

# EXAMINING THE IMPACT OF CUSTOMER PARTICIPATION ON THE INNOVATION PERFORMANCE OF TOURISM CULTURAL AND CREATIVE PRODUCTS

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## Abstract

In the dynamic tourism industry, innovation is critical for competitiveness. This study addresses the dearth of research on internalizing external knowledge in Chinese tourism enterprises. With a focus on the integration of cultural and creative industries with tourism, the study explores the relationship between customer participation, knowledge co-creation, absorptive capacity, and innovation performance in domestic tourism cultural and creative enterprises. This research investigates how customer participation and knowledge co-creation impact the absorptive capacity and innovative performance of Chinese tourism cultural and creative enterprises. By examining these factors at the organizational level, the study aims to uncover their collective influence on innovation in the evolving cultural and creative tourism sector. Targeting tourism cultural and creative enterprises in Inner Mongolia, Beijing, and Hebei Province, 495 valid responses from middle and senior managers were analyzed using Structural Equation Model (SEM). The study employs both visit surveys and electronic questionnaires to ensure a comprehensive understanding of customer participation, knowledge co-creation, absorptive capacity, and innovation performance. The study reveals a positive impact of customer participation on knowledge co-creation, with varied dimensions of customer participation influencing knowledge co-creation differently. However, direct effects of customer participation on innovation performance are not significant. Knowledge co-creation itself does not directly impact innovation performance; instead, absorptive capacity plays a pivotal role in mediating this relationship. This research contributes nuanced insights into innovation dynamics within Chinese tourism cultural and creative enterprises. By highlighting the crucial role of absorptive capacity in translating co-created knowledge into tangible innovations, the study provides valuable guidance for practitioners and policymakers navigating the intersection of cultural and creative industries with the tourism sector. The findings align with national policies promoting the synergistic development of culture and the tourism industry, fostering a deeper understanding of innovation in this evolving landscape.

**Keywords:** Customer Participation, Knowledge Co-Creation, Absorptive Capacity, Tourism Cultural and Creative Products, Innovative Performance

## 1. INTRODUCTION

The driving force behind innovation in the tourism industry is the utilization of innovation as a crucial driver for its efficient development, thereby enhancing its competitiveness. Many successful experiences in innovation in foreign tourism businesses have been documented. Among them, research on maximizing the effectiveness of external knowledge has been extensively explored. However, in domestic research, there is relatively little focus on the absorption, sharing, transformation, and creation of external knowledge within tourism

enterprises. Research on innovation in Chinese tourism enterprises still predominantly centers on closed innovation focused on the enterprises themselves, leaving ample room for innovation studies.

Currently, national policies emphasize the convergence and development of the cultural and creative industries with the tourism industry. This is achieved by enriching the depth of the tourism experience through cultural enhancements and utilizing the tourism experience as a vehicle for cultural exchange and development, thereby achieving the synergistic development of culture and the tourism industry.

The combination of tourism culture and creative products holds immense potential to enhance the value of the tourism experience, providing a promising direction for innovation in tourism enterprises. Rich knowledge and unique creativity contribute to better outcomes in the fusion of tourism culture and creative products. Incorporating knowledge co-creation into research on tourism culture and creative products will have a highly positive impact. The theories of open innovation and customer innovation can provide a theoretical foundation for this research.

## **2. RESEARCH DESIGN**

This article studies the relationship between customer participation, knowledge co creation, absorption capacity, and innovation performance of tourism cultural and creative enterprises. In the selection of questionnaire samples, tourism cultural and creative enterprises in Inner Mongolia, Beijing, and Hebei Province, China, which have been more active in entrepreneurial activities in recent years, were selected and distributed survey questionnaires.

Because customer participation, knowledge co creation, absorption capacity, and innovation performance studied in this article are basically organizational level research variables, middle and senior managers of enterprises were selected for investigation. This is because middle and senior managers of enterprises can have a relatively accurate and comprehensive understanding and grasp of customer participation, knowledge co creation, absorption capacity level, and innovation performance at the organizational level, thereby ensuring the effectiveness of the questionnaire survey. The specific survey targets for this study are senior managers, middle managers, department heads of research and development, technology, sales, and other departments in enterprises.

In addition, this article focuses on emerging tourism cultural and creative enterprises, and the distribution and collection of questionnaires mainly take two forms. The first type is a visit survey, mainly targeting enterprises in Beijing. With the assistance of relevant personnel, the researchers had face-to-face conversations with the middle and senior managers of the surveyed enterprises and asked them to fill out the questionnaire on the spot, and then promptly collect it.

The second method is to use the Question Star platform software to create an electronic version of the survey questionnaire, which clearly explains the purpose and questions of the research, the purpose of the data, and confidentiality commitments. At the same time, the specific explanations of the questions are indicated in the remarks in the question table column, and

sentences that may be difficult to understand are explained. Then, relevant personnel are asked to fill in the answers through online tools such as email, WeChat, and QQ.

At the same time, during the questionnaire filling process, the investigators communicate with the respondents over the phone to timely understand their understanding of the questions, and provide timely answers to any questions or issues that may arise during the questionnaire filling process, ensuring good quality of questionnaire filling. Based on the optimal sample size required for structural equation modeling analysis, we mainly collected 495 valid questionnaires and conducted data analysis using Structural Equation Model (SEM).

### **3. POSITIVE RESEARCH**

We employed Partial Least Squares (PLS) modeling and used SmartPLS 4 as a statistical tool to examine the measurement and structural models.

#### **3.1 Reliability and Validity Analysis**

Firstly, for the measurement model, we assessed the loadings, average variance extracted (AVE), and composite reliability (CR). Loading values should be  $\geq 0.5$ , AVE should be  $\geq 0.5$ , and CR should be  $\geq 0.7$ . AVE values are all above 0.5, and CR values are all above 0.7. The loadings are also acceptable, with only one or two loadings below 0.708 (Hair et al., 2019).

Since we have 2 second-order structures, namely customer participation and knowledge co-creation, as shown in Table 4.3, we also assessed the effectiveness and reliability of the second-order structures. The second-order measurements are effective and reliable as well.

Next, we utilized the Discriminant Validity assessment based on the HTMT (Heterotrait-Monotrait) standard proposed by Henseler et al. (2015) and updated by Franke and Sarstedt (2019). HTMT values should be  $\leq 0.90$ . Our variable HTMT values are all below  $\leq 0.90$ .

Therefore, we can conclude that respondents perceive these 7 structures as distinct. The combination of these two validity tests indicates that the measurement items are both effective and reliable.

#### **3.2 Structural Model**

As recommended by Hair et al. (2017) and Cain et al. (2017), we evaluated multivariate skewness and kurtosis. The results indicate that the collected data is not multivariately normal, with Mardia's multivariate skewness ( $\beta=5.115$ ,  $p<0.01$ ) and Mardia's multivariate kurtosis ( $\beta=62.566$ ,  $p<0.01$ ). Therefore, following the suggestion of Hair et al. (2019), we reported path coefficients, standard errors, t-values, and p-values for the structural model using bootstrapping with 5000 resampled samples.

**Table 1: Hypothesis Testing Direct Effects**

Hypothesis	Relationship	Std Beta	Std Error	t-values	p-values	BCI LL	BCI UL	f <sup>2</sup>	VIF
H1	customer participation -> knowledge co creation	0.927	0.015	63.402	0.000	0.894	0.952	6.153	2.102
H2	customer participation -> innovation performance	0.062	0.033	0.814	0.416	0.768	0.898	0.004	4.092
H3	knowledge co creation -> innovation performance	0.034	0.123	0.253	0.800	0.518	0.995	0.001	3.311
H4	knowledge co creation -> absorptive capacity	0.884	0.110	8.025	0.000	0.650	1.076	1.130	1.000
H5	customer participation -> absorptive capacity	0.071	0.028	0.614	0.539	0.826	0.936	0.007	1.000
H6	absorptive capacity -> innovation performance	0.840	0.107	7.868	0.000	0.654	1.068	0.497	1.000

**Table 2: Hypothesis Testing Indirect Effects**

Hypot hesis	Relationship	Std Beta	Std Error	t-values	p-values	BCI LL	BCI UL
H7	knowledge co creation -> absorptive capacity -> innovation performance	0.743	0.148	5.026	0.000	0.466	1.041
H8	customer participation -> knowledge co creation -> innovation performance	0.032	0.126	0.253	0.800	-0.245	0.247
H9	customer participation -> absorptive capacity -> innovation performance	0.060	0.096	0.622	0.534	-0.121	0.255

Note: We use 95% confidence interval with a bootstrapping of 5,000

**(1) Direct Effects**

According to the study by Hair et al. (2019), a model's R<sup>2</sup> values of 0.75, 0.50, and 0.25 indicate strong, moderate, and weak explanatory power, respectively. Bamgbade et al.'s (2018) research suggests that Q<sup>2</sup> values of 0.00, 0.25, and 0.50 represent small, moderate, and large predictive capabilities of the model, respectively. Firstly, we tested the impact of three predictive factors on innovation performance, with an R<sup>2</sup> of 0.862 (Q<sup>2</sup>=0.707). This suggests that all three

predictive factors explain 86.2% of the variance in innovation performance. Customer participation ( $\beta=0.062$ ,  $p=0.416$ ), knowledge co-creation ( $\beta=0.034$ ,  $p=0.800$ ), and absorptive capacity ( $\beta=0.840$ ,  $p=0.000^*$ ) were examined. Customer participation and knowledge co-creation did not show significance on innovation performance, rejecting hypotheses H2 and H3. Knowledge co-creation demonstrated a positive correlation with innovation performance, and the T-value exceeded the standard 1.96, supporting hypothesis H6. Next, we tested the impact of customer participation on knowledge co-creation, with an  $R^2$  of 0.860 ( $Q^2=0.859$ ). This indicates that customer participation explains 86.0% of knowledge co-creation. Customer participation ( $\beta=0.927$ ,  $p=0.000^*$ ) provided support for H1. We also examined the impact of knowledge co-creation and customer participation on absorptive capacity, with an  $R^2$  of 0.903 ( $Q^2=0.792$ ). This suggests that knowledge co-creation and customer participation explain 90.3% of absorptive capacity. Knowledge co-creation ( $\beta=0.884$ ,  $p=0.000^*$ ) showed a significant positive correlation with innovation performance, with a T-value exceeding the standard 1.96, supporting H4. Customer participation ( $\beta=0.071$ ,  $p=0.539$ ) did not show significance on innovation performance, rejecting hypothesis H5.

## (2) Indirect Effects

To test the mediation hypothesis, we followed the recommendation of Preacher and Hayes (2004; 2008) by assessing indirect effects through bootstrapping. If the confidence interval does not straddle 0, then we can conclude that there is a significant mediation effect. As shown in Table 6, knowledge co-creation has a significant positive impact on innovation performance through absorptive capacity ( $\beta=0.743$ ,  $p=0.000^*$ ), supporting hypothesis H7. The 95% bias-corrected confidence interval does not cross 0, confirming our findings. However, customer participation does not have a significant impact on innovation performance through knowledge co-creation ( $\beta=0.032$ ,  $p=0.800$ ), and customer participation does not have a significant impact on innovation performance through absorptive capacity ( $\beta=0.060$ ,  $p=0.534$ ). Therefore, hypotheses H8 and H9 are not supported.

## 3.3 PLS-Predict

According to Table 3, all errors in the PLS model are lower than those in the LM model, leading us to conclude that our model has strong predictive ability.

**Table 3: PLS-Predict**

	PLS	LM		
Item	RMSE	RMSE	PLS-LM	Q <sup>2</sup> _predict
absorptive capacity	0.461	0.476	-0.015	0.792
innovation performance	0.547	0.548	-0.001	0.707
knowledge co creation	0.380	0.444	-0.064	0.859

## 4. RESULTS

### 4.1 SmartPLS4 Results

#### 4.1.1 Impact of Customer Participation on Knowledge Co-Creation – Discussion of Results

The results of this study indicate that the three dimensions of Customer Participation—Information sharing, Responsible behavior, and Emotional interaction—all positively influence Knowledge Co-Creation (Embedded knowledge co-creation, Alliance-based knowledge co-creation, and Knowledge co-creation environment). This partially validates and complements the research of Yang et al. (2020), Barnes et al. (2020), Ylirenko et al. (2008), among others. Analyzing the path coefficients, the impact of Information sharing on Embedded knowledge co-creation, Alliance-based knowledge co-creation, and Knowledge co-creation environment is 0.068, 0.109, and 0.068, respectively. Responsible behavior's impact on Embedded knowledge co-creation, Alliance-based knowledge co-creation, and Knowledge co-creation environment is 0.268, 0.243, and 0.296, respectively. Emotional interaction's impact on Embedded knowledge co-creation, Alliance-based knowledge co-creation, and Knowledge co-creation environment is 0.603, 0.594, and 0.597, respectively. It is evident that the degree of influence on Embedded knowledge co-creation, Alliance-based knowledge co-creation, and Knowledge co-creation environment follows an increasing trend for Information sharing, Responsible behavior, and Emotional interaction.

This suggests that different dimensions of Customer Participation have varying impacts on knowledge co-creation. When Customer Participation involves deep emotional interactions rather than surface-level communication, the willingness and experiential value of both parties significantly increase (Rasoolimanesh et al., 2020). On one hand, customers are more willing to provide information about their needs, creativity, and emotions to the company. On the other hand, in-depth Customer Participation behavior stimulates more sharing by the company, including information about newly developed products and creative interpretations of destination cultures. Therefore, in a favorable Knowledge Co-Creation environment, whether emphasizing user-driven Embedded knowledge co-creation or company-driven Alliance-based knowledge co-creation, higher levels of Customer Participation depth have a more favorable impact on the creation of new knowledge.

#### 4.1.2 Impact of Customer Participation on Innovation Performance of Tourism Cultural and Creative Products – Discussion of Results

The study results indicate that the three dimensions of Customer Participation do not have a significant direct impact on the innovation performance of tourism cultural and creative products. Possible reasons include:

- 1) Process Perspective: From a process perspective, Bogers et al. (2020) suggest that the essence of Customer Participation in business innovation starts with sharing behavior. It integrates, utilizes, and accumulates user-shared knowledge with the company's own knowledge, creating new knowledge that is cleverly integrated into products. This

enhances the fit between the product and the market, leading to outstanding innovation performance. This suggests that Customer Participation often cannot directly influence the innovation performance of company products. Instead, it undergoes a complex process of continuous processing, integration, and looping, thereby significantly influencing product innovation performance.

- 2) **User Capability Perspective:** From a user capability perspective, Von Hippel (1986) introduced the concept of lead users. Compared to ordinary users, lead users are often more participative and committed, consistently bringing professional knowledge to a company's innovation activities, driving product innovation (Linda et al., 2019; Wang et al., 2019). However, these users are often scarce (Lüthje, 2020), and their effects are challenging to manifest in statistical analysis due to their scarcity.
- 3) **Enterprise Capability Perspective:** From an enterprise capability perspective, some scholars argue that the level of a company's own technological capabilities is also an important factor influencing the innovation performance of Customer Participation companies (Cui and Wu, 2018). Sinan (2019) believes that tourism companies constitute a unique group distinct from other service industries, with the unique "innovation context" characterized by resource constraints, short opportunity windows, and high business risk intensity. The unique nature of the tourism industry, where companies are generally small and have a low survival rate, is their basic destiny. As tourism cultural and creative enterprises share similar characteristics with tourism companies, being small in scale and young may mean that they lack the sufficient capability to provide necessary technical support to users.

#### **4.1.3 Impact of Knowledge Co-Creation on Innovation Performance of Tourism Cultural and Creative Products – Discussion of Results**

This study indicates that Knowledge Co-Creation (Embedded knowledge co-creation, Alliance-based knowledge co-creation, and Knowledge co-creation environment) does not have a significant impact on the innovation performance of tourism cultural and creative products. Embedded and Alliance-based knowledge co-creation are divided based on the different logics of knowledge flow. Embedded knowledge co-creation follows the logic of "from external to internal" knowledge flow, while Alliance-based knowledge co-creation follows the logic of "from internal to external" knowledge flow. Jiang et al. (2020) suggest that Embedded knowledge co-creation and Alliance-based knowledge co-creation play a continuous intermediary role in multi-subject participation and product innovation performance. These studies indicate that Embedded knowledge co-creation is more likely to occur than Alliance-based knowledge co-creation, and there may even be a sequential relationship between them. Alliance-based knowledge co-creation imposes higher requirements on enterprises, requiring them to have higher knowledge absorption and integration capabilities, and its occurrence is a "complex" process.

The subjects of this study, tourism cultural and creative enterprises, are mostly small and medium-sized enterprises that have been established for a short period. Single knowledge co-creation poses certain challenges and complexities. Therefore, for tourism cultural and creative enterprises, knowledge co-creation may not have a direct significant impact on the innovation performance of tourism cultural and creative products. It may require some intermediary effects to facilitate its influence.

#### 4.1.4 Mediating Effect of Knowledge Co-Creation – Discussion of Results

The three dimensions of Customer Participation (Information sharing, Responsible behavior, Emotional interaction) do not have a significant mediating effect on the relationship between Knowledge Co-Creation (Embedded knowledge co-creation, Alliance-based knowledge co-creation, and Knowledge co-creation environment) and the innovation performance of tourism cultural and creative products. Hypothesis H8 is not supported, and possible reasons include:

- 1) As emphasized earlier, Knowledge Co-Creation places higher demands on the extent of Customer Participation (Bai et al., 2019; Li et al., 2018; Jiang et al., 2020). The Information sharing stage, which is at a lower level of Customer Participation, may not meet the knowledge requirements of Knowledge Co-Creation, especially in the knowledge demand phase of Alliance-based knowledge co-creation, resulting in a non-significant mediating effect.
- 2) The characteristics of small scale and youthfulness of tourism cultural and creative enterprises in China (Sinan, 2017) may lead many enterprises to have a limited grasp of Knowledge Co-Creation. This is a significant factor in the non-significant mediating effect of Knowledge Co-Creation, especially Alliance-based knowledge co-creation, as an intermediary variable.

#### 4.1.5 Mediating Effect of Absorptive Capacity – Discussion of Results

- 1) Absorptive capacity plays a complete mediating role in the impact of Knowledge Co-Creation on the innovation performance of tourism cultural and creative products (Hypothesis H7 is supported). From the path coefficients, the path coefficients for the routes  $EK \rightarrow AC \rightarrow IP$ ,  $AK \rightarrow AC \rightarrow IP$ ,  $KE \rightarrow AC \rightarrow IP$  are 0.189, 0.229, and 0.375, respectively. It is evident that the mediating effect of Knowledge Co-Creation environment is greater, followed by Alliance-based knowledge co-creation and Embedded knowledge co-creation. The reason may be that Knowledge Co-Creation follows the logic of "from internal to external" (Chesbrough and Crowther, 2018). It involves the output of internal knowledge by the company, effective integration with the knowledge of external entities, and the creation of new knowledge. This indicates that the knowledge generated by Knowledge Co-Creation is often more from the company's existing internal knowledge. With enhanced absorptive capacity, the company can more easily integrate, transform, and utilize this knowledge to promote the improvement of innovation quality (Yuan et al., 2021). Therefore, absorptive capacity has a complete mediating effect on the relationship between Knowledge Co-Creation and the innovation performance of tourism cultural and creative products.

- 2) Absorptive capacity does not have a significant mediating effect on the impact of Customer Participation on the innovation performance of tourism cultural and creative products (Hypothesis H9 is not supported). Due to the characteristics of tourism cultural and creative enterprises, their interactions with users mainly involve "simple" Embedded knowledge co-creation. Knowledge created through Alliance-based knowledge co-creation is minimal. Therefore, the strength of absorptive capacity will not have a significant impact on the relationship between Customer Participation and the innovation performance of products.

#### **4.2 Nvivo Results**

While conducting PLS-SEM modeling analysis, we purposefully interviewed 8 corporate executives, using an open interview format to record their interview content, and analyzed their conversations using Nvivo software.

Through data analysis, we found that the respondents mainly have the following views:

- 1) Customer Participation is crucial for innovative product design, as it can enhance the dimensions of information acquisition and promote enterprise innovation. Because obtaining more dimensions of information makes it easier to generate new ideas and new ideas. At the same time, it will also provide feedback on market demand for the company, promoting the effectiveness of innovative solutions.
- 2) Innovation is the vitality of enterprises, and knowledge co creation is an efficient way of innovation. Knowledge co creation has great benefits in reducing a company's operational efficiency, reducing costs, and improving results efficiency. For example, cultural and creative products have gained knowledge from different levels through knowledge co creation. Properly expressing the characteristics of this cultural and creative product. On this basis, we will incorporate our company's innovative ideas and generate a cultural and creative innovation product that meets both historical background and public aesthetic needs. The most important thing is to effectively promote the historical significance and influence of this cultural and creative product.
- 3) Customer Participation and knowledge co creation should be combined. Because no matter what kind of creative idea it is, it must originate from the needs of customers, and enterprises need to accurately capture the accurate needs of customers, which is very important. Knowledge co creation is the deep understanding and processing of the knowledge and information provided by customers. On the other hand, knowledge co creation requires extending and diverging customer needs, and then extracting more accurate solutions and products than the demand information obtained during Customer Participation. By utilizing the feedback information from Customer Participation, we conduct research on the scalability of the information, and then combine our knowledge to co create more effective and expected results.
- 4) Having good learning and knowledge absorption abilities is crucial for improving management efficiency and ability. In the process of accumulation and learning,

enterprises should continuously absorb corresponding knowledge, digest, refine, and sublimate it into the design and innovation results needed by the enterprise, and then transform it into innovative products required by the target customer group. This process is crucial. The absorption of knowledge can improve the effectiveness of project management in enterprises, improve information accuracy, construction safety, aesthetic design, and other aspects. The absorption capacity of knowledge and the correlation between knowledge co creation are very high, which has a huge driving effect on the innovation performance of enterprises.

The above viewpoints are highly consistent with the PLS-SEM analysis results, further confirming our research hypothesis.

## **5. CONCLUSION**

### **5.1 Impact of Customer Participation on Knowledge Co-creation**

All three dimensions of Customer Participation (Information sharing, Responsible behavior, Emotional interaction) positively influence Embedded knowledge co-creation, Alliance-based knowledge co-creation, and Knowledge co-creation environment. The impact on knowledge co-creation increases with the different dimensions of Customer Participation.

### **5.2 Impact of Customer Participation on Innovation Performance of Tourism Cultural and Creative Products**

The three dimensions of Customer Participation do not have a significant impact on the innovation performance of tourism cultural and creative products. This may be due to the complex process that innovation undergoes, the scarcity of lead users, and the limited technological capabilities of small and young tourism cultural and creative enterprises.

### **5.3 Impact of Knowledge Co-creation on Innovation Performance of Tourism Cultural and Creative Products**

Embedded knowledge co-creation, Alliance-based knowledge co-creation, and Knowledge co-creation environment do not significantly influence the innovation performance of tourism cultural and creative products. This may be because facilitating significant relationships between them requires higher knowledge absorption and integration capabilities, and it is a "complex" process.

### **5.4 Mediating Effects of Knowledge Co-creation**

The three dimensions of Customer Participation do not have a significant mediating effect on the relationship between Knowledge co-creation and the innovation performance of tourism cultural and creative products. This may be due to the high requirements of knowledge co-creation for the degree of Customer Participation and the small and young characteristics of tourism cultural and creative enterprises.

### **5.5 Mediating Effects of Absorptive Capacity**

In the impact of Customer Participation on the innovation performance of tourism cultural and

creative products, the moderating effect of absorptive capacity is not significant. Absorptive capacity plays a fully mediating role in the impact of Knowledge Co-creation on the innovation performance of tourism cultural and creative products. This suggests that the knowledge generated by knowledge co-creation is mostly from within the enterprise, and by enhancing absorptive capacity, the enterprise can more easily integrate, transform, and utilize this knowledge, thereby promoting the improvement of innovation quality.

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