

Research on Travel Supply Chain Reliability based on GO Model

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Abstract

In the tourism supply chain, travel agencies at the core of the supply chain are responsible for the management, coordination and control of the entire supply chain. The instability of supply enterprises not only makes it difficult for travel agencies to establish a good image and create good benefits, but also affects the development of related enterprises to a large extent. In view of the supply chain reliability problems existing in the tourism industry, this paper takes Chongqing Youth Travel Agency as the research object, establishes six evaluation indicators including accommodation, transportation, catering, entertainment, shopping and service, uses the GO model to evaluate, analyzes the results, and puts forward feasible suggestions for the enterprise. It is hoped that it can resonate in the whole tourism industry, improve the reliability of the existing tourism supply chain, and realize the healthy and rapid development of China's tourism industry.

Keywords

Tourism Supply Chain; GO Model; Supply Chain Reliability; Travel Agency.

1. Introduction

With the development of the global economy and the increasing market demand, tourism as an important part of the service industry is developing rapidly, and the competition in the tourism industry has entered a new stage. Now it has been upgraded from the individual competition of tourism enterprises to the whole competition of tourism supply chain. As a complex supply chain system, tourism supply chain needs relatively high reliability as a guarantee. At the same time, considering that tourism is a service industry, it is a very relevant industry. By providing tourists with "food, accommodation, transportation, travel, shopping, entertainment" and other services and products to create value and gain benefits. According to the "barrel effect", high correlation often means low reliability. Due to the low mutual fungibility and compensability among the nodal enterprises in the tourism supply chain, the absence of any link may seriously damage the tourism supply chain, especially the core enterprises. According to reports, during the May Day Golden Week in 2022, there were many incidents of "tour guides abusing tourists and forcing shopping and consumption" in Yunnan, etc., and the concentrated appearance of these times exposed the order problems existing in the tourism market to a large extent. According to statistics, the platform received 587 complaints and reports in the month. Classified and summarized, in all effective complaints and reports, involving travel agencies and tour guides, shopping stores in tourist attractions, insurance, cruise companies, illegal one-day tour catering enterprises. The main reason is that the supply chain structure is not compact, there are many cooperation problems between enterprises, low efficiency, the overall level of competition is not strong, and there is a lack of leading force to coordinate and manage the supply chain. Among them, the ability of travel agencies, as core enterprises, to coordinate and communicate to promote the efficient operation of the tourism supply chain needs to be improved. Therefore, the reliability of each node enterprise and the connection reliability of each node enterprise determines the reliability of the entire tourism supply chain. To

effectively manage the tourism supply chain, it is necessary to evaluate and optimize the reliability of the tourism supply chain. Therefore, it is very important to improve the reliability of tourism supply chain under the current tourism background. In the tourism supply chain, travel agencies at the core of the supply chain are responsible for the management, coordination and control of the entire supply chain, such as: Accommodation, transportation, catering, shopping, entertainment, etc. The instability of these tourism service enterprises not only makes it difficult for travel agencies to establish a good image and create good benefits, but also affects the development of related enterprises to a large extent. Therefore, travel agencies and related enterprises in the tourism supply chain want to obtain sustained and long-term competitive advantages. The reliability of a relatively stable supply chain is needed as a guarantee.

Supply chain management, as a management method that emphasizes the cooperation of related enterprises in the chain, advocates the integration of various situations of all related enterprises and the integration of related functions of logistics planning, regulation and control from suppliers to end users in the supply chain as a management strategy and idea, with a view to improving the overall operation efficiency of the supply chain. Supply chain management regards each enterprise on the chain as a whole that cannot be split, so that each enterprise that operates and makes decisions independently on the chain can be integrated into a coordinated whole.

Theoretical research on the reliability of tourism supply chain. On the basis of studying the connotation of tourism supply chain, Zhang Fengling et al. proposed a tourism supply chain with travel agencies and travel websites as intermediaries and travel agencies as the core, built a tourism supply chain structure model, and analyzed in detail the four dimensions of tourism supply chain reliability, namely coordination reliability, relational reliability, structural reliability and supply chain flexibility. The reliability evaluation model of tourism supply chain is established.

Research on the influence index of tourism supply chain reliability. Liu Hao put forward the importance of reliability measurement and evaluation of tourism supply chain, and analyzed it. Finally, he put forward suggestions to improve the reliability of tourism supply chain in the aspects of strengthening supply chain management and establishing information platform. Wu Chun regards travel agencies as an important link in the supply chain, comprehensively considers the core enterprise operation, quality and other indicators, and builds a reliability index evaluation system to analyze the reliability of the tourism supply chain.

Research on the reliability evaluation method of tourism supply chain. Luo Yanchun, Lu Lin.

Starting from the core enterprise competitiveness, quality, flexibility and other influencing factors, grey theory is adopted. On the construction of the model, the reliability evaluation of the tourism supply chain of several tourism enterprises is carried out. Calculate. Zhang Yuemei et al. followed the tourism supply chain concept with tourism operators as the core. On this basis, fuzzy fault tree analysis method is used for qualitative and determination. The failure probability of each node in the tourism supply chain is calculated by combining the analysis of quantity. Identify weaknesses to ensure the normal operation of the supply chain.

2. Materials and Methods

2.1. Study Area

As a tourism enterprise established for many years, Chongqing Youth Travel Agency has developed a sound organizational structure after years of development. All departments are effectively connected to ensure the normal operation of the tourism enterprise. Its organizational structure is shown in Figure 1 below.

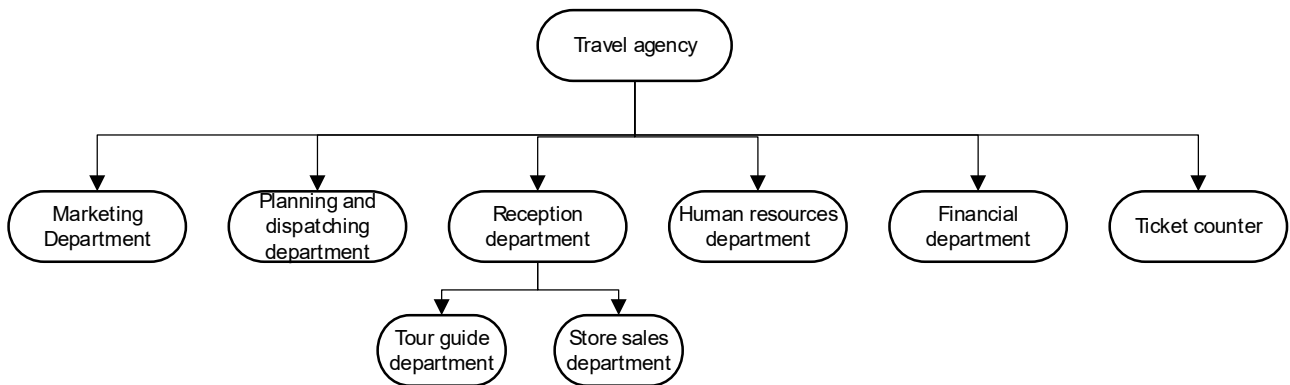


Figure 1. Chongqing youth travel Agency organization structure

The supply chain model of Chongqing Youth Travel Agency is a tourism supply chain model with travel agencies as the core. According to the different positions of related tourism enterprises in the supply chain, the tourism supply chain is divided into different levels. Catering, accommodation, transportation, scenic spots and other tourism service providers are in the upstream of the tourism supply chain; As the core, travel agencies are at the center of the tourism supply chain. Travel distributors and tourists are downstream in the supply chain. Chongqing Youth Travel Agency takes selling finished routes as its main business. This paper will take relevant service providers, Chongqing Youth Travel Agency and other route distributors (that is, travel agencies that purchase routes of other travel agencies as sales products, but do not design travel routes by themselves, and make profit by earning price difference) as research objects to study the reliability of tourism supply chain. The tourism supply chain structure of Chongqing Youth Travel Agency is shown in Figure 2.

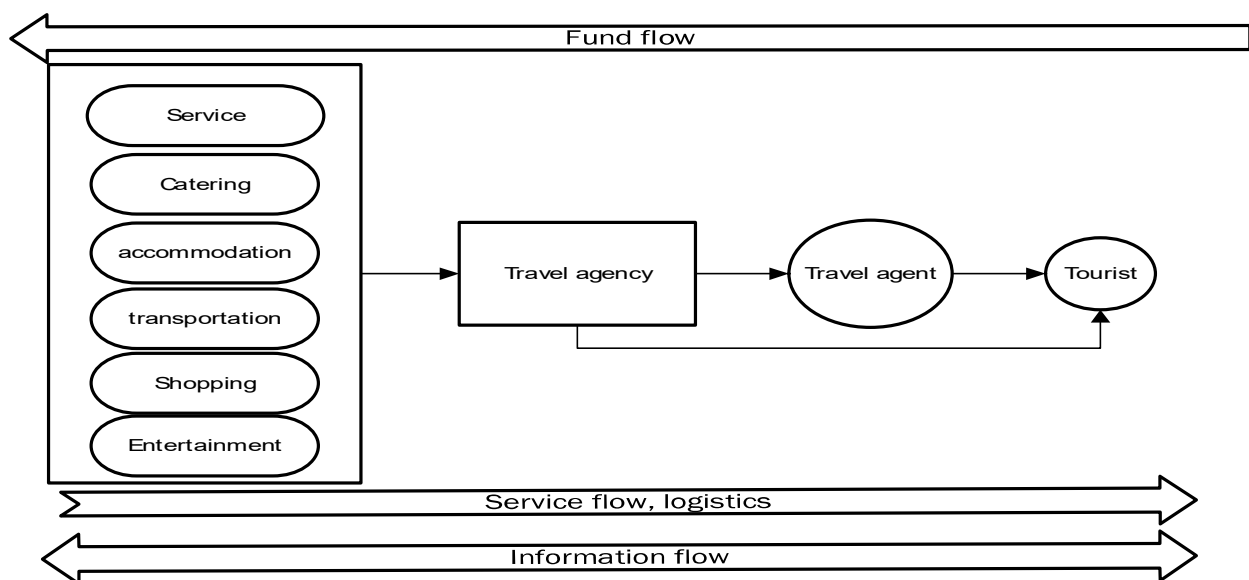


Figure 2. Travel agency supply chain structure

2.2. Influence Factors

2.2.1. Analysis of Reliability Factors of Tourism Supply Chain

Tourism supply chain is a relatively complex structure with leisure and entertainment functions. Tourism supply chain management That is, according to the needs of consumers, from the procurement of tourism services, production and design of tourism products and tourism product distribution Segment planning and control of tourism supply chain, involving service flow, information flow, capital flow, product flow, to achieve tourism The optimal

allocation of resources ultimately enables all enterprises in the supply chain to coordinate and improve tourism-related enterprises. The purpose of operating efficiency. On the basis of previous studies, this paper analyzes the current situation of the supply chain of Chongqing youth travel agencies by analyzing the five influencing factors of travel agency supply chain in terms of service reliability, information reliability, relationship reliability, travel agency operating ability and flexibility of travel supply chain [1].

2.2.2. Information Reliability

Whether the information involved in the cooperation with travel service providers and distributors can be well transmitted and shared is related to whether the loss caused by the delay of information transmission can be avoided. Therefore, information transmission and sharing is very important for travel agencies [2]. The information shared among travel agencies is basically shared through the network platform, and the travel agencies spontaneously update the information of travel-related resources provided by the enterprises at irregular times according to their own business needs [3,4]. The content of the information is also edited and responsible by the information publishing enterprises themselves. Try to give accurate answers to consumers' questions in the shortest possible time [5,6], but the process of conveying tourism product information needs to be repeatedly inquired and confirmed, which is bound to have a time difference, so that the conveyed information has a certain time lag, especially in the tourist season [7], the accuracy of information transmission will be relatively low, which has a certain impact on the order acquisition rate of travel agencies [8].

2.2.3. Relationship Reliability

Tourism enterprises form the whole supply chain of tourism products through mutual cooperation, and good relationship management plays a good role in guaranteeing the smooth progress of the whole chain of tourism supply chain [9]. Chongqing Youth Travel Agency and other related enterprises mainly maintain the interests of both parties by signing a single tour contract [10], even if there are long-term cooperation travel agencies, there are few habits of signing long-term cooperation contracts, which is a common industry habit in the tourism market [11].

2.2.4. Operation Capability of Travel Agency

In the tourism supply chain, travel agencies are in the core position. If their competitiveness is not strong, the supply chain will not be reliable for a long time. Business conditions require products to make quality, make new ideas [12,13]. At the same time, due to the increasingly fierce competition in the tourism market, the intangible characteristics of tourism products, and tourists pay much attention to the price factor, Chongqing youth travel agency focuses on quality and service, so the price will be relatively high [14,15], making Chongqing Youth Travel Agency does not have an advantage. The product in the tourism supply chain is a service, which is a special product, which is equally used in the purchase and sale. There is intangibility [16]. In the whole consumption process, it mainly involves the supervision of tour guides, because the level of tour guides' work is direct. It affects the satisfaction of tourists to tourism products and the reputation of travel agencies [17]. Therefore, the requirements for tour guides' qualifications and working ability are relatively strict. All tour guides are required to hold a certificate and have strict regulations on their work content and methods. In the whole trip, it is required to be serious and responsible, patiently answer tourists' questions, actively and calmly deal with emergencies in the trip, and protect the personal and property safety of tourists [18]; Humbly accept the opinions and requirements of tourists and feedback to travel agencies, assist in arranging tourist meetings, talks, etc [19]., and explicitly prohibit forced shopping; Conduct regular training and assessment for tour guides. In particular, the policy of full-time tour guides and part-time tour guides taking turns is generally adopted in the tourist peak season [20]. There is a great competition among tour guides. For the sake of profit, some

tour guides will change the itinerary without authorization or add shopping points or even verbally attack tourists who do not buy much, which leads to problems in the whole trip and difficulties in the consumption of tourism products[21]. It not only affects the quality of the whole tourism product, but also has an important impact on the reputation of travel agencies.

2.2.5. Flexibility of Supply Chain

The flexibility of tourism supply chain mainly includes time flexibility and product flexibility, which measures the flexibility of tourism supply chain enterprises to obtain and maintain competitive advantages in the face of rapidly changing customer demands in the highly competitive market[22]. For this principle, tourists are generally accepted and understood, and there are few disputes for this reason. For the flexible aspects of the product, if the tourist decides to change the itinerary temporarily during the consumption process, the tour guide will handle it according to his own authority. If it is within the authority and the requirements are reasonable, timely coordination will be made to adjust the itinerary. If it exceeds the authority specified by the travel agency, the travel agency will be contacted in time to deal with it.

Table 1. reliability index of travel supply chain in travel agencies

index	Main influencing factor
Information reliability(I)	Accuracy(I1)
	Timeliness(I2)
	Sharing degree(I3)
Relational reliability(R)	Employee stability(R1)
	Financial delivery success rate(R2)
	Coordination problem ability(R3)
	Supply chain enterprise cooperation(R4)
Supply chain flexibility(S)	Distribution flexibility(S1)
	Delivery flexibility(S2)
	Production flexibility(S3)
Travel agency operation capability(T)	Solving ability(T1)
	The average quality of employees(T2)
	Tourism product satisfaction(T3)
	Average tour guide capacity(T4)
	Information update(T5)
	Committed service(T6)

Considering that the travel agency supply chain is a large and complex system with relatively obvious off-peak and off-peak seasons, the data of Chongqing Youth Travel Agency from March 2022 to October 2022 is selected for quantitative calculation and statistical analysis. Part of the data is based on the original statistical information of travel agencies, and part of the data is investigated through questionnaires. 200 tourists were randomly selected for the survey, and the summary of the survey results is shown in Table 2. Each reliability index value is obtained by using the collected data and taking reasonable processing.

Table 2. Success rate of each data item

	index	Mar.	Ari.	May.	Jun.	Jul.	Aut.	Sep.	Oct.	average
A1	I	1	1	1	1	1	1	1	1	1
	R	1	1	1	1	1	1	0.992	1	0.999
	S	0.921	0.945	1	1	1	1	1	1	0.983
A2	I	1	1	1	1	1	1	1	1	1
	R	1	1	1	1	1	1	1	1	1
	S	1	1	1	1	1	1	1	1	1
A3	I	1	1	1	1	1	1	1	1	1
	R	1	1	1	1	1	1	0.947	0.979	0.991
	S	0.992	1	1	1	1	1	1	0.934	0.991
A4	I	1	1	1	1	1	1	1	1	1
	R	0.998	0.934	1	1	1	1	1	1	0.932
	S	0.997	1	1	1	1	1	1	0.995	0.992
A5	I	1	1	1	1	1	1	1	1	1
	R	0.879	0.913	1	1	1	1	1	1	0.803
	S	1	1	1	1	1	1	1	1	1
A6	I	0.913	0.934	0.985	1	1	1	1	1	0.834
	R	1	1	1	1	1	1	1	1	1
	S	1	1	1	1	1	1	1	1	1
B	T	1	1	1	1	0.982	1	1	1	0.982
C	I	0.998	1	1	1	1	1	1	1	0.998
	R	0.975	1	1	1	1	1	1	1	0.975
	S	1	1	1	1	1	1	0.996	1	0.996

3. Construct Travel Agency Supply Chain System GO Model

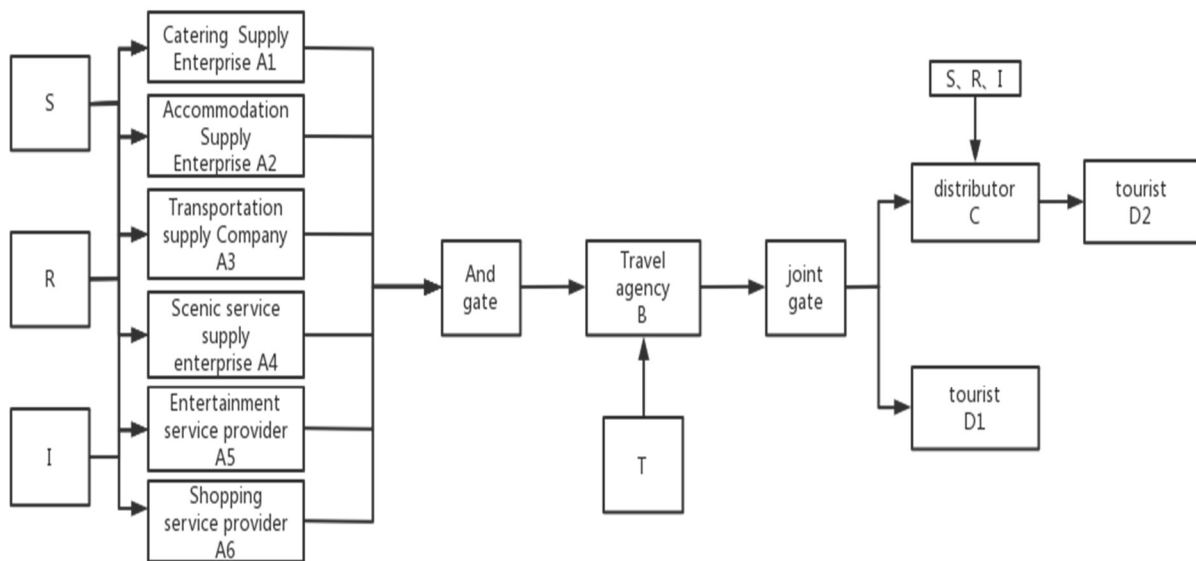


Figure 3. travel agency supply chain system GO model

The travel supply chain system of Chongqing Youth Travel Agency is carefully analyzed. Based on the reliability analysis of the travel supply chain of Chongqing Youth Travel Agency based

on the GO method, the reliability evaluation index of the travel supply chain of Chongqing Youth Travel Agency determined above is regarded as the premise that each unit can run smoothly[23,24]. Only when all the reliability indicators meet the standard can the relevant enterprises of the tourism supply chain operate normally, so it can avoid the study of suppliers, Chongqing Youth travel agencies and distributors in the tourism supply chain as a single and simple component unit, so that the GO model is more conducive to the study of the reliability of the tourism supply chain. The GO model is shown in Figure 3.

4. Quantitative Analysis of GO Chart

Based on the above data, GO method is adopted to obtain the success probability of each signal flow according to the operators involved in the GO chart and their algorithms in the supply chain of Chongqing Youth Travel Agency, and the calculation results are shown in Table 3.

Table 3. GO method calculation table

Signal flow number	Probability of success
A1	0.982
A2	1
A3	0.982
A4	0.924
A5	0.803
A6	0.834
And gate	0.597
B	0.982
C	0.969
D1	0.586
D2	0.568
total	0.577

According to the above calculation, the reliability of each link of the tourism supply chain and the overall reliability of the supply chain of Chongqing Youth travel agencies are estimated to be 0.577. We can find that the reliability of the travel supply chain of Chongqing youth travel agencies is at a medium level, and there are still many weak links.

5. Conclusion

The independent reliability of catering, accommodation and transportation are 0.982, 1 and 0.982 respectively, which are above the medium level. The independent reliability of service, entertainment and shopping are 0.924, 0.803 and 0.834 respectively. After the integration of six parts, the reliability is low, and the probability of success is only 0.597. Analysis of the reasons may exist in travel, in a sense, is consumption. However, in order to attract users to travel, the travel society lowers the threshold of customers, and guides users to consume in various ways, such as consumption, shopping stores, two consumption, self-payment, and scene stores. To some extent, it destroys the purpose of tourists' travel itself, and naturally brings negative effects to the industry. Many scenic restaurants or shopping stores, not only the price is high quality is also poor, many of these shops in many places are planning to "pit one is one" mentality to operate, because many tourists, may come once in a lifetime, so that greatly increase their rights protection costs, so that many black merchants can be profitable. In the service industry, there are hidden rules of some industries in the upper and lower source

resources, incomplete destination information, and different publicity standards, resulting in incomplete information in the tourism industry, and consumers can not fully obtain the final consumption details, and the goods are not on the board.

In view of the above problems, the following solutions are proposed. First, standardize the business behavior of travel agencies. Travel agencies should strictly implement the "one group, one report" system and comply with inbound and outbound group tourism management policies; It is necessary to sign tourism contracts with tourists in a standardized manner, promote the application of electronic contracts, and not change the itinerary without authorization; To use qualified suppliers, choose the usual consumption places of local residents, the quality of goods sold should be consistent with the price, smooth return channels; Travel agencies and travel agencies entrusted by them should be clear about their responsibilities and avoid buck-passing. The second is to improve the quality of tour guide services. All localities should strictly regulate the professional behavior of tourist guides and purify the professional environment of tourist guides; Travel agencies and other employers are required to strengthen internal management, pay labor remuneration to tour guides according to law, and shall not collect unreasonable fees such as deposits and management fees; Strengthen tour guide business training. The third is to crack down on market chaos such as "unreasonable low price Tours". All localities should maintain a high-pressure situation on the surface, focusing on cracking down on "unreasonable low-price Tours", tour guides forcing or disguised forced shopping, selling goods, unauthorized operation of travel agency business and other behaviors; We will investigate and punish a number of violations of laws and regulations that seriously disrupt market order, and publish and expose typical cases. Fourth, we will enrich the means of industry supervision. Promote the credit supervision of travel agencies, focusing on the supervision of untrustworthy enterprises and high-risk enterprises; Comprehensive use of administrative interviews, administrative guidance, tourist satisfaction survey and other means to strengthen the operation of travel agencies and tour guides practice supervision; Make good use of the functions of the national tourism supervision service platform. Fifth, we will properly handle public opinion on travel-related disputes. For tourist guides who have strong reactions from tourists and the society, such problems as abusing tourists, cheating and forcing shopping, and even abandoning the group in the middle of the tour will be dealt with strictly and expeditiously according to law and regulations; It is necessary to establish a public opinion monitoring and rapid response mechanism, smooth the channels for reporting complaints, and improve the efficiency of handling.

References

- [1] Zhang X, Song H, Huang G Q. Tourism supply chain management: A new research agenda[J]. *Tourism management*, 2009, 30(3): 345-358.
- [2] Ling R. A review of Tourism Supply Chain based on the Perspective of sustainable development[J]. *J Econ Sustain Develop*, 2015, 6: 128-132.
- [3] Szpilko D. Tourism Supply Chain—overview of selected literature[J]. *Procedia Engineering*, 2017, 182: 687-693.
- [4] Tapper R, Font X. Tourism supply chains[J]. Report of a desk research project for the travel foundation, 2004: 23.
- [5] Chen D. Innovation of tourism supply chain management[C]//2009 International Conference on Management of e-Commerce and e-Government. IEEE, 2009: 310-313.
- [6] Guo X, He L. Tourism supply-chain coordination: The cooperation between tourism hotel and tour operator[J]. *Tourism Economics*, 2012, 18(6): 1361-1376.
- [7] Font X, Tapper R, Schwartz K, et al. Sustainable supply chain management in tourism[J]. *Business strategy and the environment*, 2008, 17(4): 260-271.

- [8] Slusarczyk B, Smolag K, Kot S. The supply chain of a tourism product[J]. *Актуальні проблеми економіки*, 2016 (5): 197-207.
- [9] Babu D E, Kaur A, Rajendran C. Sustainability practices in tourism supply chain: Importance performance analysis[J]. *Benchmarking: An International Journal*, 2018, 25(4): 1148-1170.
- [10] Piboonrungrroj P, Disney S M. Tourism supply chains: a conceptual framework[J]. *Tourism III: Issues in PhD Research*, 2009, 132: 132-149.
- [11] Ghaderi Z, Hatamifar P, Khalilzadeh J. Analysis of tourist satisfaction in tourism supply chain management[J]. *Anatolia*, 2018, 29(3): 433-444.
- [12] Sigala M. A supply chain management approach for investigating the role of tour operators on sustainable tourism: the case of TUI[J]. *Journal of cleaner production*, 2008, 16(15): 1589-1599.
- [13] Palang D, Tippayawong K Y. Performance evaluation of tourism supply chain management: the case of Thailand[J]. *Business Process Management Journal*, 2019, 25(6): 1193-1207.
- [14] Suleiman M A. The impact of tourism supply chain on sustainable performance in sub-Saharan Africa: evidence from Tanzania[J]. *Management of Environmental Quality: An International Journal*, 2023, 34(2): 492-510.
- [15] Suleiman M A. The impact of tourism supply chain on sustainable performance in sub-Saharan Africa: evidence from Tanzania[J]. *Management of Environmental Quality: An International Journal*, 2023, 34(2): 492-510.
- [16] Simatupang T M, Sridharan R. The collaboration index: a measure for supply chain collaboration[J]. *International journal of physical distribution & logistics management*, 2005, 35(1): 44-62.
- [17] Lin C T, Chiu H, Chu P Y. Agility index in the supply chain[J]. *International Journal of production economics*, 2006, 100(2): 285-299.
- [18] Sardesai S, Klingebiel K. Maintaining viability by rapid supply chain adaptation using a process capability index[J]. *Omega*, 2023, 115: 102778.
- [19] Said R, Joseph C, Rahmat M, et al. Development of supply chain management sustainability index (SCMsi)[J]. *Int. J. Supply Chain Manag*, 2020, 9: 902-907.
- [20] Liu W, Wang S, Wang J. Evaluation method of path selection for smart supply chain innovation[J]. *Annals of Operations Research*, 2021: 1-27.
- [21] Wang K, Yan F, Zhang Y, et al. Supply chain financial risk evaluation of small-and medium-sized enterprises under smart city[J]. *Journal of advanced transportation*, 2020, 2020: 1-14.
- [22] Mahadevan K, Elias A, Samaranayake P. Supply chain performance measurement through collaborative effectiveness: an Asia-Pacific perspective[J]. *International Journal of Productivity and Performance Management*, 2023, 72(6): 1667-1687.
- [23] Zhou G, Zhu L. Distribution Characteristics and Influencing Factors of Supply Chain Innovation Firms: A Case Study of Zhejiang Province[J]. *Sustainability*, 2022, 14(4): 2210.
- [24] Buurman J. *Supply chain logistics management*[J]. McGraw-Hill2002, 2002.