that the validity value of each indicator is above 0.7, so all research indicators are declared valid. In the outer model test, in addition to the convergent validity test, there is also a reliability validity test, namely a test that aims to determine the reliability of indicators in measuring variables, while a variable is said to be valid if it has an AVE value above 0.5 and the Cronbach Alpha value is above 0.7, the following is the discriminant validity test in this study (Purwanto et al., 2021):

Table 1
Validity, Reliability, R2, and Q2 Test Result.

Variable	Indicator	Loading	Cronbach's Alpha	CR	AVE	R ²	Q ²
Green innovation	GI1	0.921	0.893	0.924	0.754		
	GI2	0.780					
	GI3	0.885					
	GI4	0.880					
Transformational leadership	TL1	0.959	0.885	0.924	0.896		
	TL2	0.934					
Green supply chain management	GSCM1	0.909	0.889	0.923	0.751	0.276	0.178
	GSCM2	0.865					
	GSCM3	0.834					
	GSCM4	0.856					
SME performance	SP1	0.907	0.518	0.796	0.665	0.721	0.458
	SP2	0.713					
Job positions		1.000	1.000	1.000	1.000		
Age		1.000	1.000	1.000	1.000		
Gender		1.000	1.000	1.000	1.000		
Transformational leadership × Green innovation	Moderating Effect	1.109	1.000	1.000	1.000		

Table 1 shows that all Cronbach alpha values and the average variance extracted exceed the minimum limit so that all variables are declared valid. From Table 1 R-Square it can be concluded that 27.6% of green supply chain management is influenced by green innovation and transformational leadership, while the remaining 72.4% is influenced by other variables outside the study. The SME performance variable is influenced by green innovation, transformational leadership, and green supply chain management by 72.1% while the remaining 27.9% is influenced by other factors outside the theme of this study. In addition to reliability in the inner model test, there is also a hypothesis test, while the hypothesis testing in this study is as follows:

4.2 Inner Model

Hypothesis testing in this research is done by bootstrapping the research model. Furthermore, it can be seen the value of T Statistics or P Value of each latent variable. This study uses (alpha) of 5%. This analysis was conducted with the intention of knowing how big the level of significance of the influence of exogenous variables on endogenous variables. The following is the result of calculating the path coefficients of this research model:

Table 2
Direct Effect Test Result

	(O)	(M)	(STDEV)	TValue	P-Value
Green innovation → Green supply chain management	0.422	0.387	0.127	3.312	0.001
Transformational leadership → Green supply chain management	0.452	0.435	0.063	7.165	0.000
Moderating effect → Green supply chain management	0.258	0.244	0.073	3.552	0.000
Green supply chain management → SME performance	0.838	0.837	0.018	7.081	0.000

The results showed that the hypothesis stating that green innovation significantly influences green supply chain management is accepted. This is indicated by the value obtained from the hypothesis testing. As shown in Table 2, in the relationship between green innovation and green supply chain management, the original value (O) obtained is 0.422, with mean (M) of 0.387, standard deviation (STDEV) of 0.127, TValue of 3.312 and P-Value of 0.001. As the level of significance is <0.05, thus the hypothesis is empirically supported. Thus, the first hypothesis is accepted.

The statistical output showed that the hypothesis examining the effect of transformational leadership strategy on green supply chain management is empirically supported. This is indicated by the original value (O) obtained is 0.452, with mean (M) of 0.435, standard deviation (STDEV) of 0.063, TValue of 7.165 and P-Value of 0.000<0.05. This means that the higher the transformational leadership strategy, the higher the quality of green supply chain management. Thus, the hypothesis stating the significant effect of transformational leadership strategy on green supply chain management is accepted. Furthermore, the output showed that green supply chain management has a significant influence on SME performance. This is indicated by the value of P-Value of 0.000<0.05, while the value of original value (O) obtained is 0.838, with mean (M) of 0.837 with

standard deviation (STDEV) of 0.018, TValue of 7.081. This means that the higher the green supply chain management, the higher the SME performance. Thus, the hypothesis stating green supply chain management has a significant influence on SME performance is accepted.

Table 3
Indirect Effect Test Result

	(O)	(M)	(STDEV)	TValue	PValue
Green innovation → Green supply chain management → SME performance	0.354	0.323	0.106	3.329	0.001
Transformational leadership → Green supply chain management → SME performance	-0.379	-0.365	0.054	6.986	0.000
Moderating effect → Green supply chain management → SME performance	0.216	0.204	0.062	3.511	0.000

In this study, the intervening variable test was carried out by bootstrapping the research model by looking at the value of T Statistics and P Value on the specific indirect effects test so that it can be seen how influential/significant the intervening variable is between the independent variables on the dependent variable as an indirect relationship. From the test results in Table 3, the results showed that the hypotheses are all accepted indicated by p-value <0.05. It can be seen that green supply chain management mediates the effect of green innovation on SME performance (p-value 0.001<0.05). The output also showed that green supply chain management mediates the effect of transformational leadership on SME performance. The last results showed that green supply chain management mediates the moderating effect (Transformational leadership*Green innovation) on SME performance.

5. Discussion

Based on the results of data analysis, it is found that the estimated path coefficient value is the direct influence of green innovation on green supply chain management. The test results can prove the reality that occurs to accept the hypothesis that green innovation is more likely to the application of green supply chain management. The positive path coefficient means that the relationship between green innovation and green supply chain management is unidirectional. This means that the greener innovation, the implementation of green supply chain management will increase (Fig. 2).

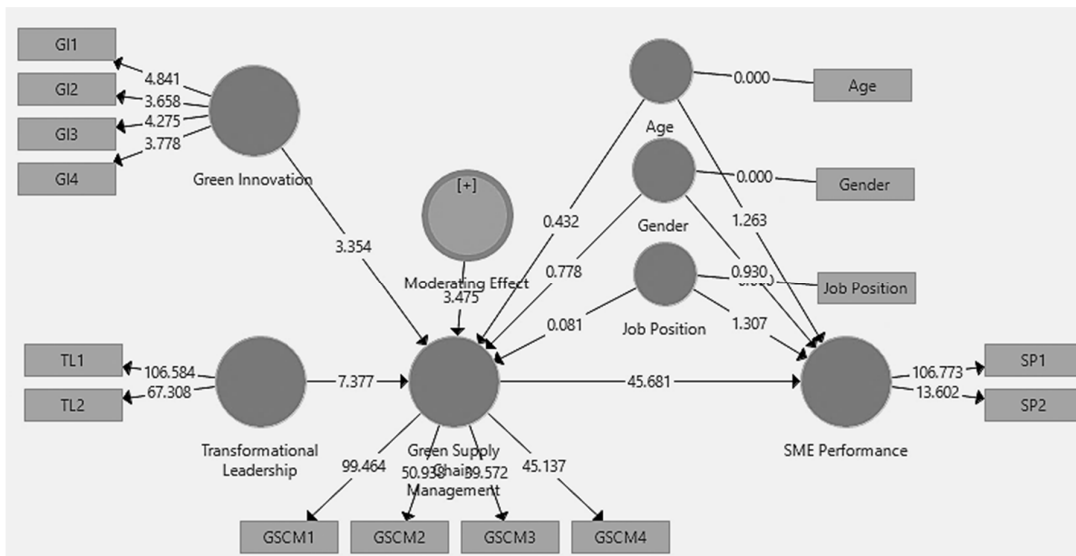


Fig. 2. Full Model

The results of this study support the statement that green innovation is referred to as a revolutionary environmental innovation of practices, processes, managerial, and marketing, resulting from the application of GSCM that has brought improvements in organizational environmental performance (Shafique et al., 2017; Wong et al., 2020). Furthermore, the findings of Walz and Eichhammer (2012), Li et al. (2017) also support this research, green innovation is referred to as a revolutionary environmental innovation of practices, processes, managerial, and marketing, which results from the implementation of GSCM that has brought about improvements in organizational environmental performance.

Based on the results of data analysis, it is found that the estimated path coefficient value is the direct influence of transformational leadership on green supply chain management. The test results can prove the reality that occurs to accept the hypothesis that the better the application of transformational leadership, the application of green supply chain management will increase. The positive path coefficient means that the relationship between transformational leadership and green supply chain management is unidirectional. This means that the better the implementation of transformational leadership, the application of green supply chain management will increase.

The results of this study support the statement that supply chain transformational leadership will also play a role in improving the quality of integration with suppliers and maintaining long-term relationships with suppliers (Hult et al., 2000) as well as broad application of supply chain management strategies (Gosling et al, 2016). The findings of this study are also supported by the findings of Bass (1985); Jung & Avolio (2000) which states that the transformational leadership style directs followers with motivation through changes in mindset so that green supply chain management is expected to take place in the long term. Furthermore, Green innovation moderates the effect of transformational leadership on green supply chain management. The test results can prove that green innovation as a moderating variable is reciprocal and significantly influences the weak or strong influence of transformational leadership on green supply chain management.

Based on the results of data analysis, it is obtained that the estimated path coefficient value is the direct influence of green supply chain management on company performance. The test results can prove the reality that occurs to accept the hypothesis that the better the implementation of green supply chain management, the company's performance will increase. The positive path coefficient means that the relationship between green supply chain management and company performance is unidirectional. This means that the better the implementation of green supply chain management, the company's performance will increase. The results of this study support the statement which states that the company's strategic support for the company's operations through supply chain design has a positive impact on the company's overall operations, so that the supply chain is designed to support operations management. The findings of this study support previous researchers that the practice of green supply chain management has a significant effect on financial performance, operational performance and customer satisfaction (Gimenez & Ventura, 2005; Ou et al., 2010; Yang et al., 2013, Boon-itt & Wong, 2011, Rohdayatin et al., 2018). Then it also supports the findings that provide evidence that green supply chain management is the main driver of the company's operational performance, that a successful green supply chain management strategic vision is built on the basis of effective management leadership, which creates and communicates the company's green supply chain management strategic vision (Jamaludin et al., 2021b).

6 Conclusion

Based on data analysis, it can be concluded that green innovation and transformational leadership have a positive effect on green supply chain management. Green innovation moderates the effect of transformational leadership on green supply chain management. Green supply chain management has a significant effect on tourism SME performance. Furthermore, green supply chain management mediates the effect of green innovation and transformational leadership on tourism SME performance. These results indicate that the better the application of transformational leadership and the number of green innovations carried out, the better the interaction between the company and its suppliers and customers in setting delivery standards and response to customers is able to increase cost efficiency as a manifestation of operational performance. In this study, there are several limitations, namely this study does not investigate other variables other than green innovation and transformational leadership as antecedents of green supply chain management. In addition, the data collected from this study are based on small and medium enterprises in the tourism sector in West Java. This may make a difference when collecting data in different sectors and locations. Thus, it is suggested that further research can explore more complex research variables and data to provide better green supply chain management information.

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