

## THE RELATIONSHIP BETWEEN COOPERATION, SUPPLY CHAIN PERFORMANCE AND TOUR OPERATOR PERFORMANCE: A CASE STUDY OF TOURISM SUPPLY CHAIN IN VIETNAM

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**Abstract:** Cooperation among members in the supply chain is essential and is a core element in the supply chain management strategy. This article uses a combination of qualitative and quantitative analysis methods. Structural equation modeling (SEM) demonstrates the relationship between cooperation, tourism supply chain performance, and operator performance in Vietnam. Research collected data from 242 domestic and international tour operators located in major Vietnam cities such as Ho Chi Minh City, Hanoi City, Da Nang City, and Can Tho City. The study has demonstrated that cooperation positively affects tourism supply chain performance and operator performance. Besides, tourism supply chain performance benefits operator performance in the Vietnamese tourism supply chain.

**Key words:** Cooperation, tourism supply chain performance, tour operator performance, tourism supply chain

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### INTRODUCTION

In the 21<sup>st</sup> century, fierce competition occurs in supply chains more than individual enterprises (Zhang et al., 2009). Therefore, supply chain management has been highly concerned as an effective tool to cope with the challenges in the competitive market (Kim, 2010; Tellioglu, 2021). Furthermore, building close linkages among members of the supply chain helps companies improve their performance (Topolšek and Dragan, 2016), reduce supply chain risks (Faisal et al., 2006; Kim, 2010), and improve supply chain performance (Narasimhan and Kim, 2002).

In the fiercely competitive environment of the tourism industry, tour operators have closely connected to improve their efficiency (Dragan et al., 2015). Also, travel agencies focus on building close relationships with other members in the supply chain to share information, resources, and risks (Golicic, 2003). This supports tour operators' performance (Topolšek and Dragan, 2016). According to Grunfleher and Tarafda (2014), the improvement of the supply chain positively affects the performance of tour operators. Therefore, enterprises in the tourism supply chain need to care about strategic cooperation with suppliers, customers, and competitors to survive and develop (Frohlich and Westbrook, 2001; Flynn et al., 2010). The literature review has shown that there are many studies about the relationship between collaboration, supply chain performance, and enterprise performance. However, most studies have been conducted in developed countries while few studies have been conducted in developing countries with similar contexts to Vietnam. The COVID-19 epidemic has broken the original business network structure and globally affected the tourism supply chains (Haque, 2022). Cooperation in building and developing tourism supply chains is an appropriate approach to limit risks and improve the adaptability and performance of the supply chain's members. Therefore, this study was carried out to demonstrate the impact of cooperation on supply chain performance and operator performance participating in the tourism supply chain in Vietnam. Besides, the study has indicated the correlation between supply chain performance and operator performance participating in the tourism supply chain. The research results are the scientific basis to build a tourism supply chain management strategy.

### THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

#### 1. Theoretical framework

##### Tourism Supply Chain

The tourism supply chain is a network of tourism organizations consisting of entertainment service providers, transportation companies, accommodation facilities, souvenir shops, tour operators, and public service providers (Zhang et al., 2009). The tourism supply chain represents the cooperation of individuals, organizations, and enterprises in producing and providing tourism services, information, and tangible products to tourists directly or indirectly

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(Piboonrungrroj and Disney, 2009). The tourism supply chain is approached from two aspects: the existence of participants and the cooperation between members in the supply chain to share information, reduce risks, improve business performance, and bring the highest satisfaction to visitors.

### Collaboration

Supply chain collaboration is the formation of close and long-term partnerships that work together to share information, resources, and risks to accomplish collective or individual goals (Golicic, 2003). Collaboration brings plenty of benefits to running a continuous supply chain and closely connects its members (Piboonrungrroj and Disney, 2009). Collaboration in the supply chain is classified into three dimensions: horizontal, vertical, and multidimensional (Barratt, 2004).

### Supply Chain Performance

Supply chain performance is defined as producing and delivering products or services to meet customer needs, thereby enhancing efficiency for the supply chain participants (Vickery et al., 2003; Chen et al., 2004). In addition, supply chain performance is measured by the flexibility, cooperation among members, and responsiveness to customer requirements (Qrunfleh and Tarafdar, 2014). Flexibility is the ability to adapt to market changes quickly and efficiently by supply chain members (Vickery et al., 1999). Collaboration is the degree of coordination among supply chain members in activities, communication, and decision-making (Stock et al., 2000). Finally, responsiveness represents how the supply chain's members respond timely to customer needs (Chen et al., 2004).

### Operator Performance

Operator performance reflects how an operator fulfills its financial and market objectives compared with its major competitors (Li et al., 2006; Qrunfleh and Tarafdar, 2014). To measure operator performance, three factors used include financial performance, operational performance, and overall effectiveness (Zhao et al., 2013). In addition to this, operator performance can be measured by sales growth, profit growth, market share growth, productivity growth, and competitiveness improvement (Stock et al., 2000; Narasimhan and Kim, 2002; Chen and Paulraj, 2004; Chang and King, 2005; Petersen et al., 2005; Li et al., 2006; Flynn et al., 2010; Cao and Zhang, 2011).

## 2. Research hypotheses

### Relationship between collaboration and supply chain performance

Supply chain collaboration positively impacts performance (Narasimhan and Kim, 2002). The partnership quality between buyers and sellers positively impacts the supply chain performance (Srinivasan et al., 2011; Ali and Shukran, 2016; Mofokeng and Chinomona, 2019). The close cooperation among enterprises motivates the tourism industry (Theuvsen, 2004). Therefore, the H1 hypothesis is proposed: Collaboration positively affects tourism supply chain performance.

### Relationship between collaboration and operator performance

Collaboration has a positive effect on operator performance (Simatupang and Sridharan, 2004). Furthermore, collaboration in the supply chain improves the tour operator's performance (Cao and Zhang, 2011; Huo, 2012). Besides, cooperation in the supply chain beneficially influences the performance of tourism agencies (Dragan et al., 2015). Moreover, the connection of the tour operator with other members of the supply chain has a positive impact on its performance (Topolšek and Dragan, 2016). Thus, hypothesis H2 is as follows: Collaboration positively affects the performance of tour operators.

### The relationship between tourism supply chain performance and operator performance

Supply chain collaboration increases the efficiency of information sharing, thereby improving the performance of supply chain members (Rai et al., 2006; Zhang et al., 2006). Also, supply chain flexibility is positively correlated with operator performance (Sanchez and Perez, 2005). Supply chain performance positively affects the performance of its participants (Qrunfleh and Tarafda, 2014). Hence, hypothesis H3 is suggested as Tourism supply chain performance positively influences operator performance. Based on the above literature review and research hypotheses, the study used participatory rural appraisal (PRA) with two supply chain experts and four directors of travel agencies. The result of the assessment helps identify the appropriate evaluating scales. The proposed research model is as below.

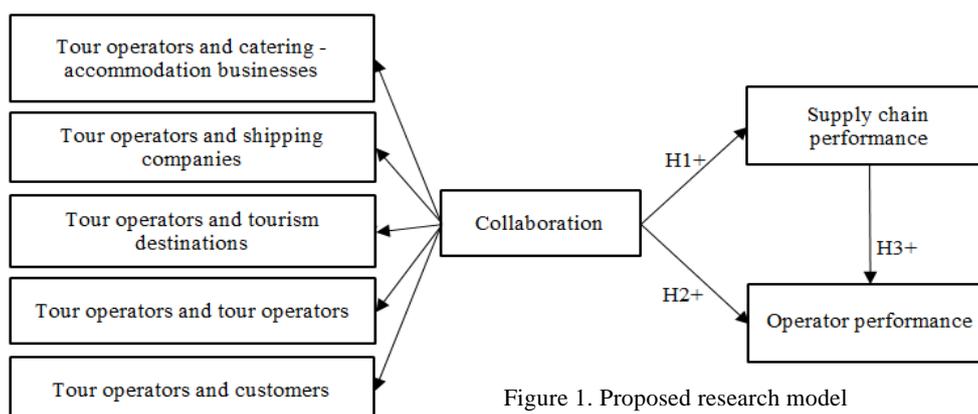


Figure 1. Proposed research model

Table 1. Interpretation of observed variables in the research model

Factor	Observed variables	Scales	References resources
Collaboration between tour operators and accommodation businesses (ACC)	ACC1: We maintain active cooperation with accommodation and catering establishments.	Likert 1-5	Zhao et al. (2013), Li et al. (2006)
	ACC2: We help accommodation and catering establishments improve their service quality.	Likert 1-5	
	ACC3: We exchange information with accommodation and catering establishments during the product/service design process.	Likert 1-5	
Collaboration between tour operators and shipping companies (SHI)	SHI1: Shipping companies share shipping schedules and shipping capacity with us.	Likert 1-5	Flynn et al. (2010)
	SHI2: We share market information and demand forecasts with the shipping companies.	Likert 1-5	
	SHI3: We help shipping companies improve their services to meet customer needs.	Likert 1-5	
Collaboration between tour operators and tourism destinations (DES)	DES1: We and the tourism destinations keep each other informed about market information and changing demands.	Likert 1-5	Simatupang and Sridharan (2005), Cao and Zhang, 2011, Li et al. (2006)
	DES2: We and tourism destinations make plans for essential events.	Likert 1-5	
	DES3: We and tourism destinations share benefits and find solutions for problems.	Likert 1-5	
Collaboration between tour operators and tours operators (TOU)	TOU1: We and other tour operators exchange information about spare capacity, sales, and market forecasts.	Likert 1-5	Topolšek and Dragan (2016)
	TOU2: We and other tour operators make plans and solve supply chain problems.	Likert 1-5	
	TOU3: We and other tour operators work together to reduce costs and improve operational efficiency.	Likert 1-5	
Collaboration between tour operators and customers (CUS)	CUS1: We keep close contact with our customers.	Likert 1-5	Zhao et al. (2013)
	CUS2: Customers give us feedback on the service quality.	Likert 1-5	
	CUS3: Customers are actively involved in our product design processes.	Likert 1-5	
Supply chain performance (SCP)	SCP1: The supply chain meets the detailed requirements of special customers.	Likert 1-5	Vickery et al. (1999), Chen et al. (2004), Qrunfleh and Tarafdar (2014)
	SCP2: The supply chain provides products meeting the needs of different choices, experiences, and prices.	Likert 1-5	
	SCP3: The supply chain can quickly improve to respond promptly to changing customer needs.	Likert 1-5	
	SCP4: The supply chain quickly introduces new products.	Likert 1-5	
	SCP5: The supply chain has a prompt and flexible response time to customer requests.	Likert 1-5	
Tour operator performance (TOP)	TOP1: Our company has grown in sales.	Likert 1-5	Flynn et al. (2010), Li et al. (2006), Cao and Zhang (2011)
	TOP2: Our company has increased profit.	Likert 1-5	
	TOP3: Our company has grown in market shares.	Likert 1-5	
	TOP4: Our company has gradually improved its competitive position.	Likert 1-5	
	TOP5: The labor productivity in our company has increased.	Likert 1-5	

**RESEARCH METHODOLOGY**

**1. Analytical method**

To test the proposed hypotheses, qualitative analysis and quantitative analysis are applied (Figure 2). First, the participatory rural appraisal (PRA) is used to identify the appropriate scales for the research model. The quantitative analysis used includes testing the reliability of scales by Cronbach’s alpha coefficient, exploratory factor analysis (EFA) to evaluate the convergent and discriminant validity, confirmatory factor analysis (CFA) to test the suitability of research data, and structural equation modeling (SEM) to test the research hypotheses.

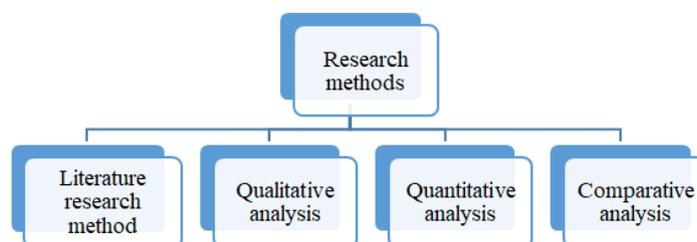


Figure 2. Flowchart of the research methods (compiled by the authors)

**2. Data collection method**

To ensure the reliability of the SEM method, the sample size should be significant because it is based on the theory of sample distribution (Raykov and Widaman, 1995); it should be 200 observations (Hoelter, 1983; Hoyle, 1995). In linear structural analysis, the appropriate sample size is determined based on the number of factors (Hair et al., 2010); the minimum sample size should be 150 if the number of elements is 7 or less, each factor has more than 3 observed variables with communalities values in EFA are from 0.5 or higher (Hair et al., 2010). Therefore, the sample size must have at least 200 observations based on the proposed research model, the authors surveyed from September 2020 to November 2020 by direct and email interviews. The survey respondents are the Director Board of domestic and international tour operators. The research sample size achieved is 242 operators (177 international and 65 domestic) with headquarters located in major cities in Vietnam such as Ho Chi Minh City, Hanoi City, Da Nang City, and Can Tho City. Thus, the sample size is satisfactory, ensuring reliability for the model test.

The demographic characteristics of respondents are shown in Table 2. The proportion of males and females is not too different (53.72% for males and 46.28% for females). The “46 to 60 years old” group accounts for the highest proportion (47.93%). Regarding education background, most respondents have university degrees (54.13%). Respondents who have more than 10 years of experience account for 86.36%. All respondents are members of the board of directors of travel agencies, in which the Chief Executive Officer holds the highest proportion (40.5%).

Table 2. Demographic characteristics of respondents (n = 242)

Gender	Frequency	(%)	Years of management	Frequency	(%)
Male	130	53.72	Under 10 years	33	13.64
Female	112	46.28	10 - 15 years	77	31.82
Age	Frequency	(%)	16 - 20 years	92	38.01
30 - 45	52	21.49	Over 20 years	40	16.53
46 - 60	116	47.93	Position	Frequency	(%)
Over 60	74	30.58	Chief Executive Officer	98	40.50
Education background	Frequency	(%)	Chief Marketing Officer	48	19.83
Intermediate/College	65	26.86	Chief Commercial Officer	52	21.49
University	131	54.13	Chief Operations Officer	44	18.18
Postgraduate	46	19.01			

## RESEARCH RESULTS AND DISCUSSIONS

### 1. Scale reliability test

In this study, Cronbach's alpha coefficient is used to test the reliability of the scales in the research model. Table 3 shows that all the observed variables have the corrected item-total correlation greater than 0.3. In addition, the research scales have Cronbach's alpha values from 0.705 to 0.866. This shows that all research scales meet the reliability requirements (Nunnally, 1978; Peterson, 1994; Nunnally and Bernstein, 1994; Slater, 1995).

Table 3. Scale reliability test

Observed variables	Mean	Standard deviation	Factor loading	Cronbach's alpha
<b>Collaboration between tour operators and accommodation businesses (ACC)</b>				0.705
ACC1	3.88	0.560	0.586	
ACC2	3.86	0.658	0.737	
ACC3	3.99	0.562	0.679	
<b>Collaboration between tour operators and shipping companies (SHI)</b>				0.720
SHI1	3.52	0.925	0.508	
SHI2	3.63	0.821	0.888	
SHI3	3.79	0.788	0.549	
<b>Collaboration between tour operators and tourism destinations (DES)</b>				0.792
DES1	3.74	0.754	0.800	
DES2	3.73	0.751	0.818	
DES3	3.67	0.727	0.677	
<b>Collaboration between tour operators and tours operators (TOU)</b>				0.866
TOU1	3.39	0.788	0.660	
TOU2	3.40	0.889	0.872	
TOU3	3.42	0.847	0.867	
<b>Collaboration between tour operators and customers (CUS)</b>				0.749
CUS1	3.66	0.821	0.723	
CUS2	3.67	0.772	0.787	
CUS3	3.36	0.829	0.552	
<b>Supply chain performance (SCP)</b>				0.818
SCP1	3.93	0.654	0.747	
SCP2	3.92	0.758	0.652	
SCP3	3.87	0.705	0.791	
SCP4	3.67	0.750	0.588	
SCP5	3.42	0.842	0.685	
<b>Tour operator performance (TOP)</b>				0.855
TOP1	3.91	0.682	0.680	
TOP2	4.00	0.587	0.744	
TOP3	3.89	0.642	0.793	
TOP4	3.78	0.711	0.706	
TOP5	3.82	0.682	0.778	

Next, the study conducts EFA to test the convergent and discriminant validity of the scales in the research model. The test result proves that the statistical values are guaranteed. (1) The reliability of the observed variables is satisfactory, with the factor loading value higher than 0.5 (Hair et al., 1998). (2) The model suitability test receives a KMO value = 0.816 (Hair et al., 1998). (3) Bartlett's test on the correlation of observed variables meets the requirement with Sig. = 0.000 (Hair et al., 1998). Cumulative variance test = 67.9% higher than 50% (Anderson and Gerbing, 1988). These values show that the observed variables included in the model have high explanatory power. The seven factors formed from 25 observed variables are consistent with the scales in the proposed research model. After the EFA analysis, confirmatory factor analysis (CFA) is used to test the suitability of the research data. The test results are guaranteed as follows: Chi-square/df = 1,717 < 2 with P = 0.000 ≤ 0.05; TLI and CFI reach 0.911 and 0.925, respectively, all > 0.9; RMSEA = 0.055 < 0.08 (Anderson and Gerbing, 1988; Hair et al., 2014). This indicates that the model fits the market data.

The standardized regression weights of the scale are greater than 0.5, and the unstandardized regression weights are statistically significant, so the factors acquire convergent validity. Besides, the correlation coefficients between the elements are less than 1, and the standard deviations are less than 0.05. Therefore, the research factors receive discriminant validity. The composite reliability (Pc) values are satisfactory, with a minimum of 0.71. Although the average variance extracted from some scales are low ( $0.4 < P_{ve} < 0.5$ ), the Pc values of all scales are more significant than 0.6. Hence, the seven scales meet the requirement (Fornell and Larcker, 1981).

Table 4. CFA and SEM test results

Evaluating indicators	CFA	SEM	Comparative coefficient	Resources
$\chi^2$	432.685	449.081		Gerbing and Anderson (1988), Hair et al. (2014)
Df	252	265		
$\chi^2/df$	1.717	1.695	$\leq 2$	
P-value	0.000	0.000	$< 0.05$	
TLI	0.911	0.914	$\geq 0.9$	
CFI	0.925	0.924	$\geq 0.9$	
RMSEA	0.055	0.054	$\leq 0.08$	

Table 5. Analytical result summary

Factor	Number of observed variables	Composite Reliability (P <sub>c</sub> )	Average variance extracted (P <sub>ve</sub> )	Reference resources
Collaboration between tour operators and accommodation businesses (ACC)	4	0.71	0.45	Fornell and Larcker (1981)
Collaboration between tour operators and shipping companies (SHI)	4	0.73	0.47	
Collaboration between tour operators and tourism destinations (DES)	3	0.80	0.57	
Collaboration between tour operators and tours operators (TOU)	3	0.87	0.69	
Collaboration between tour operators and customers (CUS)	4	0.75	0.51	
Supply chain performance (SCP)	4	0.81	0.47	
Tour operator performance (TOP)	4	0.85	0.53	

**2. Research hypotheses test**

Structural equation modeling (SEM) is used to test the research hypotheses. The results of the analysis are in Figure 3 and Table 6. Based on Table 6, hypotheses H1, H2, and H3 are accepted with a 99% significance level. The relationship between factors is explained below.

**Hypothesis H1:** Collaboration positively affects tourism supply chain performance Table 5 shows that collaboration (COL) and tourism supply chain performance have a positive relationship, with a standardized

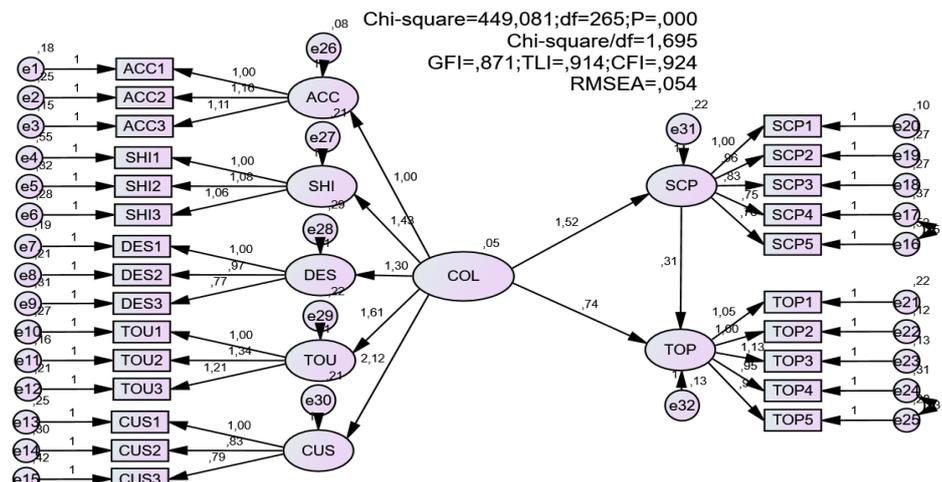


Figure 3. Model Fit SEM

coefficient is 0.575 and a statistical significance of  $p = 0.000$ . The result is consistent with studies by Narasimhan and Kim (2002), Srinivasan et al. (2011), Ali and Shukran (2016), Mofokeng and Chinomona (2019). This means that if a tour operator has good cooperation with other supply chain members (accommodation establishments, transportation companies, tourist destinations, other tour operators, or customers), the performance of the supply chain improves. For example, if the tour operator maintains close relationships, shares market information, develops products, and shares risks with other members, the supply chain performance will be enhanced.

Table 6. Research hypotheses test

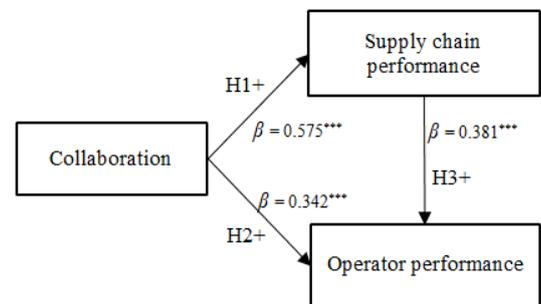
Relationship	Standardized			Standardized estimated value	Significance level	Hypothesis
	Estimated value	Standard error S.E	Critical ratio C.R			
SCP <-- COL	0.593	0.128	4.641	0.575	***	H1: accepted
TOP <-- COL	0.379	0.120	3.159	0.342	***	H2: accepted
TOP <-- SCP	0.410	0.108	3.814	0.381	***	H3: accepted

**Hypothesis H2:** Collaboration has a positive effect on the performance of tour operators. In this hypothesis, the standardized coefficient = 0.342 and the statistical significance  $p = 0.000$ . This demonstrates a positive relationship between collaboration and operator performance. The result is similar to studies by Simatupang and Sridharan (2004), Cao and Zhang (2011), Huo (2012), Dragan et al. (2015), Topolšek and Dragan (2016). The result points out the importance of supply chain collaboration to the performance of tour operators. As the collaboration grows, the supply chain operation ensures continuity (Piboonrungraj and Disney, 2009), limits risks (Golicic, 2003), and improves the operational efficiency of tour operators (Topolšek and Dragan, 2016).

**Hypothesis H3:** Supply chain performance positively affects the performance of tour operators. The analytical result shows a positive relationship between supply chain performance and operator performance, with the standardized coefficient = 0.381 and statistical significance  $p = 0.000$ . As supply chain performance improves, this represents better flexibility and responsiveness to customer requirements (Chen et al., 2004; Qrunfleh and Tarafdar, 2014). Therefore, the performance of enterprises participating in the supply chain raises (Sanchez and Perez, 2005, Qrunfleh and Tarafda, 2014). The ultimate purpose of supply chain management activities is to enhance the performance of its members (Li et al., 2006).

## CONCLUSION

The study has demonstrated a strong relationship between collaboration, tourism supply chain performance, and tour operator performance. The cooperation among members supports the tourism supply chain's performance, thereby improving tour operators' performance. The research results confirm the essential role of collaboration in the supply chain management strategy and prove that the close coordination between travel agencies benefits the tourism industry (Theuvsen, 2004). To conclude, it shows that tour operators must cooperate in the supply chain as it is critical in the supply chain management strategy. The research results provide an essential scientific basis for tourism supply chain managers and a basis for strategic planning to connect parties in the supply chain to improve the quality of the supply chain performance and business productivity. Besides, the research results have confirmed the importance of cooperation in supply chain management strategy. Especially in the context of the Covid-19 epidemic and the disruption of the tourism supply chain in Vietnam, the role of cooperation in the tourism supply chain becomes even more critical.



Note:  $\beta$  = path coefficient, \*\*\*  $p = 0.000$   
Figure 4. Mediation effect (Source: authors)

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